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From Food to Thought: A Path Toward Ecoliteracy in Higher Education

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Education

by

Timothy Peter Winstanley Randall

2019

ABSTRACT OF THE DISSERTATION

From Food to Thought: A Path Toward Ecoliteracy in Higher Education

by

Timothy Peter Winstanley Randall

Doctor of Philosophy in Education

University of California, Los Angeles, 2019

Professor Walter R Allen, Chair

This case study examines college student ecoliteracy, a measure of ecological awareness and understanding, as influenced by a year-long course on food systems and related environmental issues. *Food: A Lens for the Environment and Sustainability* is part of the UCLA Cluster Program, a three-quarter lecture, lab, and seminar series that satisfies several of the College's General Education requirements, including scientific inquiry and writing. The study follows twenty students through the program, relying on data collected through in-depth interviews, document analysis of course materials and assignments, and fieldnotes from my experiences as a participant-observer and one of the instructors of the course. This project evaluates the utility of food as an entry-point for broader conversations of ecology and sustainability. I identify the ways in which college students integrate ecoliteracy into their perspectives and habits, and I explore the educational and contextual barriers that inhibit or

mitigate this type of development. Many of the student narratives center around relational understandings of environmental issues, navigating the complexities of food choices, and their experiences applying new socioecological knowledge into their established social and cultural contexts. The purpose of this project is twofold: first, to make the theoretical argument for ecoliteracy as a fundamental intention of higher education, and second, to provide institutions and educators with recommendations for transformative ecopedagogical practices.

The dissertation of Timothy Peter Winstanley Randall is approved.

Ananda Maria Marin

Richard V Kahn

Teresa L McCarty

Walter R Allen, Committee Chair

University of California, Los Angeles

2019

DEDICATION

To Sue and Tom, who taught a young boy how to walk in the woods.

CONTENTS

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It is no great stretch to say, that this work would not have been possible without the steady guidance and support of an army of educators, hell-bent on dragging me over the finish-line. I am a late bloomer, always have been and always will be. And it takes a special kind of patience, one forged deep in compassion and understanding, to keep up with someone as slow as I am. I hold immense gratitude for the teachers who validated the path less traveled and who took some time to walk it with me: Diane Hirschberg, Elaine Dunn, Bill Hritz, Danielle Herald, Jason Kim-Seda, Henri Andre, Byron Bowman, Bob O'Brien, Katie Gayman, Jesse Sarzana, Paul Ruhlmann, Rob Leith, Leigh Hogan, Lelia Evans, Henry Kasdon, Adam Holland, Brian Staveley, Hideko Abe, Tamae Prindle, David Findlay, Melissa Glen, Jed Wartman. If this dissertation is half a good read, it is because you made it so. If not, I am sorry.

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Brandon Nieuw, Matthew Boyes-Watson, and Kaeghan Kelly, you guys did not help at all with this, but your friendship over the years has meant the world to me.

My family, I love you all. May you forever put me gently in my place.

Chelsea and Ellie Katniss Sage Granger, you fill my life to the brim with laughter and love.

Finally, this project would not have been possible if not for an inspiring, thoughtful, and engaged group of students. Going to class was never a chore, and I always left with my spirits higher than when it began. I will always be indebted to the time and energy you afforded me in

this process, and I am grateful for the opportunity to reflect the nature and quality of our

conversations in the pages that follow.

PREFACE: ODE TO MOUNTAIN DAY

Teach the children. We don't matter so much, but the children do. Show them daisies and the pale hepatica. Teach them the taste of sassafras and wintergreen. The lives of the blue sailors, mallow, sunbursts, the moccasin flowers. And the frisky ones—inkberry, lamb's-quarters, blueberries. And the aromatic ones—rosemary, oregano. Give them peppermint to put in their pockets as they go to school. Give them fields and the woods and the possibility of the world salvaged from the lords of profit. Stand them in the stream, head them upstream, rejoice as they learn to love this green space they live in, its sticks and leaves and then the silent, beautiful blossoms.

Attention is the beginning of devotion.

Mary Oliver, *Upstream* (2012)

As a senior in high school, I toured a number of small, liberal arts colleges in New England. Being a relative newcomer to the college selection game, as most seventeen-year-olds are, I was not entirely sure what I was supposed to be looking for. I proceeded to evaluate each school on a variety of probable facets, such as the relative attractiveness of campus grounds, the apparent happiness of the many students walking around it, and the recent success, or lack thereof, of the college's men's soccer team.

No doubt, there were better ways to go about it. Beautifying a rural New England college campus in the autumn is no hardship. Leaves explode off the trees in an elaborate and chilling display that both celebrates the fleeting life of summer and promises the impending quiet of winter. It is also no surprise that, for the most part, the students I saw seemed in good spirits. It is

near impossible for any student to keep from smiling on a Saturday afternoon, as they observe a huddled pod of prospective students jostling by. There is a pleasant, comical nostalgia inherent in watching your friend-turned-tour guide walk backward steadily across the quad, while simultaneously entertaining a large group of nervous onlookers. As for soccer, each team I watched had strong players and a likeable coach at the helm. All told, by the time college applications were due later that year, the many campus visits seemed to coalesce in my mind into one single memory of a long stroll along a never-ending row of brick buildings, one hardly differentiated from the next.

As a graduate student studying higher education, I now look back at this period mildly bemused that I used so little information to make what may have been, at the time, the single most significant decision of my life. Having spent the better part of the past five years pouring over the literature on student development, college access, and critical pedagogy, I am now privy to an entire world of resources, metrics, and perspectives that would have no doubt proved useful at seventeen.

Amidst the blur of uninformed decisions that characterized my college application process, and perhaps the greater entirety of my high school years, one memory in particular has remained salient. I was touring Williams College, a liberal arts school nestled in the quiet, stately hills of western Massachusetts. Reversing through the sprawling green campus, the tour guide listed-off the many offerings of the school: an intimate campus, a plethora of academic departments with world-class faculty, winning athletic teams, and Mountain Day. This last addition piqued my interest, as it was unique among the many campus spiels to which I had become all too familiar. Our guide went on to explain that Mountain Day was an annual tradition at the school. One morning each year, the college President cancels all courses for the day, in

favor of a communal ascent of the nearby Mount Greylock. Students hike, drive, or otherwise meander to the top of the mountain, relishing the outdoors and the newfound freedom brought about by a day of coursework gone missing.

As a senior in high school, I found both humor and comfort in the idea of Mountain Day. It did not seem to fit with the perceived structure and rigor of academic life, and I appreciated its whimsy and randomness. It seemed like an interesting alternative to a snow day, of which I was exceedingly familiar and appreciated a great deal. Growing up in New England, I was not above predicting such novelties, and I learned to accept the consequences in school the next day for an incorrectly assessed Doppler. As I made my way through the Williams campus, I wondered how many college students had optimistically predicted a Mountain Day and what the telltale signs for such an occasion might be.

Beyond the lighthearted spontaneity, I appreciated the perspective that Mountain Day offered. The most rigorous of schools are often the first to fall victim to drones of mechanical students fueling busy schedules and high grade-point averages with as much sleep deprivation and caffeine as necessary (Lund et al., 2010). Deresiewicz (2015) describes this perfectionist propensity toward academic hoop-jumping in his aptly titled commentary *Excellent Sheep,* in which he identifies a constriction of student creativity and intellectual engagement due to stressful educational environments that foster a severe aversion to failure. In a culture of overbearing expectation, Mountain Day offered students at Williams the gentle reminder that some things are, dare it be said, more important than academic achievement.

This refreshed perspective of academic life invites the question: why is a day in the mountains more important than a day of school? Surely it is an irresponsible and unnecessary use of time and resources. After all, the current sticker price of a Williams College degree is

$261,920, which, even at the per diem rate of a few hundred dollars, is a hefty premium on what is ostensibly a zero-cost day hiking in the mountains. Students probably do not anticipate that a large percentage of their tuition accounts Mountain day, nor are they likely to leverage the experience for highly profitable endeavors in the future through which they might begin to chip away at a quarter of a million dollars in student loan debt. By all immediate financial measures that might impact a student's life, Mountain Day is a net neutral activity with the opportunity cost of a traditional school day. It is as useful, or decidedly unuseful, as a day spent surfing an ocean break, snowshoeing through the woods, or walking through a meadow of wildflowers. However, this line of thinking builds upon the false premise that economic worth is the only relevant measure of value; a misconception that is not only readily applied to how people spend their time, but also the natural spaces where they might choose to exist as economic nonentities. In Utah, for example, the economic impact of federally protected spaces like Bears Ears Monument *can* measure up to the proposed profits of encroaching corporate oil rigs, but doing so makes use of a woefully incomplete value scale.

For those of us who see inherent value in the natural world, and who regularly seek out experiences to connect with it, the response is deeply personal. Throughout my life, I have often found solace and inspiration in the mountains. Starting when I was in the sixth grade, my parents ran an overnight camp in the woods of New Hampshire. My siblings and I would spend each summer there, first as campers then as counselors. We would play in the fields, swim in lakes, cook over fires, and stare up into the infinite depths of the stars at night. It was a simpler, calmer life than that of our hurried existence in the city during the school year. While these experiences are unique to me, many can relate to them in some way. Whether it is a breath of fresh air on a cold night, the clean smell of upturned earth after a storm, or the afternoon sun hitting your face,

our connection to the natural world is far more pervasive than we often give it credit for. And perhaps more importantly, we are much more dependent on the health and vibrancy of ecological systems than we are often led to believe.

As the product of over four billion years of evolutionary history, the very existence of humanity has always been predicated on a balanced relationship with our ecosystem. Throughout the course of human history, civilizations have either abided by this truth, periodically relocated to more plentiful ecosystems, or ceased to exist (Diamond, 2013). But as our cities have developed, as our economic systems have become more global and complex, and as our relationship to technology distances our connection to the physical realm, it becomes harder to tell exactly what ecosystem we live in at any given moment. Our understandings of connection and integration with ecology are dissipating at the most significant and unfortunate historical moment, as global biodiversity, a fundamental measure of ecological health, diminishes at unprecedented rates (Kolbert, 2014).

Educational programs that dissolve the barriers between the individual and the natural world are perhaps the only thing that can inform and influence future leaders, activists, educators, and consumers, at the scale necessary to curb the rate of global environmental degradation. Petrovic (1965) writes, "A free action can only be one by which a man changes his world and himself" (see Fromm, 1965, p. 274). Of Petrovic, Freire (1970) extrapolates, "If this view be true, the revolutionary process is eminently educational in character" (p. 138). While talking about a revolution may, at first, seem like a misappraisal of the present context, Edwards (2005) argues that the paradigm shift toward a sustainable future is not a passive endeavor. Revolution, understood in this context as transformational and liberating education, has staunch opposition in the entrenched private interests that profit greatly from the unsustainable present.

Reluctance to accept the reality of opposing forces, and in so failing to understand the system in which we all, knowingly or unknowingly, participate, further emboldens the status quo and the entities that benefit from systematic, ecological oppression.

However, in recognition of opposition, of ecological and other forms of oppression, perhaps our greatest challenge in revolution is identifying the ways in which we all participate in, and are therefore responsible for, the current system. While we might criticize the operations and morality of an oil conglomerate—which I do at length in this dissertation—we who own and drive cars, enjoy nonlocal foods, or fly regularly to visit family, must also sit with our own hypocrisy and what it enables. In participating in the many opportunities of modern society, we are complicit to the extent that these practices, and the systems they perpetuate, destruct the ecological systems of the Earth. We are in part the oppressors and the oppressed. As such, calls to revolution are first and foremost directed inward at they many ways in which we all fail to uphold our own values, morality, and aspirations. Freire (1970), who's seminal work *Pedagogy of the Oppressed* greatly informs the methodology, educational praxis, and theoretical foundation of this study, explains this intrinsic reflexivity of revolution:

> The oppressed suffer from the duality which has established itself in their innermost being. They discover that without freedom they cannot exist authentically. Yet, although they desire authentic existence, they fear it. They are at one and the same time themselves and the oppressor whose consciousness they have internalized. The conflict lies in the choice between being wholly themselves or being divided; between ejecting the oppressor within or not ejecting them; between human solidarity or alienation; between following prescriptions or having choices; between being spectators or actors; between acting or having the illusion of acting through the action of the oppressors; between

speaking out or being silent, castrated in their power to create and re-create, in their power to transform the world. This is the tragic dilemma of the oppressed which their education must take into account (p. 48).

Revolution as an educational endeavor positions schools, colleges, and universities in the front lines. In some modest ways, a few institutions have taken up the call. Since my college tours as a high school student, I have learned that Mountain Day is not unique to Williams College. A number of other schools celebrate some version of the holiday or embrace the general concept by offering students other types of immersive experiences in nature. I view Mountain Day as an important opportunity to rekindle our connection to the natural world and to develop a sincere gratitude that we have been able to call Earth our home for so long. While it may be impractical for college presidents to officially declare every day Mountain Day, it is imperative to foster these types of educational experiences. Mountain Day is merely one day in the academic year and, truth be told, in many ways it represents a departure from an antithetical norm. Nevertheless, it is a step in the right direction. Students need more mountain days, and ocean days, and meadow days, and desert days, not only for their own health and wellbeing, but to integrate these experiences into their perspectives, values, and actions, and to appropriately contextualize their existence as interconnected and interdependent with species and systems beyond themselves. "Attention is the beginning of devotion," writes Oliver (2016, p. 8). What follows is a humble journey toward this end.

VITA

2011   関西外国語大学

                                    Kansai Gaidia University

                                    Osaka, Japan

2012   Area Resident Director of Campus Life

                                    Outstanding Campus Leadership Award

                                    Judicial Board

                                    Board of Trustees Athletic Committee

                                    Colby College

                                    Waterville, Maine

2012   B.A., Psychology: Neuroscience, Japanese Minor

                                    Colby College

                                    Waterville, Maine

2012   Educational Programs Intern

                                    The Island School

                                    Cape Eleuthera, Bahamas

2013   M.A., Higher Education and Organizational Change

                                    Graduate School of Education and Information Studies

University of California, Los Angeles

Los Angeles, California

2013   Student Affairs Officer

Educational Leadership Program

Graduate School of Education and Information Studies

University of California, Los Angeles

Los Angeles, California

2013 – 2016   College Academic Mentor

College Academic Counseling

University of California, Los Angeles

Los Angeles, California

2017 – 2019   Teaching Fellow

Institute of the Environment and Sustainability

University of California, Los Angeles

Los Angeles, California

2019   Cofounder

Eredità Creative House

Santa Monica, California

Chapter One: Introduction

"Why don't we just shoot the trash into space?"

It was as good a starting point as any. Laura seemed as honest in her inquiry as she was bemused by its preposterousness. I sat down at the front of the fluorescently lit classroom, and the radiant banter of twenty college first-years gradually met its half-life.

"That would be very expensive," I offered.

According to NASA, the cost of sending a rocket into space tallies up to a cool $500 million. The biggest rocket in the world, the Falcon Heavy of Space X, is currently capable of a 70-ton payload and costs a mere $90 million per launch. We had found a bargain. The Environmental Protection Agency reported that in 2013 the United States alone produced 167 million tons of non-compostable and non-recyclable trash. To clear it all would require over two million Falcon Heavy launches and about $214 trillion dollars. So, if each American shot their trash to the moon, it would cost us each $659,239 per year—and about five times more than that if NASA provided the service.

Less than halfway through the collective googling and calculations, it became apparent to most in the room that the 'trash-rocket' strategy for waste management was severely flawed. From a purely economic perspective, the numbers are outlandish and yet still only account for one country. From and environmental perspective, while many natural ecosystems would flourish with less consumer waste lying around, the pollution and carbon footprint produced by over two million rockets per year would be undeniably much worse (see Emmert, Stevens, Bernath, Drob, & Boone, 2012). And yet, if we allow ourselves to dig a little deeper, the 'trash-rocket' concept is quite telling. We live in a culture that maintains the general, unchallenged assumption that we can buy the things we want and later throw them away.

But where is "away?" Perhaps we mean out of sight or out of mind, because, in actuality, "away" is not any place at all. When 2.9 million people a day visit Starbucks for their daily cup of joe, the cap of their hot drink or the cup/straw situation of their cold drink will be used for twenty minutes and then continue to exist for at least 450 years, likely making its way to a public landfill or to the ocean (Jambeck et al., 2015).

There is a compelling reason why we do not often stop to think through the euphemisms of modern existence: We would have to change the way we live, significantly. A trip to the grocery store sounds benign enough, but in order for everyone on earth to grocery shop like an American, we would need the resources and biocapacity of five earths (Global Footprint Network, 2014).

A few weeks after 'trash-rocket,' each student in the class calculated their personal earth count, based on the biocapacity of the earth and the resources required to produce their lifestyle (should everyone in the world consume at the rate they do). In a class of college students, most of whom live on campus and do not commute, the most sustainable lifestyle required 2.8 Earths. Notably, this is 1.8 Earths more than we have.

It is easy to look at the realities of modern consumption and waste, particularly in the United States, and become disheartened and overwhelmed. Particularly at the beginning of the academic year, while many students were taking stock of their own impact on the world, many felt powerless to change their own reality, let alone make any significant dent in the 167 million tons of non-reusable waste. But despair and powerlessness are not effective catalysts for positive change; nor is ignorance or faulty solutions. But as a society we tend to underestimate the power of an individual. *The Onion*, a publication probably not referenced nearly as often as it should be, ran a wonderful piece in 2010 titled: *'How Bad Can Throwing Away One Plastic Bottle Be?'*

Wonder 30 Million People. The article goes on to describe the relative quandaries and rationalizations of the many individuals who shared this common sentiment and maps out geographical representation of them, extracting pithy quotes such as, "It's not like I don't care, because I do, and most of the time I don't even buy bottled water… It's really not worth beating myself up over."

As with perhaps all satirical work, what makes the article funny is its relative proximity to the truth. In his *Anatomy of Satire,* Highet (2015) explains, "The mask is Irony. The voice speaks a gross exaggeration or falsehood, knowing it to be exaggerated or false, but announcing it as serious truth. Listening to it, intelligent men think, "That cannot be true. He cannot possibly mean that." They realize that he means the reverse of what he says. For the truth is sometimes so outrageous, and sometimes, unhappily, so familiar that people disregard it" (p. 55). However, whereas satire in most instances is an exaggeration of the truth, *The Onion* article is noteworthy because it presents a watered-down version of reality. Rather than 30 million people, the population of the United States is actually 329 million (according to the United States Census Bureau, 2019), and collectively we consume 85 million plastic bottles of water per day (Gleick, 2010). Even with factoring in a generous recycle rate of 29 percent (as calculated in the United States Postconsumer Plastic Bottle Report, 2017), we still nearly double the 30 million bottles postulated for comedic effect by *The Onion*. When we expand the model to include a global population of 7.6 billion, which is the more appropriate measure to use for environmental and climate related issues, and the wide variety of other products that are made from single-use plastics, we need quite a few more jokes to feel good about things.

As individuals, we consider our contribution to societal problems minimal because it is. Based on data from the Census Bureau, a Pew Research Center report calculated that 44 percent

of eligible people did not vote in 2016. It is difficult to pinpoint the reasons behind it, but a likely verdict is that people believe their vote does not matter. Ironically, 44 percent is more than enough people to swing most political races. But we tend to discount or ignore economies of scale such as the relative number of participants or time. Using and discarding one plastic water bottle is mathematically insignificant, but one bottle per day over the course of an average lifetime is just under 30 thousand. It logically follows, therefore, that any educational initiatives to address environmental issues require both a development of relational sophistication and a long-term view of the future.

And so began the 2018 academic year, in a dizzying heap of hypothetical calculations and comedic despair. I was a Teaching Fellow at the Institute for the Environment and Sustainability at UCLA, teaching a first-year course on food and the environment. As a graduate student in the School of Education, such an appointment might appear to be a departure from my established trajectory—or indeed my undergraduate pursuits in psychology, neuroscience, and Japanese. And it was; however, teaching this particular course on food was also the most intellectually and emotionally grounded that I had ever felt in academia.

There was good reason for this. In the seventh grade, I took a class called *Optimal Performance* with Henri Andre, the Health and Fitness Director at the school and a former professional soccer player in Switzerland. He had a strong French accent and a contagious positivity. Wanting to become a professional soccer player myself, I took his word as gospel and eagerly adopted his many recommendations for a healthful life. One day, he taught a class on artificial preservatives in food. I was astounded to learn about the pervasiveness of health-destroying additives in many of the, what I had assumed to be, 'healthy' foods that I regularly consumed. When I got home that day, I went straight to my kitchen and cleared out my pantry of

all foods with high fructose corn syrup on the ingredient label, which, at the time, was most of them.

My mother was not impressed. She suggested that we could have implemented my newly enlightened standards on our food shop the following week, and, in the meantime, we could have eaten through what we had in. It was rational position, but as a seventh grader I saw the world in very black and white terms. There was good and bad, the right way and the wrong way, and if something was worth doing, it was worth doing immediately and all the way.

Despite my mother's dismay, my insubordination led to many gradual changes in my household regarding what we ate and how we sourced food. My parents made a conscious effort to buy the "good bread" and avoid long, unintelligible ingredient labels, perhaps in fear their food might otherwise prematurely make its way to the garbage bin. Mr. Andre was thrilled to hear that I had acted so quickly. His encouragement led me to pursue the study of food long after the course ended, especially as it related to nutrition and athletic performance. Although I had never previously been an avid reader, I tore through the entire canon of Andrew Weil, Eric Schlosser, and Michael Pollan. I soon realized that food has a much greater impact on my life and in the world than merely making me faster, stronger, and less prone to injury on a soccer field. Through food, I became interested in a host of related topics, such as disease prevention, cooking, permaculture, and the ethical and environmental issues associated with food production. Perhaps most importantly, my exploration of these complex and often contentious topics revealed that things might not be as black and white as I had previously thought. Food is not merely something people do right or wrong; however, there is an array of consequences for the choices each person makes. From that point on, I made it my goal to develop a greater

understanding of the broader implications of my food choices and to aspire to a guiding philosophy that was free from hypocrisy and cognitive dissonance.

Although it has taken many forms throughout the years, from experiments in fermentation to a lifelong obsession to find and replicate the perfect pizza, my passion for food has never wavered. Beyond my personal hobbies and culinary interests, over the years the study of food and sustainable food systems has crept into my work and research in the field of education. At the Island School in Cape Eleuthera, I harvested lettuce and tilapia from the school's many large aquaponics farming tanks. With Education First, the largest study abroad program in the world, I brought groups of students to Umbertide, Italy, to learn about permaculture farming. So when it came time to teach *Food: A Lens for the Environment and Sustainability,* and to later write on my experiences, doing so felt like the next logical step in continuing my own educational journey through food (Carle, 1969).

Synoptic Overview

This case study on ecoliteracy development among first-year college students explores the opportunity for institutions of higher education to facilitate and expediate the paradigmatic shift toward a sustainable global society through engaging and widespread curricular initiatives and ecopedagogical practices. The study explores college student ecoliteracy, a measure of ecological awareness and understanding, as influenced by a year-long course on food systems and related environmental issues. *Food: A Lens for the Environment and Sustainability* is part of the UCLA Cluster Program, a three-quarter lecture, lab, and seminar series that satisfies several of the College's General Education requirements, including Scientific Inquiry and Writing. The study follows twenty students through the program, relying on data collected through in-depth interviews, document analysis of course materials and assignments, and fieldnotes from my

experiences as one of the instructors of the course. The purpose of this project is twofold: first, to make the theoretical argument for ecoliteracy as a fundamental intention of higher education, and second, to provide institutions and educators with recommendations for transformative ecopedagogical practices.

While many colleges and universities have begun institutional level changes to decrease or, in some cases, to eliminate their carbon footprint, very few schools have implemented significant changes in curriculum or educational requirements that would better inform their student body on environmental issues. As such, higher education is not only shortchanging students by denying them the opportunity to make proactive and informed decisions as democratic and economic participants in society, but it is also shirking its fundamental obligation to educate generations of students who are prepared to address the pressing issues of their time. What follows is a brief overview of the upcoming chapters of this dissertation.

The remainder of Chapter One establishes environmental and ecological degradation as a global crisis and emphasizes the necessity for colleges and universities to educate young people on these issues. In developing the context for this study, I briefly outline a few of the systemic threats to global ecosystems and the political climate charged with the responsibility of addressing them. I explore the ways in which wind and ocean currents transport waste and pollution from one area of the world to another, creating hosts of ecological, economic, and health-related problems. Given the pervasive impact of issues such as pollution and climate change, I express the importance of widespread societal awareness and participation in solutions. I describe the improbability that businesses and corporate structures will provide timely solutions to these complex global issues, and instead look toward public policy and educational institutions to provide the necessary regulatory measures and informed citizenry respectively. I identify

higher education in the United States as one such educational system desperately failing at developing ecoliteracy en masse and advocate for ecoliteracy as a fundamental objective of a meaningful college education. I conclude this first chapter by describing the specific contributions of this study with regards to informing pedagogical and institutional practices and list out the specific research questions that guide the remaining chapters of this dissertation.

Chapter Two delves into the relevant literature that has informed my understanding of these topics and offers a conceptual framing for ecoliteracy. I begin with a discussion of the current political context and outline some of the institutional forces that actively promote or deter environmental initiatives. Having established the larger sociopolitical context, I examine the concept of food in relation to the individual and the series of ecological, economic, and cultural practices that bring various edible life forms to our dinner tables. I discuss food as a useful gateway to understanding ecological concepts and related environmental issues. I move on to ecoliteracy and trace the conceptual lineage of the term, positioning it within the larger theoretical context of educational research. To conclude this chapter, I cross-examine the concept of ecoliteracy with well-established theories pertaining to the function and purpose of higher education as a significant and meaningful institution in society.

Chapter Three outlines the methodological approach. This research project spanned the course of an entire academic year, during which I interviewed twenty first-year college students about their experiences in the course. In this chapter, I detail my process and rationale for each phase of the research process, including the research design, data collection and analysis, and my relative positionality as an educator-researcher.

The following three chapters entwine study findings and the relevant analysis for each of the three research questions outlined in Chapter One, relying heavily on student narratives from

individual interviews. Each of these sections is accompanied by my respective analysis on the ideas presented, allowing for a closer and more coherent presentation of the data and my interpretations. The first of these chapters illustrates the ways in which students developed or changed their understandings of ecology, environmental issues, along with the greater scientific, political, and economic systems that influence them. I identify the ways in which college students integrate ecoliteracy into their perspectives and habits, and I explore the educational and contextual barriers that inhibit or mitigate this type of development. In Chapter Five I explore student behavioral changes and other means by which they process ecoliteracy and incorporate new ideas and information into their worldview. In Chapter Six, I explore institutional practices that enhanced or detracted from student learning or the functional application of an increasingly ecoliterate perspective. I examine the teaching methods, course materials, projects, and other educational experiences that had the greatest impact on students over the course of the year.

In the final chapter synthesizes the narratives presented in the prior three, summarizing key findings and unpacking a number of the themes, stories, and surprises that emerged over the course of the study. I contrast the ways in which my findings correspond to and diverge from prior research on ecoliteracy and what the possible implications for this study might be. My goal here is not to reiterate what was covered in the previous three chapters, but rather to offer new perspectives and understandings within the context of other important trends in higher education. I conclude my analysis with recommendations for educators who aspire to enhance the ecoliteracy development of their students and for institutions that are inclined to shape their policies, practices, and values toward such aims.

Context: Between Moro Rock and a Polluted Place

From the valley below, the immense granite dome of Moro Rock juts skyward as if the Earth itself is giving you a thumbs-up. The sight comes as a welcome reassurance that you are indeed headed in the right direction, as even the most reliable of navigation systems lose signal here, and that the nausea you and your companions are experiencing from the hairpin ascent may yet be worth the while. With its peak a mere two miles from Generals Highway, a dizzying mountain pass that dances through the giant redwood of Sequoia National Park, Moro Rock is a likely book-end destination for park visitors. The top of the dome offers a panoramic glimpse of the snow-capped Sierras to the northeast, while the opposing vista follows the godforsaken highway through the subalpine forests and meadows and out toward the vast agricultural flats of the San Joaquin Valley.

Should you brave the road, the brown bears, and the seemingly never-ending series of cliff-face stairs carved into the rock, you escape onto a smooth and surprisingly narrow walkway across the summit. A sturdy steel handrail, drilled into the rock, traces the perimeter, which is easily vaulted by droves of athletic youth, eager to transcend the intoxicating safety of the pen and to personally bear witness to the vertical asymptote of the dome face. For us squares, the railing provides a series of informational posters, detailing key aspects of the landscape and ecosystem, such as: the impact of light pollution on certain species of wildlife and a topographical map identifying each peak on the near 360-degree horizon. As I edged along the row toward the precipice, I arrived at a poster that donned a fittingly ominous question: *What's in the air?* It was a relevant inquiry, as beyond the metal edge of the poster frame, a sunlit stream of golden haze appeared to have been poured out of the valley and dispersed amongst the roots of the westerly mountain range. The poster went on to describe how global weather patterns

systematically import smog from across the Pacific Ocean, but its path eastward is impeded by the Sierra Mountain Range, causing a buildup of circulating and heavily polluted air. It seemed woefully ironic that, despite the fact I was standing amidst 40 thousand square miles of federally protected wilderness, without a residential or industrial development in sight, issues of environmental degradation were at the forefront and required explanation.

The air at Moro Rock highlights a fundamental principle of ecology in which all living things are interconnected and relational (Capra, 1996). These interconnected relationships hold true even at the global scale. In this case, pollution from industrial activity in China ends up across the world in Sequoia National Park. While the exchange is not directly reciprocal, as global weather patterns do not simply circulate the air from the Sierras back to Beijing, air pollution is one measure in a highly complex and symbiotic relationship that includes infinite transactions and ripple effects of energy and resources. "China is currently the second-largest U.S. trading partner, its third-largest export market, and its biggest source of imports" (Morrison, 2011, p. 4). Over the past three decades, Chinese exports have transformed drastically from agricultural goods and textiles, to electronics, appliances, and machinery (Amiti & Freund, 2010). Shui and Harriss (2006) estimate that American consumers are responsible for seven to fourteen percent of China's carbon dioxide emissions, which amounts to 720 million metric tons of carbon dioxide. So, to understand why the view from Moro Rock is so unfortunately tainted, we need look no further than the GPS device that got us there or the smartphone we are using to snap a picture.

Goleman, Bennett, and Barlow (2012) describes the mystification of cause and effect in the global economy. "Historically—and for some cultures still in existence today—the path between a decision and its consequences was short and visible. If a homesteading family cleared

their land of trees, for example, they might soon experience flooding, soil erosion, a lack of shade, and a huge decrease in biodiversity. These days, we often don't see the far-reaching implications of many of our actions—they seem to be invisible" (p. 14). Capra and Luisi (2014) come to understand these complex ecological, social, and economic relationships through a philosophical perspective called systems view, in which networks of living organisms, human beings included, operate in relation to one another across complex and diverse landscapes. Systems view, or systems thinking as it is sometimes referred to (Checkland, 1999; Jackson, 2003; Trochim, Cabrera, Milstein, Gallagher, & Leischow, 2006; Cabrera, Colosi, & Lobdell, 2008), is a useful tool for environmental protection efforts, as it assumes a multidimensional approach. When we start to appreciate environmental ecosystems as a whole, predicated upon the balanced and sustainable participation of all living organisms, it becomes apparent that individualistic and anthropocentric perspectives and actions are not capable of addressing complex environmental concerns. However, the capacity to understand the world beyond the blinders of our personal, human experience requires cultivation.

A holistic ecological perspective of the natural world is perhaps the first casualty of neoliberalism, the dominant economic ideology of our time (Saad-Filho & Johnston, 2005). Competition for resources amongst individuals, institutions, and corporations, within an unregulated, free-market economy, encourages competitive advantage and profit at the cost of alternative, egalitarian motivations, such as environmental justice, social justice, and public health (Chomsky, 1999; Giroux, 2002; Hill, 2011). Collective action toward a common goal, as required by social movements, is the antithesis of the neoliberal ideology. A united approach to mitigating consumerism on a global scale, and the associated environmental degradation and waste, complicates simplistic and exploitative profit-seeking. And yet, tightening the reigns of

consumerism through public policy and personal responsibility is the basis for environmental protection and ecological regeneration.

It is far too simplistic, however, to attribute the full spectrum of environmental woes on the neoliberal agenda. Clark (2015) writes:

Aside from the fact that socialist systems of government have also had appalling environmental records, the processes culminating in the Anthropocene include events that predate the advent of capitalism, primarily the invention of agriculture, deforestation and the eradication over centuries of large animals in all continents beyond Africa as humanity expanded across the globe (p. 2-3).

The human tendency to overconsume limited resources is not new and is not necessarily wedded to one specific societal precursor. Since early sapiens gained control of fire more than 300 thousand years ago, we have been dramatic and efficient manipulators of the ecosystems we inhabit (Mitchell, 1978). Therefore, the solutions for mitigating human impact on the natural world must be all-encompassing in scope, rather than targeted toward one specific economic system, group of people, or geographic location.

Hardin's seminal 1968 paper, *Tragedy of the Commons*, corrals this particular tension between individual consumption with relation to a larger community. Hardin theorized that the economic interests of individual cattle-herders on public or common-use land, were misaligned from the interests of the general public and, principally, the other cattle-herders. Hardin argued that, from an economic standpoint, it inevitably behooved the lone herder to raise additional cattle, because the costs of overgrazing the land was shared collectively among the farmers. Conversely, the profits of the additional livestock belonged to the individual. Therefore, Hardin

concluded, the rational herder is incentivized to exploit the communal resource to the degree that they are able.

However, in reality, the behavior described by Hardin exposes cattle-herders to two existential threats. The first, and most importantly, is that if the common land is degraded to the extent that it is unable to rejuvenate for further grazing, then the cows will have nothing to eat. This first conundrum establishes the communal necessity for a sustainable rate of consumption (D. W. Pearce, Atkinson, & Dubourg, 1994). That is, a rate of consumption that does not decrease the principle amount of the given resource. "There is no sustainable rate of consumption when the resource base consists solely of a nonrenewable resource in fixed supply" (p. 458). However, for a renewable resource such as grass, as long as the pasture can grow at or above the rate it is grazed, all things remaining equal the pasture will not diminish. However, grazing to excess of the rate of renewal ensures that over time the resource will cease to exist. Li and Williams (2006) describe this problem as the environmental paradox. "To achieve a balance in the mismatch between what is demanded of the environment and what the environment is capable of supplying requires either a reduction in the demands made on the environment and/or an increase in the access to available resources" (p. 100). But on a fixed plot of common-use land, such as the context proposed by Hardin, and a renewable resource, grass, the collapse of the system affects all herders. Therefore, the incentives for individuals to maximize profits remain in concert with the collective necessity to protect the viability of the resource over time. The latter trumps the former in magnitude as one cannot exist without the other, but it hinges on a key foundation of trust.

Trust between herders enables the alignment of communal and individual interests and works to minimize the second existential threat to greedy herders: exclusion. In the years that

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followed Hardin's warning, a number of economists began to push back against the notion of unrestrained consumption as the governing premise of socio-ecological systems (Angus, 1997; Ostrom, 2009). Instead, they suggest that communities develop systems of self-regulation that reinforce cooperation and the sustainability of shared resources. Interpersonal relationships within the system enable various levels of accountability and reaffirms the realities of interdependence. Rather than one-upping each other, communities create shared standards with consequences for those who betray them.

The problem here is that Hardin arrived at a sturdy notion but ultimately identified a wobbly example. If anything, Hardin's work is actually more significant and applicable today than it was half a century ago. And whereas the specifics of his hypothesis fall short, the general sentiment is regaining practical value. Across the globe, bubbles of community are bursting against the pressures of an increasingly interconnected world economy. A cow herder in Manchester, England in the 1950s did not have to contend with farmers from Newcastle driving their herds to the local Manchester commons and grazing their cattle, before making a run for it back north. But the socioecological equivalent is common practice in business today. Monsanto might have its corporate headquarters in St. Louis, Missouri, but that does not restrict them from buying up large swaths of forests and grasslands in Brazil to clear for soy (Pearce, 2012). The ecological cost is borne by local communities, while the economic benefits are shipped north (Athanasiou, 1998). The relative anonymity of international trade and corporate veils enable these types of socioecological manipulation in which the costs and benefits are inversely distributed. As Hardin predicts, our ability to self-regulate our increasing global community falls short because economic expansion has drastically outstripped our growth in communal understandings of socioecological interconnectivity. "Forget the commons," writes Ryan and

Jetha (2010) "We need to confront the tragedies of the open seas, skies, rivers, and forests. Fisheries around the world are collapsing because no one has the authority, power, and motivation to stop international fleets from strip-mining waters everybody (and thus, nobody) owns. Toxins from Chinese smokestacks burning illegally mined Russian coal lodged in Korean lungs, while American cars burning Venezuelan petroleum melt glaciers in Greenland" (p. 330)

Within a global ecology, international policy and practices matter just as much as domestic. Similarly, at the interpersonal level, the actions of your neighbor, be it the person who lives next door or an institution such as a school or business, matter just as much as your own. They perhaps matter more, should you happen to live downstream. Ecological systems incorporate individuals, not as self-contained and independent entities, but as part of highly interconnected and interdependent systems that continually transcend geographic and political boundaries. This socioecological context requires multilevel cooperation across geopolitical distinctions, however it is likely that the environmental, social, and economic impacts of climate change will only further exacerbate sociopolitical strife in many regions (Barnett & Adger, 2007). The role of higher education institutions in developing solutions to climate change is not only to produce technological advancements through university research, but it is also to produce ecologically literate graduates who understand the socioecological implications.

At the broadest level, this project builds off the work of Freire (1970), Kimmerer (2013), Capra (1999), Hammond and Herron (2012), Kahn (2007), Long et al. (2014), and Rowe (2002), to catalyze a collective and paradigmatic shift in ecoliteracy and global sustainability through educational initiatives. More specifically, I focus on college student ecoliteracy as a measure of environmental awareness and the accompanying propensity to actively address ecological threats (McBride, Brewer, Berkowitz, & Borrie, 2013). In this study, I examine how a sustainability-

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based curriculum on food systems impacts college student ecoliteracy over the course of an academic year.

In the sections that follow, I introduce ecoliteracy as an educational ideal and advocate for its widespread integration into higher education curricula. In doing so, I discuss both the context of this research, along with the theoretical and practical contributions this study seeks to provide. I then outline the specific research questions that will inform and guide the methodological approach and analysis. The chapter concludes with a brief overview of the sections that follow.

Problem Statement: The Ecolit Deficit in Higher Education

For the first time in 4.5 billion years, human beings have a greater impact on the planet than any other geological force. This tectonic shift of power and the resulting implications is often described as "the Anthropocene," a term first coined by atmospheric scientists to describe the geological epoch brought about by the industrial revolution (Clark, 2015). However, the Anthropocene is no longer understood or utilized as merely a scientific concept (Castree, 2014). The "term is rapidly become adopted in the humanities in a sense beyond the strictly geological. Its force is mainly as a loose shorthand term for all the new contexts and demands - cultural, ethical, aesthetic, philosophical, and political - of environmental issues that are truly planetary in scale, notably climate change, ocean acidification, effects of overpopulation, deforestation, soil erosion, overfishing and the general and accelerating degradation of ecosystems" (Clark, 2015, p. 2).

However, the transition of geological global authority promoted humans to a leadership role for which we were drastically underprepared. Beck (1999) describes the modern human

existence as "entering a newly uncertain reflexive stage, the age of unintended consequences" (p. 119). Goleman et al. (2012) reiterate this sentiment:

> Many of the environmental crises that we face today are the unintended consequences of human behavior. For example, we have experienced many unintended but grave consequences of developing the technological ability to access, produce, and use fossil fuels. These new technological capacities have been largely viewed and progress for our society. Only recently has the public become more aware of the downsides of our dependency on fossil fuels, such as pollution, suburban sprawl, international conflicts, and climate change (p. 15).

But simply because the adverse environmental outcomes of the industrial revolution were largely unanticipated, does not mean that it is too late or impractical to change course in response to the newly apparent consequences. To this end, we have yet to fully harness the potential of our education system to right our course by fostering a new generation of ecological stewards.

According to the National Center for Educational Statistics (NCES), of the 7481 U.S. colleges and universities that offered bachelor's degrees in 2015, only 753 offered majors in the category of Natural Resources and Conservation. This category includes, among others, majors such as Environmental Studies, Environmental Science, Forestry, Natural Resource Management and Policy, and Natural Resource Economics. Given that only ten percent of institutions offer academic programs with an environmental focus, one can conclude that most college students are not given the opportunity to make issues of the environment a central component of their academic careers.

It is important to note however, that these limitations in institutional offerings do not accurately reflect student interest. Pryor, Hurtado, Saenz, Santos, and Korn (2007) determined

that 30 percent of college seniors have goals of becoming involved in programs to clean up the environment and 76 percent believe that the federal government is not doing enough to control environmental pollution. So when the U.S. produces almost two million Bachelor's degrees per year, but the total number of environmental studies-related degrees reported by the U.S. Department of Education is less than 18 thousand (IPEDS, 2015), it is safe to say the U.S. is falling short of its potential to produce environmental experts and leadership.

Simply because a student does not major in an environmental-related field does not necessarily dictate that ecoliteracy development was not a significant component of their college academic experience. Should they elect to do so, students might be able to minor in environmental studies or the like, enroll in environmental- or sustainability-focused elective courses, or even take general education or core requirement courses in environmental education. Wolfe (2001) conducted a national survey of chief academic officers, which reported that only 55 percent of institutions offered environmental literacy courses that satisfy general education or core requirements. Environmental literacy in this study was defined as "a basic understanding of the concepts and knowledge of the issues and information relevant to the health and sustainability of the environment as well as environmental issues related to human health." Wolfe also reported that only 12 percent of institutions require students to take an environmental literacy course in order to graduate.

A second survey by the National Wildlife Federation's Campus Ecology program found similar results to Wolfe (2001) in their "State of the Campus Environment: A National Report Card on Environmental Performance and Sustainability in Higher Education" (McIntosh, 2001), which reported that only 8 percent of two and four year institutions in the United States have an

environmental literacy course requirement. Perhaps the most troubling aspect of this report was that only three percent of schools were planning to build in this requirement in the future.

Fortunately, colleges offer far more opportunities for student engagement than merely their course offerings and academic programs. Student environmental organizations and outdoor education programs provide students on some campuses with non-academic options for participating in nature or addressing issues of sustainability. However, as many student organizations operate without direct institutional guidance, it is difficult to evaluate the efficacy of these programs in terms of fostering ecoliteracy and promoting sustainability (O'Connell, Potter, Curthoys, Dyment, & Cuthbertson, 2005). In addition, many college outdoor education programs, such as Mountain Day at Williams College and the Colby College Outdoor Orientation Trips (COOT), are temporary adjournments from the standard curriculum, rather than regular integrations in the overall academic experience.

There are, of course, exceptions. Schools such as Sterling College in Craftsbury Common, Vermont, and Warren Wilson College in Asheville, North Carolina, require students to participate in extensive and immersive educational experiences that center on sustainable systems and environmental awareness. Less adventurous institutions have found ways of infusing their established curricula with themes of sustainability (Rowe, 2002).

> Instead of adding environmental literacy as an additional degree requirement, these higher education institutions have decided to try to shift the dominant paradigm within the college's curricula from nature as an unlimited set of resources to be used and conquered, to a paradigm of sustainable development and the ongoing challenge of creating a more humane and environmentally healthy future society. These institutions

provide students with multiple exposures to the sustainability paradigm throughout their

education. (p. 5)

However, these institutions represent the minority rather than the majority. Ultimately,

whether incorporated into their academic life or simply as an extracurricular opportunity, the vast

majority of college students in the U.S. do not receive any formal ecoliteracy instruction. In the

section that follows, I discuss how this research project begins to address this issue.

Contribution to Educational Research

The purpose of this study is to inform the development of ecoliteracy curricula in higher

education. Through greater understanding of college student ecoliteracy upon matriculation and

of the ways in which institutions may foster this capacity in their students, colleges may begin to

develop transformative academic experiences that focus on ecoliteracy and utilize the abilities,

experiences, and perspectives their students bring to the table (Yosso, 2005).

Despite the many calls from education scholars for ecopedagogical transformation in

higher education (Fassbinder, Nocella, & Kahn, 2012; R. V. Kahn, 2007), few institutions have

taken up the call (McIntosh, 2001; Rowe, 2002; Wolfe, 2001). There are many possible reasons

for why this is the case. Colleges may not see value in devoting resources to sustainability efforts

or to developing their own ecoliteracy curriculum. Alternatively, institutions may not know how

to create and implement a meaningful ecopedagogical experience for their students, or they may

fear compromising the quality or integrity of their traditional curriculum.

Perhaps the most likely explanation for this untimely and irresponsible institutional

inertia is that, thus far, students have not demanded, nor do they necessarily expect, that their

institutions provide this fundamental component of a twenty-first century education. Within the

growing neoliberal commodification of higher education, a number of scholars have equivocated

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students with consumers (Apple, 2005; Giroux, 2002; Slaughter & Rhoades, 2004), and when student demand for something reaches a profitable threshold, institutions respond.

This reactionary stance to education reform is problematic, in particular within the context of addressing important societal issues that require inspirational leadership. As previously discussed, public opinion on environmental issues vary drastically from scientific opinion, and it is the role of institutions to work to unite these tangential paradigms rather than to await the nexus of the supply and demand curves.

However, general agreement of the need for ecopedagogical practices in higher education bears little significance in the lives of students and on the impact of higher education in society. Therefore, colleges must be informed as to how best to implement coursework that will have a positive impact on student ecoliteracy. While a number of studies have provided an overview of the total number of colleges requiring environmental literacy coursework (McIntosh, 2001; Wolfe, 2001), the relative impact of these courses on student ecoliteracy remains largely understudied. Rowe (2002) makes the case for "more longitudinal studies… to see what approaches and combinations of approaches best encourage graduates to be proactive change agents for sustainability concepts. Research is also needed on what types of teaching are most effective" (p. 11).

These objectives, however, may ultimately prove far more complex than merely the thoughtful curation of ecopedagogical best-practices for the ready application and integration into college registration brochures. Kahn (2007) explains the ways in which effective ecopedagogical practices must be linked to cultural and ecological notions of place. "While drawing upon a coherent body of substantive ideas, [ecopedagogy] is neither a strict doctrine nor a methodological technique that can be applied similarly in all places, all times, by all peoples"

(p. 21). Therefore it is with a reserved enthusiasm that we begin to study what works, with the knowledge that what may prove essential to the ecoliteracy development of one student, at one time, and in one particular educational and ecological landscape, may or may not maintain the same degree of significance once transplanted to another place or when offered to another student. Therefore, with a narrow focus on one institution, this study aims to inform the higher education as an ecological whole rather than construct a rigid and unyielding template for each individual institution within it.

Research Questions

Stake (1995) writes, "Perhaps the most difficult task of the researcher is to design good questions, research questions, that will direct the looking and the thinking enough and not too much" (p. 15). Indeed, developing a research question (or ultimately, multiple questions) proved a difficult task, in that seemingly small changes in language and structure created large oscillations in the scope and trajectory of the project and its necessary elements. What I ultimately arrived at was a central guiding question accompanied by a series of sub-questions that work to inform it. My goal in this structure was to attend to both the general and specific, allowing for multiple levels of inquiry and analysis.

This study was propelled by one primary line of inquiry: In what ways does the critical examination of food systems develop college student ecoliteracy? While this question offers some specificity to the bounds and focus of this research, it is important to note, and indeed be wary of, the assumptions, implicit biases, and ambiguities inherent in the structure and phrasing. Perhaps the most obvious assumption, implied in the phrase "in what ways," is my belief that learning about food systems *does* aid in the development of ecoliteracy. Based on my understanding and use of the term 'ecoliteracy,' detailed further in the upcoming chapter, any

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attention devoted to a process of consumption is in itself a practice of ecoliteracy. In this way, ecoliteracy is not merely an end goal, but a skillset and continuous process that must be revisited and reincorporated into everyday behaviors. Other definitions of ecoliteracy, and in particular earlier iterations of environmental literacy and ecological literacy, may or may not inherently draw the same conclusion. However, if we assume that attention to food as part of an ecological system does positively impact ecoliteracy, we may then move one step deeper in our analysis into the realm of "how."

Validation of this primary research question gives way to a series of additional inquiries that may help inform our understanding. Here I offer three sub questions that tease out key elements to what I believe would provide a comprehensive answer to the primary research question:

1) What do college students learn from the critical examination of food systems?

2) How do students integrate these ideas into their beliefs, decisions, and behaviors?

3) What pedagogical and institutional practices best facilitate ecoliteracy development?

Collectively, these supplemental questions address (1) the complex nature of ecopedagogical outcomes, (2) the ways in which these educational experiences become actionable for students in a meaningful and lasting way, and (3) the best institutional and instructional practices for achieving these outcomes.

Chapter Summary

Given the rate of global ecological destruction and the socioecological implications of climate change, ecoliteracy remains a fundamental and increasingly significant competency that is largely ignored by the educational system. The purpose of this project is to identify ecoliteracy as a universal ideal in higher education and to provide institutions and educators with tools for

effectively integrating this key capacity into the educational experience. The study is centered upon one central line of inquiry, which is: In what ways does the critical examination of food systems develop college student ecoliteracy? Chapter One establishes my positionality to the research project and provides a roadmap for the remaining chapters.

Chapter Two: A Review of Literature

It is time for us as a people to start making some changes:

Let's change the way we eat. Let's change the way we live,

And let's change the way we treat each other.

You see the old way wasn't working, so it's on us to do

What we gotta do, to survive.

Tupac Shakur, *Changes* (1998)

Whereas the previous chapter discussed the role of a critical, ecological perspective as the appropriate lens for educational initiatives in sustainability, this chapter will delve into the greater social, political, and scientific context for this study. In the sections that follow, I discuss the political landscape for environmental policy and the relative impact of the industrial food system on the environment. From there I develop a framework for ecoliteracy and discuss the role of transformative educational practices to shape culturally-inform ecological perspectives.

From an ecological perspective, change over time is simultaneously an inevitability and a necessity. However, the agent of change, its direction, degree, and impacted variables remain desperately uncertain, so we will not be as presumptuous as to prematurely curtail our discussion ecological considerations. Whereas it is difficult to encapsulate the totality of irreparable damage to ecosystems at the hand of human ingenuity and ignorance, any interpretation of the Anthropocene would be remiss without a discussion of changes in the Earth's atmospheric composition and the associated impacts on average global surface temperatures. As with any assessment of change, it is prudent to start with an understanding of normality in order to fully comprehend the magnitude and significance of the abnormalities we face.

The Earth has a biological carbon cycle, through which carbon is released into the atmosphere as the result of microbial respiration and decomposition, and then it is sequestered back into the ground by plants (Schlesinger & Andrews, 2000). Although atmospheric carbon levels have risen steadily over the past several thousand years, the past two hundred years have catapulted the levels of atmospheric carbon dioxide to new, parabolic heights (Hofmann, Butler, & Tans, 2009).

The combustion engines of the Industrial Revolution took carbon out of the ground, in the form of coal, natural gas, and oil, and released it into the air as exhaust. At the time, these innovations were welcome improvements to the economic inefficiencies and environmental devastation of preindustrial energy sources such as wood, peat moss, and oils from whale blubber (Heizer, 1963). However, the age of fossil fuels has long outlived its utility to society in light of rising global temperatures and the availability of renewable energy alternatives such as hydro, tidal, solar, geothermal, and wind (Boyle, 2004). Each year, 35 gigatons of carbon is released into the atmosphere (Gerlach, 2011).

Climate change research is not a new scientific endeavor. As far back as May, 1956, Gilbert Plass published *The Carbon Dioxide Theory of Climate Change*, which predicted a 3.6°C increase in Earth's average surface temperature due to an increase in atmospheric carbon. Carbon dioxide is one of a number of gasses responsible for global warming, but it is the most significant with regard to understanding the link between climate change and industrial practices as it accounts for 82 percent of greenhouse gas emissions (EPA, 2017). Excess carbon and other greenhouse gasses like methane, nitrous oxide, and fluorinated gases, create an atmospheric environment that retains solar energy longer—creating what is described as the greenhouse effect (Mercer, 1978). The increase in the Earth's average surface temperature causes glaciers and the

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polar ice caps to melt, and each one-degree Celsius increase equates to a two-meter increase in ocean levels in the next couple hundred years (Levermann et al., 2013). While gradually rising sea levels may sound benign enough, we are actually quite ill-equipped to deal with the structural implications. Just under 40 percent of the world's population live in coastal cities that, depending on their geological context, resources, and infrastructure, vary in their ability to effectively accommodate a surge in ocean levels and severe weather (Bulkeley, 2013; Creel, 2003; Hallegatte et al., 2011).

It is a common consensus among economists that a tax on greenhouse gas emissions, often referred to as a carbon tax, is a necessary measure to incentivize and expediate the transition from fossil fuels to renewable energy sources (Bulkeley, 2013; Creel, 2003; Hallegatte et al., 2011). Such a tax would help businesses and consumers internalize the negative externalities of climate change and align incentive structures such that society and the individual are more in sync (Metcalf & Weisbach, 2009; Weitzman, 2015). Harden, whose work *Tragedy of the Commons* is discussed at length in the previous chapter, might argue that the present incentive structure actually acts as a covert carbon subsidy rather than a tax. Whereas the benefits and profits of fossil fuel consumption go to individual corporations, the greater society bears the burden of the severe costs of carbon emissions. "Our tragedy," Athanasiou (1998) concludes, "lies in the richness of the available alternatives, and in the fact that so few of them are ever seriously explored" (p. 307).

If we assume any rate of environmental degradation over time, and as a species we are dependent on the quality of environment, then our operational mode of existence is, by definition, not sustainable in the long run. Take the air, for example: Humans require a certain minimum air quality in order to survive (World Health Organization, 2000). Therefore, the rate

at which we pollute the air is hypothetically irrelevant if it surpasses the ways in which it is restored, because *any rate* over a long enough period of time will cross the threshold of human breathability. The same could be said for soil quality, ocean acidification, weather patterns, and any other element of an ecological system upon which society is dependent. In this way, much of public debate surrounding the environmental crisis or lack thereof, completely misses this larger fundamental notion. We are dependent on the natural environment which is eroding in very real, measurable ways. In *Braiding Sweetgrass*, Ecologist and Indigenous scholar Robin Kimmerer (2013) offers, "For all of us, becoming indigenous to a place means living as if your children's future mattered, to take care of the land as if our lives, both material and spiritual, depended on it" (p. 9). It is time to make a change.

One inherent feature of unsustainable practices is that they cannot last forever. Any practice that gradually diminishes an element of the environment or the availability of a resource maintains a future date of complete depletion. Without intervention, eventually, we will have sucked out all the fossil fuels, mined all the lithium, and poached all the rhinoceros. In this way, the transition from fossil fuels to renewable energy sources is inevitable. The question is not *if* we will change, as we will have to, but *when* we will change; and how much displacement and destruction we are willing to abide in the transition.

Our predicament is in many ways reminiscent of *Pascal's Wager*, in which the 17th century mathematician ran a probabilistic cost-benefit analysis for the existence of God (Pascal, 1670/2013). God either exists or does not, but the consequences of believing or not believing are drastically different in each scenario. An atheist risks eternal damnation at the benefit of living a life unrestrained. A pious person risks the possible inconvenience of a religious life with the potential reward of paradise. This model offers an interesting parallel for present-day climate

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change sceptics who suggest that environmental issues are myth (McCright & Dunlap, 2011). The total cost of inaction is far greater than the opportunity cost of effective environmental policy and practices. The sticking point, in this case, is the unequal relative distribution of risk and reward.

While indecision in environmental policy has a steady ecological cost, there is a silver lining for those who are in position to drill for it. Oil companies benefit, not only from a non-sustainable status quo, but also from the perpetuation of ignorance and miseducation. For years, fossil fuel companies have lobbied heavily for subsidies (Benes, Cheon, Urpelainen, & Yang, 2016; Hughes, 2014; Victor, 2009), stifled common sense environmental reforms such as a tax on carbon (Pezzey, 2014), avoided meaningful regulation (Meckling, 2011), and profited greatly from United States military involvement abroad (Jhaveri, 2004; T. C. Jones, 2012; Le Billon, 2013; Wright, 2003). Companies have leveraged these advantages to the tune of $28 billion in earnings in 2018 alone (U.S. Energy Information Administration, 2019). However, these bold profit margins come at an ecological cost that extends far beyond the carbon footprint associated with the combustion of fossil fuels (Meng, 2017).

In 2010, British Petroleum's rig, *Deepwater Horizon*, erupted in the Gulf of Mexico, causing incalculable damage to the ocean floor, oceanic ecosystems, and coastal communities. Typical methods of assessing ecological impact include calculating the total amount of oil spilt, in this case about 2 million barrels (McNutt et al., 2012), and the number of marine-life carcasses (Williams et al., 2011). However, as Williams et al. note, our ability to appropriately address such calamities is mitigated by the inadequate methods used to determine the total environmental impact. Researchers may only uncover a small portion of the animal casualties leading to a misrepresentation of the true costs and thus a missed opportunity for sufficient retribution. In

2016, *The Washington Post* reported that BP had paid $62 billion in fines, legal fees, and cleanup efforts—far above the $18 billion in criminal fines and penalties originally sanctioned by the EPA (Mufson, 2016). While these are significant sums of money, the question remains whether it is sufficient. What price tag should we put on the Gulf of Mexico? On the Alabama coastline? Based on reports published half a decade after the spill, these ecosystems and coastal communities have yet to fully recover (Joye, 2015; Shultz, Walsh, Garfin, Wilson, & Neria, 2015).

Equally important to understanding the pervasiveness of ecological deterioration is the development of a value system that can accommodate meaning beyond profit. Through the lens of quantified earnings, the natural world exists as foundational source of increasingly scarce commodities. From this perspective, exploitation of such opportunities at the cost of both local communities and delicate ecosystems is actually the rational approach. At its core, ecoliteracy as an educational endeavor offers knowledge and understandings that ascribe significance to a wide range of value systems that involve forms of meaning that are ecological, longitudinal, sociocultural, and political. Thoreau, in his 1873 commencement address at Harvard University, posited, "This curious world we inhabit is more wonderful than convenient; more beautiful than it is useful; it is more to be admired and enjoyed than used."

Ecoliteracy offers opportunities for governance, accountability, and knowledge that transcend revenue projections and exploitative suppositions. From an ecological perspective, ignorance and collective indifference are similarly destructive. The ecological perspective connects disparate entities such that the exploitation of land, resources, and people in one context denigrates the vitality of the system as a whole. Ecoliteracy trades complicit ignorance for collective self-actualization, without which we are indefinitely subjugated to entities that resist

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accountability across dimensions beyond that which apply to corporate shareholders. The pretext of an ecological perspective necessitates informed action, even within contexts that seem uncertain, inconclusive, or futuristic.

Pascal writes, "you must wager. It is not optional. You are embarked… Let us estimate these two chances. If you gain, you gain all; if you lose, you lose nothing. Wager, then, without hesitation" (Pascal, 1670/2013, p. 66-67). Even the hypothetical absence of sufficient evidence, it behooves society to embrace the reality of environmental crisis and to err on the side of reasoned and informed probabilities. As of yet, we do not have another planet to live on, so the cost to benefit analysis of taking care of our own is heavily lopsided. We gain the stability of life on this planet and the prosperity of sustainable economies, at the cost of global peril and the financial margins on fossil fuels.

While the consequences of inaction are great, we have far more information to factor into our model than Pascal did. Evidence of God can be tricky to put your finger on, let alone come to a general scientific consensus about. However human and ecological systems are much easier to measure and quantify. The goal of this chapter is to unpack some of the relevant theories, contexts, and research that can better inform our actions and decisions moving forward. We need not wager, as such, but we are embarked.

Socioecological Landscape and Environmental Politics in the Trumpian Era

I believe in clean air. Immaculate air. But I don't believe in climate change.

Donald Trump (2015)

Human-induced warming reached approximately 1°C (±0.2°C likely range) above pre-industrial levels in 2017, increasing at 0.2°C (±0.1°C) per decade (high confidence).

United Nations Report (2018)

On March 16, 2017, President Trump released a proposed federal budget, which called for a 31 percent decrease in funding for the Environmental Protection Agency (EPA) (Office of Management and Budget, 2017). According to the EPA's Mission Statement, the agency is responsible for: 1) Developing and enforcing regulation to protect from significant risks to human health and to the environment; 2) Researching and funding research on environmental issues; and 3) Educating the public and other agencies on environmental issues. The proposed funding cut constituted the largest percentage decrease of all the federal agencies included in the budget, and it comes as a surprise, or at the very least seems incongruous, given the global context and, specifically, input from the scientific community.

The scientific literature on climate change is so despairingly conclusive that even the most ardent contrarian sluggers would surely have to wait for the next pitch. The Intergovernmental Panel on Climate Change (IPCC), which aggregates scientific research from across the world to inform both local and international policy, has reported a definitive consensus amongst scientists since the early 2000s (Oreskes, 2014). The IPCC's Fourth Assessment Report released in 2007 stated that it is "extremely unlikely that the global climate changes of the past fifty years can be explained without invoking human activities" (Solomon et al., 2007). In a study of global warming consensus, Cook et al. (2013) found that only 0.7 percent of the 11,946 peer-reviewed articles on 'global climate change' or 'global warming' published between 1991 and 2011 rejected anthropogenic global warming. Furthermore, only 0.3 percent were classified as uncertain about the cause of global warming. Of the papers that expressed a definitive position, 97 percent supported the conclusion that global climate change is a result of human activity.

The implications of climate change are widespread and significant for environmental systems and human beings alike. Rising sea levels due to melting polar ice caps puts many coastal communities (Bosello, Roson, & Tol, 2007) and wildlife habitats at risk (Galbraith et al., 2002), along with damaging species that require specific aquatic temperatures to sustain life (Hoegh-Guldberg et al., 2007). Human health risks associated with climate change have been heavily documented, including thermal exposure, extreme weather events, and infectious disease (McMichael, Woodruff, & Hales, 2006). Changing hydrological patters are expected to disrupt food and water sources all of Earth's beings, threatening ecological biodiversity (Araújo & Rahbek, 2006; Bellard, Bertelsmeier, Leadley, Thuiller, & Courchamp, 2012; Cheung et al., 2009; N. E. Heller & Zavaleta, 2009) and resource availability, particularly for rural communities (P. G. Jones & Thornton, 2003; Mendelsohn, Dinar, & Williams, 2006; Turral, Burke, & Faurès, 2011).

While the scientific research on the existence of global warming seems redundant in its consistency, a fascinating yet troubling chasm separates the established literature from public opinion (Krosnick, Holbrook, Lowe, & Visser, 2006; Oreskes, 2014). In a nationally representative study, Leiserowitz et al. (2013) found that only 63 percent of Americans believe global warming is happening. Of the believers, only half attribute climate change to humans. These findings are corroborated by Borick, Lachapelle, and Rabe (2011), who observed that affirmative perceptions of global warming range from 52 percent to 72 percent of Americans over the two year period from 2008 to 2010.

The discrepancy between public and scientific opinion on climate change may have less to do with the capabilities of analysis and more to do with the quality and scope of the information that is under scrutiny. Leiserowitz et al. (2013) attributed some of the variance in

climate change perceptions to what they call seasonal effects. "The decrease in the belief that global warming is happening occurred largely in the Northeast and the South, two regions in which respondents were much more likely, compared to Fall 2012, to report having experienced extreme cold temperatures and, in the Northeast, extreme snow storms (e.g., Nemo) over the past year" (p. 4). Hamilton and Stampone (2013) also found that short-term weather patterns impact public perceptions of anthropocentric climate change. So whereas scientists are utilizing longitudinal data from across the globe, the average person, and indeed the current President, is merely basing their assumptions on whether they feel the need to wear a jacket.

Rampant disconnect between scientists and the public is highly problematic for a democratic society in which people vote policy makers into positions of power. The capacity of a democracy to provide equity and justice for its people diminishes with an uneducated or mis-educated citizenry. In *Democracy and Education*, Dewey (2004) explains this fundamental role of education in society:

> The superficial explanation is that a government resting upon popular suffrage cannot be successful unless those who elect and who obey their governors are educated. Since a democratic society repudiates the principle of external authority, it must find a substitute in voluntary disposition and interest; these can be created only by education. But there is a deeper explanation. A democracy is more than a form of government; it is primarily a mode of associated living, of conjoint communicated experience. The extension in space of the number of individuals who participate in an interest so that each has to refer his own action to that of others, and to consider the action of others to give point and direction to his own, is equivalent to the breaking down of those barriers of class, race,

and national territory which kept men from perceiving the full import of their activity (p. 87).

Here, Dewey evokes a democratic ecology, in which the potential of a democratic society as a whole is beyond the summation of its individual actors. Gestation psychologist Kurt Koffka argued that this new entity is not an additive function, but exists independently from its parts (Koffka, 1935). From this perspective, we can understand a democratic ecology not as a relative value above or below that of the individuals, but as something different. For Dewey, the power of democracy is in the interconnected, relational existence and in the active consideration of the needs of others. However, a relational existence predicated in mutuality, as required by democracy and ecology, is not the default mode of neoliberalism. Press (1994) writes:

> Environmental critiques of modern society go to the very heart of our political and economic organizations. Never before have we been confronted with such intractable problems, with threats that arise from within our own practices, and with such profound uncertainties over how to proceed. Environmental protection and restoration are not technically overwhelming—we probably had less of the requisite know-how for putting a craft on the moon in the 1950s than we do for solving major environmental problems today. In our society, environmental problems are *democratic* dilemmas (p. 1-2).

Press suggests that the environmental problems faced by humanity, both in the present and in the future, will not be solved primarily through technological advance, but by the empathetic capacity of human beings. The motivation to protect the environment and to develop a sustainable existence requires that people understand the value of the natural world. Higher education is one context where young citizens can be provided with knowledge to develop sustainable practices. In addition, there are questions about how best to educate students about

environmental issues. This is the present call for higher education: to produce ecologically literate graduates who can navigate the complexity of environmental issues and develop sustainable solutions for society. And yet, to a large extent, college and university curricula inadequately address these needs (Cortese, 1999).

An Education in Food

From the standpoint of sustainability, food production systems prove a worthy point of focus. According to the EPA, agriculture accounts for nine percent of total greenhouse gas emissions, roughly half of which is due to the methane produced by ruminant animal meat production (M. C. Heller & Keoleian, 2015). The ecological significance of these practices, however, have just as much to do with morality as they do with measurable outcomes. Industrial meat production has a disturbing history of cruelty toward animals raised for beef and dairy. Long before these animals ever reach a slaughterhouse, their existence is largely one of sickness, deprivation, and abuse (see Appleby, Mench, & Hughes, 2004; Benson & Rollin, 2008; Pollan, 2006; Webster, 2008). However, despite the suffering caused by industrial meat production, the cruelty of the system is largely ignored. Industry gag laws, which in themselves are a telltale sign of improper conduct, prevent journalists from reporting on such issues (Shea, 2014). So that which happens out of sight, remains out of mind, restricting the bounds of human empathy to systematically exclude nonhuman suffering. Kimmerer (2013) offers:

> When the food does not come from a flock in the sky, when you don't feel the warm feathers cool in your hand and know that a life has been given for yours, when there is no gratitude in return—that food may not satisfy. It may leave the spirit hungry while the belly is full. Something is broken when the food comes on a Styrofoam tray wrapped in

slippery plastic, a carcass of a being whose only chance at life was a cramped cage. That

is not a gift of life; it is a theft (p. 30).

It is beyond the scope of this work to justify or demonize that which people choose to

consume. However, the process of questioning what human food is and *should* be, and the study

of the processes by which it is generated, is central to developing an ecological perspective. Only

through critically investigating the established systems of food production can we begin to

determine the ways in which our choices are incongruous with our values. Seeing as we cannot

photosynthesize our required sustenance, we must decide what kind of ecological impact we

would like to have.

Botanist Arthur Haines , author of *A New Path: To Transcend the Great Forgetting*

Through Incorporating Ancestral Practices Into Contemporary Living (2017), describes food as

all that nourishes us, and includes in his definition a wider range of human needs such as air,

sunlight, and community. Beyond any physical or emotional connections, we may experience

with an entity in the outside world, the food we eat literally becomes our bodies. Through the

complex process of digestion, we take the energy and nutrients available from our ecosystem and

reincorporate them into our very being. Scientists have determined that every cell in our bodies is

renewed every ten years (Manolagas, 2000). So about once per decade we have eaten our way to

a new body, using the very same molecular building blocks we decide to put in our mouths.

Sufficient nutrition is perhaps the most necessary human endeavor after breathing, but

that does not mean that we are actually any good at deciding what to consume. Four of the top

seven causes of death in the United States are diet-related diseases (Heron, 2018). Cancer and

heart disease vie for the number one spot, each killing over half a million people per year.

Evolutionary biologists attribute our present predicament to a gradual disassociation with the

natural world over the past few millennia (Lieberman, 2014). The general trend away from ecologically integrated lives and the many natural food sources offered by landscapes and ecosystems has increased exponentially in the post-industrial world, but has roots that date back over ten thousand years.

The First Agricultural Revolution, also referred to as the Neolithic Revolution, depicts the period between 12000 BC – 2000 BC, during which hunter-gatherer communities became increasingly agrarian. The transition is believed to have begun in the Fertile Crescent with easily domesticated crops such as wheat and barley (Brown, Jones, Powell, & Allaby, 2009). Based on the relative outcomes of this multigenerational social experiment, it is difficult to determine which species benefited more from cultivation. While wheat experienced unprecedented privileges and prosperity afforded by its caretakers, the fact remains that the humans who cultivated it developed a series of new hardships and dependencies that we have yet been able to truly shake off to this day. Wheat requires a significant degree of processing before eating, and a harvest produces an abundance that must be safely stored. Due to these demands, people became committed to one parcel of land in a way that earlier and more mobile experiments with domestication, such as goats and dogs, had not required of them (Bar-Yosef, 1998). While yearly migration cycles tapered, the daily toil of everyday life increased, shortening life-expectancy and causing unprecedented rates of musculo-skeletal maladies. Furthermore, the newfound fervor of agriculturalists was fueled by an inferior diet that lacked the nutritional density and diversity of that of a hunter-gatherer. Fossil records of hunter-gatherer communities indicate greater bone density and far fewer rates of disease compared to their agricultural contemporaries and, indeed, modern day people (Price, 1945).

These comparisons between pre-agricultural communities and later agriculturalists, industrialists, and technologists are important because the advent of agriculture was not a conscious choice. Rather, it was a series of practices and developments that evolved over a long period of time. At the most fundamental level, agriculture redefined what constitutes human food. Our early ancestors consumed that which was provided by their local ecosystem and that they could reliably harvest at a given time of year. When the landscape could not provide sufficient sustenance, they moved to a place that could. Later agriculturalists, however, imposed entirely new systems by clearing and repurposing land for specifically human food sources, creating a meaningful separation between human beings and the rest of the ecological system.

The transition to a largely agrarian society came at a cost that would not have been readily apparent. For the first time in human history, universal and transferable forms of wealth and power were created. They who controlled the production and disbursement of these early domesticated grains wielded power over all who depended upon it. In a newly stratified social order, dependency bound subjects to tyranny, and it is upon this fundamental economic reality that modern civilization took root.

Beyond the increased rates of infectious disease brought about by people living in increasingly close quarters, or the relative inferiority of an agrarian diet, or the physical and spiritual hardship of laboring land and living in servitude to a lord, the ultimate and potentially inevitable cost of the Neolithic Revolution was our divorcement from nature. These seemingly rudimentary advancements paved a new path of ecological disassociation and ignorance that was amplified with each subsequent generation. Several millennia down this road we have much to show for our efforts, but we have yet to fully account the true cost of our journey.

Harari (2012) describes these paradigmatic shifts as a "luxury trap," wherein unbeknownst to the participants, the path of least resistance is a falsehood. Enabled by a useful technology or contextual convenience, the traveler fails to develop the necessary capacity to make any alternative decisions later on. Harari writes "one of history's few iron laws is that luxuries tend to become necessities and spawn new obligations. Once people get used to a certain luxury, they take it for granted. Then they begin to count on it. Finally they reach a point where they can't live without it" (p. 171). From this perspective, the 'wheat bargain' of the Neolithic Revolution was a multi-millennia hoodwink, during which humanity not only abandoned their prior capacities as hunter-gatherers, but forgot altogether that they ever possessed them.

Olson (2012), however, takes this critique one step further, and his conclusion is much more troubling. Olson posits that, overtime, this path of least resistance results in an individual that is not only incapable of the original task but is entirely disconnected from the process. Olson writes:

> Every succeeding level of technology creates a further disconnect, with a simultaneous increase in power, control and efficiency—a troublesome combination. You can dig a hole much faster with a shovel than your hands, but you no longer feel the soil. You can cut a tree down much faster with a saw than stone tools, with a chainsaw than a hand saw, and with a feller-buncher than a chainsaw. In every stage, the person doing the cutting becomes more removed from the process, more alienated from the individual tree that is being cut. You kill faster, feel less… (p. 47).

Olson warns that through technological sophistication, we distance ourselves from the spiritual and moral consequences of our actions. Such is the burden of modern society, in particular with our relationship to food. For the past fourteen thousand years, our concept of food

has been shaped by steady technological advancements of economic entities that maintain a vested interest in people having a very limited and narrow understanding of what food is and where it comes from. In return, they conveniently provide us sustenance at a marginal economic price, but at the cost of something much more sacred: our independence. For the most part, nobody chooses ill-health. Nobody chooses to have their vegetables sprayed with pesticides or to eat the flesh of sick and deprived animals. And yet, this is what we as a society are fed. The path of least resistance is acceptance. The path of independence requires an education in alternative options and the motivation for students to pursue them.

The modern diet has made us increasingly sicker as a society, and for the inevitable subsequent medication we turn to pharmaceuticals. While there is certainly a time and place for the miracles of modern medicine, no pill can remediate years of malnutrition and toxicity. Furthermore, the incentive structures for these businesses, and many food industry businesses, is predicated on dependency. Every week, two thousand people in the United States die from addiction to opioids (Rudd, 2016). Purdue, a leading pharmaceutical company has been sued $600 million for propagating the epidemic (Meier, 2007). There is far less money to be made from healthy people than sick, and there is far more to be made from treatments than from prevention. It is the responsibility of educational institutions to recognize that corporate interests are not aligned with the well-being of our students, and schools must prepare students accordingly.

With an ever-growing global population, systems of food production, distribution, and quality, require strategic, comprehensive, and ethical solutions. This study builds off the work of Barrientos (2012) and Turral et al. (2011), which suggest that the study of food systems is an accessible entry point to larger conversations on global consumption and ecological balance.

Food offers a logical and directly applicable line of inquiry for students that incorporates the complexities of their personal identity, upbringing, and daily habits. In this way, food offers students the context for grounded and informed conversations about larger ecological, political, and economic systems. *What is my food? Where does it come from? Who is involved in this process? Who makes money off what I eat?*

The answers to these questions can be surprising. The daily ritual and obvious necessity of eating often demotes the conceptual conversation of food from ethical production, environmental impact, and nutritional quality to more modest determinants of convenience, speed of service, and habit. Such a narrow perspective of this daily experience eliminates the systems view of the (typically international) production process and confines the conversation to the immediate table upon which the food is placed.

Teaching college students about food is not a siloed endeavor. What we eat connects to our culture, our lived contexts, our preferences, and ultimately integrates with our physiology. Studying food systems connects students to a social, political, economic, scientific, and ecological conversation that is grounded in their lived experience. Food is one possible entry-point of many that connects students in meaningful ways to the larger systems in which they may consciously or passively participate. This holistic perspective on human health and ecological connection illustrates the utility of food as key to understanding our human needs and our processes of consumption.

Ecoliteracy in Higher Education

There are two primary difficulties with ecoliteracy as a framework for educational research. The first challenge is adequately defining ecoliteracy as to distinguish it from other related concepts, primarily ecological literacy and environmental literacy. The second

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complication surrounds how we make the ecoliteracy framework actionable. Ecoliteracy and its precursor, ecological literacy, were both engendered from an even more general framework: environmental literacy (Berkowitz, Archie, & Simmons, 1997). Despite the conceptual and utilitarian discreteness of environmental literacy, ecological literacy, and ecoliteracy, (McBride et al., 2013), these frameworks are often conflated and applied indiscriminately in academic research (Disinger, 1992; Stables & Bishop, 2001). Payne (2005, 2006) argues that the muddied waters surrounding the terms, constitutes cause to abandon the fleet entirely, arguing instead for a "critical ecological ontology." While this proposed curricular theory, offering a critical perspective on the student experience in the natural world, might provide enticing specificity, I would argue that what it gains theoretically, it loses in applicability. As an applied field, education scholars must provide accessible and useful advancements. Critical ecological ontology, on the other hand, requires an explanatory parenthetical. This project, therefore, will utilize ecoliteracy for the ready applicability of the framework. The theoretical composition and scholarly evolution of ecoliteracy are outlined in the following sections, beginning with the necessary conceptual precursor: literacy.

Defining Literacy

Long before its use in environmental education, *literacy* maintained a purely linguistic application. Perhaps ironically, the term first emerged in the 1800s in its negative form: *illiteracy*, identifying an inability to read (Venezky, Kaestle, & Sum, 1986). *Literacy* came into use much later as an educational objective and societal necessity. The new technological advancements of the industrial revolution required a workforce that could support the bureaucratic levels of this new age in commerce. The new economic growth provided greater funding for social initiatives such as education and public welfare (Carl, 2009). Written

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communication and basic accounting became the standards of the time and, as such, literacy became a fundamental necessity. Perhaps more significantly, leaders in government and industry began to identify illiteracy as a societal plague worthy of extinction.

Despite the monolithic emergence of literacy, over time the term took on additional meaning. While the initial process of learning to read any given language is a relatively specific goal, once that skill is acquired, 5,000 years of recorded human thought become accessible for contemplative exploration. With reading, the pursuit of knowledge is self-directed and limited only by the availability of literary materials. Therefore, literacy as a concept took on the additional connotations of freedom (Carl, 2009), an idea that had very real implications for other aspects of societal achievement beyond learning. Reading offered individuals the opportunity to knowingly enter legal and business contracts. Following the American Civil War, the ability to read quite literally defined democratic citizenship, as it determined who was able to vote.

Reading, and the ability to do so, reflects the overall quality of the human experience. Of his work in literacy among Brazilian farming communities, Freire (1970) writes: "To impede communication is to reduce men to the status of 'things'—and this is a job for oppressors, not for revolutionaries" (p.128). From the perspective of education as an emancipatory endeavor, literacy offers the potential of self-actualization. Here, we are not merely concerned with the inflow of energy and information and the role of this experience in developing mindfulness (Siegel, 2016), but also with the outflow of these properties from the individual. Literacy, in the form of reading *and* writing, demonstrates a historically rooted conversation in which individuals are both privileged recipients and active participants in the generation and proliferation of knowledge. Through this process, individuals develop nuanced understandings of the world that

ultimately empower them to shape their own reality, unbridled from the forces of oppression the might otherwise stifle them.

While reading has often been understood as a precursor to writing in literacy research, Tierney and Leys (1984) reflect on the inadequacies of this presumption. Rather, they understand reading and writing as reciprocal processes that inevitably enhance one another.

In the past, what seems to have limited our appreciation of reading-writing relationships has been our perspective. In particular, a sentiment that there exists a general single correlational answer to the question of how reading and writing are related has pervaded much of our thinking. We are convinced that the study of reading-writing connections involves appreciating how reading and writing work together as tools for information storage and retrieval, discovery and logical thought, communication, and self-indulgence. Literacy is at a premium when an individual uses reading and writing in concert for such purposes. Indeed, having to justify the integration of reading and writing is tantamount to having to validate the nature and role of literacy in society" (p. 24).

Over the years, literacy has taken on additional meaning in the colloquial use of the word, which is: knowledge or ability within a given field of study. From this additional definition, which is far more general in scope and utility, a plethora of other forms of literacy emerged, bearing no explicit connection to the process of reading (e.g., technological literacy, media literacy, financial literacy). McBride et al. (2013) writes: "Especially over the last 50 years, expectations for a literate citizenry have been extended to include the ability to understand, make informed decisions, and act with respect to complex topics and issues facing society today" (p. 2). The imperative of an informed citizenry capable of addressing the complex relationship

between humans and the natural world is the onus behind the three major fields relevant to the understanding of this study: environmental literacy, ecological literacy, and ecoliteracy.

The Evolution of Ecoliteracy: A Historical Disambiguation

Braus and Disinger (1996) documents the emergence of environmental education from the precursory and related fields of nature studies, conservation education, and outdoor education. Nature studies grew out of the early 1900s as an attempt to provide students with an appreciation for the natural world. As society shifted from small agriculture to more commercial forms of industry, fewer and fewer children grew up with a close connection to nature. Conservation education and outdoor education came from the 1930s and 1950s respectively. Conservation education addressed the needs of preserving natural resources such as soil and water, an idea that was highly salient at the time due to the agricultural and ecological devastation of the Great Dust Bowl in 1934. The outdoor education programs of later decades preempted the detriments of what Louv (2012) calls "nature deficit disorder" and sought to reunify human beings and the natural world through various forms of nature immersion. Much like these earlier educational initiatives, environmental literacy addresses the specific focus of society at the time of its emergence.

Environmental literacy was first coined by Roth (1968) in a piece published in the *Massachusetts Audubon* titled, "How will I know the environmental literate citizen?" The piece was written in response to what had become a common catchphrase in the media: "environmental illiterates" (Roth, 1992). Four years prior, Rachel Carson had published her seminal work, *Silent Spring* (1962), which documented the environmental impacts of indiscriminate use of synthetic pesticides in agriculture. The piece became a national best-seller and created an unprecedented societal fervor around environmental issues which ultimately led

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to a nationwide ban on the chemical DDT (Nash, 1990; Rothman, Nash, & Etulain, 1998). The commotion and newfound public awareness surrounding environmental issues provided a timely opportunity in the sociopolitical landscape for Roth's ideas on environmental literacy to take root. The *Massachusetts Audubon* article was later republished in the *New York Times* (Faust, 1969), but Roth (1992) surmises that "relatively little more attention was given to it until a year or so later when the term "environmental literacy" appeared in several speeches by President Richard Nixon that related to the passage of the first National Environmental Education Act [in 1970]" (p. 7). This new national cause, reified by the President, both established environmental education as a distinct field of academic study (Braus & Disinger, 1996) and secured environmental literacy as its principle objective (Roth, 1992).

As the field of environmental education grew, so did the diversity of pedagogical practices and theoretical frameworks within it. Sauvé (2005) described the environmental landscape as having fifteen "currents," which she described as "a general way of envisioning and practicing environmental education" (p. 12). These currents ranged from naturalist and systemic, to bioregionalist and feminist. While many currents share overlapping perspectives and approaches, each current offers a unique theoretical lens through which one may examine environmental education.

Perhaps the most significant factor in the growth in scope and diversity of the field of environmental education was its international appeal. Throughout the 1970s, the United Nations Educational, Scientific, and Cultural Organization and the United Nations Environment Program (UNESCO-UNEP) drafted a series of declarations expressing the importance of environmental education on both the local and global scale. The *Belgrade Charter* of 1976, which would become a foundational document in environmental education (Adkins & Simmons, 2002), stated:

The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones (p. 2).

This proclamation was later refined by the 1978 *Tblisi Declaration*, which in turn listed the following three objectives: 1) to foster clear awareness of, and concern about, economic, social, political, and ecological interdependence in urban and rural areas; 2) to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment; and 3) to create new patterns of behavior of individuals, groups, and society as a whole towards the environment (UNESCO, 1978, p. 2).

It was not until 1989 that UNESCO-UNEP identified environmental literacy as the primary goal of environmental education in the publication: *Environmental Literacy for All*. The North American Association for Environmental Education ultimately adopted this same educational objective for the United States (NAAEE, 2004).

Environmental, Ecological, and Eco- Literacy Frameworks

As environmental literacy became the national and international standard, scholars directed their attention toward "creat[ing] a complete and broadly applicable framework for environmental literacy (i.e., what an environmentally literate person should know and be able to do)" (McBride et al., 2013). Simmons (1995) developed a rubric for environmental literacy research, outlining seven key attributes derived from 26 relevant studies. Simmons included the following markers of environmental literacy:

- Affect: environmental sensitivity or appreciation
- Ecological knowledge: ability to communicate and apply ecological concepts

- Socio-political knowledge: awareness of economic, social, political, and ecological interdependence

- Knowledge of environmental issues: understanding of environmental issues

- Cognitive skills: identification and definition of environmental issues

- Environmentally responsible behaviors (ERB): active participation aimed at problem solving

- Additional determinants of ERB: assumption of personal responsibility

McBride et al. (2013) built upon the work of Simmons to evaluate theories of environmental literacy, ecological literacy, and ecoliteracy, across each of these seven components. McBride found that, while there is significant overlap between the three frameworks, there are also key differences. Whereas the environmental literacy framework focuses primarily on environmental problems and solutions (Ballard & Pandya, 1990; Coyle, 2005; Hungerford et al., 1994; Charles E. Roth, 1992; Stapp & Cox, 1974), ecological literacy, to a much greater extent, emphasizes the role of individuals within these larger environmental systems (Berkowitz et al., 1997; Jordan, Singer, Vaughan, & Berkowitz, 2009; Klemow, 1991; Odum, 1992; Powers, 2010). "In contrast with frameworks for environmental literacy, which mainly focus on the environment as a series of issues to be resolved through values and action, frameworks for ecological literacy emphasize that knowledge about the environment is necessary for informed decision making" (McBride et al., 2013). The emphasis on decision-making processes transforms the theoretical conversation from identifying problems and solutions within a techno-environmental sphere, to restructuring decisions at the individual and institutional levels within a sociopolitical sphere.

Ecoliteracy, in turn, takes the actionable and motivational elements of ecological literacy and applies them to larger community contexts. Within this framework, people are inherently interconnected to ecology, but also to each other (Capra & Luisi, 2014). Cutter-Mackenzie and Smith (2003) and Wooltorton (2006) discuss the importance of community within the ecoliteracy framework, emphasizing both spiritual and temporal interdependence. In this way, ecoliteracy does not merely address the impact of our actions on the natural world and on the people in your community (or indeed the global community), but it also address the way in which our present way of living impacts the availability of resources and the quality of life for future generations. This "expansion of the soul," described by Wooltorton, incorporates a community beyond both our immediate individual interests and our immediate present context.

From a theoretical perspective, ecoliteracy, as it relates to an understanding of ecology, is a relative term in that it means different things in different contexts. Ecology, and the knowledge thereof, is rooted in place. Land and climate, to a large extent, dictate the system of life forms that may be supported in any given area. And while the Anthropocene and other forces of globalization complicate this fundamental relationship between place and species, the premise still holds true, especially among people and cultures who still live in close connection to the land. Eating a vegan diet in Southern California, where the vast majority of potable water goes to industrial animal agriculture (Rothausen & Conway, 2011), might be a highly ethical and sustainable practice, given the contextual realities and demands of the local ecosystem. However, the same practice of veganism would not get you very far in the remote regions of northern Canada, where the Inuit traditionally glean nearly all of their calories from animal sources (Glenn, 1992).

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In this way, a universal rubric for ecoliteracy would be fundamentally flawed as it would neglect the cultural and environmental context of the individual actor. While there are undoubtedly global trends of which an appropriately ecoliterate individual would be aware, the practice itself is a localized endeavor grounded in place. If we view the natural world as a collective space on a particular trajectory of degradation, then it is perhaps inevitable that it continues down the path toward a tragic end, as predicted by Hardin's *Tragedy of the Commons* (1968). However, if ecoliteracy reflects the knowledge, awareness, and behaviors of a localized and complex ecology that is by no means independent but rather connected to more global trends, then power resides with the individual to interact with the system in an optimal and meaningful way. Given the complexity and array of environmental issues facing society, it is important to recognize the multiplicity of factors that influence human behavior and decisions. In this way, to be ecoliterate is to be aware of environmental issues, to understand the ecology of place in an increasingly interconnected global economy, and to prioritize the health and prosperity of the natural world in decision processes. However, the actions, behaviors, and practices that result from these decisions may vary across time and space, making any summation of it dependent on a person's intent and rationale.

The Misgivings of Anthropocentrism

Ecoliteracy as an educational outcome is steeped in a number of philosophical incongruities. Without a coherent philosophical trajectory, initiatives centered upon developing ecoliteracy in higher education are in many ways incompatible with what Freire (1970) describes as the banking concept of education.

In the banking concept of education, knowledge is a gift bestowed by those who consider themselves knowledgeable upon those whom they consider to know nothing. Projecting

an absolute ignorance onto others, a characteristic of the ideology of oppression, negates education and knowledge as processes of inquiry. The teacher presents himself to his students as their necessary opposite; by considering their ignorance absolute, he justifies his own existence (p. 72).

To Freire, the banking concept of education is inherently oppressive and is in fundamental opposition to honest and reciprocal educational endeavors. However, despite these warnings, the banking model, typically in the form of a lecture-test course structure, is the norm in a system that struggles to accommodate continually increasing enrollment numbers (Cooper & Robinson, 2000; Toth & Montagna, 2002). Such educational premises buckle under the requirements of addressing existential problems for which there are no universally applicable answers—such as climate change, for example.

One primary incongruity in ecoliteracy education is the perspective of anthropocentrism, in which human beings are the only valued perspective (Lupinacci & Happel-Parkins, 2016). Such understandings of the world are incompatible with an ecological perspective that necessarily incorporates other types of entities, both living and nonliving.

> Instead of understanding humans as connected to, and interdependent upon, the more than human world and the environment, people existing within anthropocentrism act as though they are not connected to the networks of relationships that make up their existence. For those of us within Western industrial culture, this manifests in our assumptions that we are separate from, and superior to, other species and the natural world" (p. 20).

A number of scholars including Best (2009), Kahn (2011), and Spannring (2017) have explored this important opportunity to incorporate the perspectives of other species, without

which the bleating screams from slaughterhouses go unnoticed. These sounds are imperative to an ecological conversation that persists beyond the bounds of species. However, within these notions of ecological dialogue, it is important to recognize our critical role in the ready destruction of these systems. On the one hand, we are a part of nature: an ape that has constructed social marvels. On the other hand, we are also all-powerful beings with the capacity to annihilate the rest.

> The fact that, of all organic beings, man alone is to be regarded as essentially a destructive power, and that he wields energies to resist which, nature — that nature whom all material life and all inorganic substance obey — is wholly impotent, tends to prove that, though living in physical nature, he is not of her, that he is of more exalted parentage, and belongs to a higher order of existences than those born of her womb and submissive to her dictates" (Marsh, 2003, p. 170).

One might argue that the perspective of humanity as having "more exalted parentage" is necessary to achieving ecological justice, as it embraces our heightened responsibility as stewards of the larger ecological context. And Marsh reinforces this distinction that we indeed exist in a privileged position apart from nature. However, this dichotomy is further emphasized through the use of gendered, naturist language that separates man (read: humanity) from nature, whilst simultaneously distinguishing between man (read: men) and women. Ecofeminist scholars such as Plumwood (2002) and Warren (1996) explore the ways in which our discussion of our relationship to the natural world mirror many of the complexities and oppressive characteristics of our own intraspecies power structures. The gendered interpretations of broad and necessarily nonidentifying concepts, such as nature, reflect the ways in which ecological perspectives are intrinsically undermined by oppressive contexts that posit one entity above another, rather than

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focusing on the relative connections and distinctions between them. King (1981) writes that gendered symbols, such 'Mother Nature,' is either "potentially liberating or simply a rationale for the continued subordination of women" (p. 12).

The linguistic symmetry between patriarchy and anthropocentrism is indicative of culturally limited perspectives in value. In patriarchal systems, society values some humans over others. There are many other social dominance structures, such as racism, colonialism, neoliberalism, that offer no substance in the valuation of human beings and yet are pervasive throughout history. These hierarchical perspectives regularly employ naturalistic rhetoric in stereotypes to enforce the established dominance structure, suggesting that those who are lesser are more natural, more wild, and more animal-like (Jeynes, 2011). Beyond the utility of this rhetoric to regulate, demean, and disenfranchise, it simultaneously represents our culturally informed fear and rejection of nature.

Not all languages share these aversions. Kimmerer (2013) describes how Potawatomi uses linguistic structures that recognizes life in the more than human world. In Potawatomi, elements of the natural landscape are described as verbs, rather than the nouns of their English counterparts.

A bay is a noun only if water is dead. When bay is a noun, it is defined by humans, trapped between its shores and contained by the word. But the verb wiikwegamaa—to be a bay—releases the water from bondage and lets it live. "To be a bay" holds the wonder that, for this moment, the living water has decided to shelter itself between these shores, conversing with cedar roots and a flock of baby mergansers. Because it could do otherwise—become a stream or an ocean or a waterfall, and there are verbs for that, too. To be a hill, to be a sandy beach, to be a Saturday, all are possible verbs in a world where

everything is alive. Water, land, and even a day, the language a mirror for seeing the animacy of the world, the life that pulses through all things, through pines and nuthatches and mushrooms. This is the language I hear in the woods; this is the language that lets us speak of what wells up all around us (p. 55).

These elements of language as expressions of social and ecological relationships, make the process of learning ecoliteracy in English a seemingly incongruous task. In its height of global influence, the British Empire spread a domineering linguistic orientation that valued landscapes and ecosystems for the wealth and resources they could acquire from them. But the colonial perspectives embedded in this language readily subjugate nature rather than engage it empathetically. Akin to Freire's perspectives on social structure in meaningful dialogue, Kimmerer similarly advises that transformative communication, and thus understanding, requires language that reflects this intention. "A grammar of animacy could lead us to whole new ways of living in the world, other species a sovereign people, a world with a democracy of species, not a tyranny of one—with moral responsibility to water and wolves, and with a legal system that recognizes the standing of other species" (Kimmerer, 2013, p. 57).

What is the human animal standpoint? Are we inherently a destructive and oppressive force from which the rest of the ecological system must unshackle itself? Or does civilization have the capacity for ecological justice? These important questions offer ample opportunity for what Freire (1970) describes as problem posing, in which educators posit existential problems for students to consider.

Those truly committed to liberation must reject the banking concept in its entirety, adopting instead a concept of women and men as conscious beings, and consciousness as consciousness intent upon the world. They must abandon the educational goal of deposit-

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making and replace it with the posing of the problems of human beings in their relations with the world. "Problem-posing" education, responding to the essence of consciousness—intentionality—rejects communiques and embodies communication. It epitomizes the special characteristic of consciousness: being conscious of, not only as intent on objects but as turned in upon itself in a Jasperian 'split'—consciousness as consciousness of consciousness (p. 79).

Through "problem posing" education, for which issues around climate change offer ample fodder, ecoliteracy does not reflect what a student "should" know about our ecological condition and paths to a sustainable future, but rather asks students to posit what their individual perspective offers to the given context. In this way, ecopedagogy is a process of conscious communication and action; it is not limited to a particular outcome.

Freire writes, "The oppressed, who have been shaped by the death-affirming climate of oppression, must find through their struggle the way to life-affirming humanization, which does not lie simply in having more to eat (although it does involve having more to eat and cannot fail to include this aspect)" (p. 68). For the purposes of this study, we will explore the ways in which students may have their nutritional needs met, as this necessity cannot be ignored, and we will also critically reflect on the complex system that brings various life forms to their plates. The consumption of food, as with many other things, is by nature death-affirming. The hope that there are life-affirming modes of being is either entirely naïve or completely worthwhile.

Chapter Summary

The consensus from the scientific community affirms that anthropogenic climate change poses a significant threat to ecological systems, biodiversity, and the livelihood and safety human beings across the world. However, the data on the environmental crisis has been widely

misunderstood and often ignored by a number of important stakeholders: the general public, educational institutions, and policy-makers. As a product of ecological systems and something that connects us socially, culturally, and economically, food brings many of these inconvenient truths to light in a way that integrates the individual and the environmental systems upon which they depend. In this way, the study of food systems offers a useful entry point to ecoliteracy development, which I define in this chapter as relational understandings of socioecological systems and the integration of this knowledge and awareness into decision frameworks.

Chapter Three: Methodology

Once more, I wish to emphasize that there is no dichotomy between dialogue and revolutionary action.

Paulo Freire, *Pedagogy of the Oppressed* (1970)

As an empirical, qualitative research project, the methods and methodologies employed in this study make use of larger epistemological arguments that center upon the essence and creation of knowledge. As Lincoln and Guba (1998) put it, "facts are only facts within some theoretical framework" (p. 119). One could equally suggest that research is only research within some methodological framework. However, as Morgan and Smircich (1980) note, "the choice and adequacy of a [research] method embodies a variety of assumptions regarding the nature of knowledge and the methods through which that knowledge can be obtained, as well as a set of root assumptions about the nature of the phenomena to be investigated" (p. 55). Scientific inquiry as a process of knowledge creation requires the justification of research methods, however no one theoretical orientation maintains a monopoly on truth, reality, or what constitutes quality research (Peshkin, 1993).

Various research methodologies are attuned to different questions, data, and conclusions, and the symphony of contributions allow for a process that is far more textured and nuanced than any one approach could provide on its own. Warwick and Osherson (1973) write, "Every method of data collection is only an approximation to knowledge. Each provides a different and usually valid glimpse of reality, and all are limited when used alone" (p. 190). Thus, it stands to reason that the interpretations, understandings, and conclusions derived from each dataset is likewise limited. Rather than fixating on conclusive outcomes, Selltiz, Jahoda, and Deutsch (1959) instead

suggest that these processes are ongoing and cyclical. "Social research is a continuing search for truth in which tentative answers lead to a refinement of the questions to which they apply" (p. 23).

The research questions outlined in Chapter One lend themselves to a qualitative methodological approach. Morgan and Smircich (1980) explain that "Qualitative research stands for an approach rather than a particular set of techniques, and its appropriateness—like that of quantitative research—is contingent on the nature of the phenomena to be studied" (p. 63). This inherent flexibility in research design is critical to complex and exploratory lines of inquiry, a notion that Oldfather and West (1994) encapsulate beautifully in *Qualitative Research as Jazz:*

> As the deep structure of jazz guides the unfolding of the music, so the epistemological principles, socially constructed values, inquiry focus, and emerging findings guide the unfolding of qualitative research processes. As jazz is collaborative and interdependent, so are the dynamics of qualitative research. As each improvisation is unique, so are the contextually bound findings within each research setting (Erickson, 1986) and the peculiar adaptive methodologies of each qualitative inquiry" (p. 22).

Like jazz music, the instruments of qualitative research are not independent of the perspectives, interests, talents, and aspirations of the people who manipulate them. "To Idealists," Smith (1983) writes, "Instruments [of qualitative research] do not have a standing independent of what they are designed to measure. They are extensions of the knowers and operate as an element in their attempts to construct or constitute reality" (p. 16). The methods employed in this study, namely: in-person interviews, participant observation, and to a much more limited extent, document analysis, could not have come to fruition without the relevant parties, specifically, me the researcher and the many student participants. This person-dependent

context offers an array of possibilities and opportunities for insight, along with a number of complexities that require unpacking. "No observation can be made unless the observer has a point of view which guides [their] selection and interest. But even if the anthropologist's fieldwork is guided by a theoretical interest in particular problems, much of it still remains 'undirected' (Jarvie, 1964, p. 215) and open-ended, at least to a certain extent" (Holy, 1984, p. 115).

Despite the open-ended nature of qualitative methodology, the goal of this chapter is to create transparency in the research process (see Huberman & Miles, 1994) and to offer epistemological justifications for the choices and interpretations made throughout. In the sections that follow, I discuss key elements of the research process and explain how these decisions promote accuracy and rigor within the research design. By illustrating the study protocol for data collection and the subsequent methods of analysis, I hope to produce trustworthy and useful insights for institutions, educators, and future research (Lather, 1986; Lincoln & Guba, 1986).

Dialogue as Educational Research

In his 1997 article, *Crossing Sexual Orientation Borders: Collaborative Strategies for Dealing with Issues of Positionality and Representation*, Robert Rhoads, my late and cherished teacher here at the UCLA Graduate School of Education wrote, "The goal for qualitative researchers is to enter into dialogue with research participants in order to uncover the multiple and conflicting views of truth and reality" (p. 20). This interpretive approach to social research suggests that "not everything that is important can be measured with precision and that trying to do so is a distracting and inappropriate task" (Rubin & Rubin, 2011, p. 35). The notion that there are "conflicting views of truth and reality" is in itself incongruous with the early, positivist perspectives that the social sciences inherited from the physical sciences. These orientations

posit that the ideal researcher is "impersonal and unbiased because they exclude values, feelings, political intentions, aesthetic preferences, and other 'subjective' states from the conduct of their research" (Messer-Davidow, 1985, p. 12). Smith (1983) writes:

> Whereas the physical sciences dealt with inanimate objects that could be seen as existing outside us, this was not the case for cultural studies. Here the subject concerned the product of human minds and was therefore inseparably connected to our minds with all attendant subjectivity, emotions, and values. In this sense interrelationship between investigator and what was being investigated was impossible to separate, and what existed in the social and human word was what we (investigators and laymen) thought existed. In the cultural sciences we were the subject and object of inquiry, and the study of the social and human was the study of ourselves (a subject-subject relationship)" (p.14).

The way in which these subject-to-subject relationships manifest in this study is through the many interactions between myself, the researcher-educator, and the student participants, which included in-depth one-on-one interviews (see Rubin & Rubin, 2011; Spradley, 1979). Interviews offered the ideal mode of data collection for this study as they provided a flexible container for student perspectives and experiences. Narratives captured within this framework were afforded ample detail and context, greatly aiding my understandings and interpretations. Borrowing from Warren (1996), first-person narratives inform ecological discourse in four main ways:

> 1) Such a narrative gives voice to a felt sensitivity often lacking in traditional analytical ethical discourse, viz., a sensitivity to conceiving of oneself as fundamentally 'in relationship with others,' including the nonhuman environment.

2) Gives expression to a variety of ethical attitudes and behaviors often overlooked or underplayed in mainstream Western ethics (e.g. friends with a rock vs making it to the top of it.)

3) It provides a way of conceiving of ethics and ethical meaning as emerging out of particular situations moral agents find themselves in, rather than as being imposed on those situations (e.g. as a derivation or instantiation of some pre-determined abstract principle or rule.) This emergent feature of narrative centralizes the importance of voice.

4) Narrative has argumentative force by suggesting what counts as an appropriate conclusion to an ethical situation (p. 27).

Of the twenty students participating in the study, each sat for at least one interview throughout the course of the year. Originally, I had intended to pursue an interview schedule that was structured around Astin's (1993) Input-Environment-Output model, which would have provided a pre- and post- analysis of the class experience. Ultimately, however, I decided to let this opportunity pass (see Huberman & Miles, 1994, for discussion of research shifts and midcourse corrections). At the beginning of the year, I did not want to burden my students with any additional obligations. Rubin and Rubin (2011) argue that "concern for the interviewee… is the basis for maintaining an ethical relationship with those being studied" (p. 40). As first-year students, many faced academic, social, and emotional challenges adjusting to their new lives on campus, and I was reluctant to present another possible cause of stress or distraction. Instead, I held the vast majority of the interviews much later in the academic year, mostly in the spring when students had more time in their schedules and had a more developed perspective on the course. By this point I had gotten to know the students well, allowing the interviews to easily fall into what Spradley (1979) describes as "friendly conversation." Spradley writes, "The

interviewer should not be neutral but should be, if not a friend to the interviewee, at least a partner or collaborator. Such collaborations should produce better interviews that help those being interviewed, rather than merely using them for the purposes of the researcher" (p. 38). In addition, the high level of rapport enabled for more candid and informative responses than if the interviews that had taken place earlier in the year. Furthermore, with more of the academic year under their belts, many had adjusted to their college lives and had a better sense of how the Cluster course fit into their academic goals and experiences.

Hertz (1995) suggests that an interview "—from the moment of initial contact—becomes a socially constructed matrix of shifting multiple identities—both the researcher's and the respondents" (p. 432). To a large extent, these identities inevitably shape the nature of conversation. "The relationships between participants and the interviewer in a research project are inevitably complex, multifaceted, and dynamic. While contextually situated, these relationships nonetheless are influenced by the identities and histories of those involved, researcher and researched alike" (Arendell, 1997, p. 364-365). However, the existence of these complex, interacting matrices of identity does not mean we are always aware of them. Both in spoken conversation and the analysis illustrated in the written work, "the author's [or researcher's] intentions, emotions, psyche, and interiority are not only inaccessible to readers, they are likely to be inaccessible to the author herself" (p. 13). The following section is an effort to identify, understand, and reveal my own positionality to the research participants and the research process as a whole. Rather than claiming or even aspiring to objectivity in the research process, the measured and logical approach is that of describing, to the best of my ability, these complex matrices of internal and external relation. "Scientists firmly believe that as long as they

are not conscious of any bias or political agenda, they are neutral and objective, when in fact they are only unconscious" (Namenwirth, 1986, p. 29).

Educator-Researcher Positionality

Hesse and Hesse (1980) suggest that "the attempt to produce value-neutral social science is increasingly being abandoned as at best unrealizable, and at worst self-deceptive, and is being replaced by social sciences based on explicit ideologies" (p. 24). Rather than striving for objectivity in research, Mauthner and Doucet advocate for exposing the subjective nature of data analysis. An important way to begin this process is by establishing the researcher's own positionality, described by Rhoads (1997) as the many aspects of their identity, personal histories, social standing, and cultural background. These factors influence the researcher's interpretations of findings, interactions with participants, and relationship to the research itself. A comprehensive investigation of the unique, relational characteristics of the researcher is a methodological necessity to the ultimate usefulness of the study, as it exposes the interpreter's motivations and perspectives and informs the greater contextual backdrop within which the research is situated. "Research which is openly value based is neither more nor less ideological than is mainstream positivist research. Rather, those committed to the development of research approaches that challenge the status quo and contribute to a more egalitarian social order have made an 'epistemological break' from the positivist insistence upon researcher neutrality and objectivity" (Lather, 1986, p. 63).

Creswell (2009) notes that failing to clarify the biases the researcher brings to the study threatens the openness and honesty of the narrative and, ultimately, the accuracy of the argument. To ensure that my relative positionality to the research is apparent, I wrote the Preface to this work with the intention of providing the reader with some degree of insight into who I am

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and the journey that brought me to this work. However, there are a number of additional elements of my story and my work that I would like to bring to light here.

It is my understanding that "privileged groups are more likely to speak and be heard, and in so doing claim the power to name reality" (Kelcourse, 2004, p. 6). As a white, heterosexual male, and graduate student, born and raised in the United States, there are a fair number of privileged groups to which I ascribe; perhaps the most relevant of which to this study is that I was an instructor in the course.

Both teaching and research are reflexive endeavors, in that the processes impact both subjects (the researcher and the participant or the teacher and the student) in the exchange of energy and information. Mauthner and Doucet define researcher reflexivity as "recognizing the social location of the researcher as well as the ways in which our emotional responses to respondents can shape our interpretations of their accounts" (2003, p. 418). Denzin (1997) elaborates on the "problem of reflexivity" by suggesting that "our subjectivity becomes entangled in the lives of others" (p. 27). Viewing my participants first and foremost as students, second as friends, and third as research collaborators, indeed "entangled" the many roles we each played. Bloom (1996) embraces these complexities, suggesting that it is a more complete understanding of identity with the social context. "Rejecting the notion of the unified self, some postmodern feminists argue that understanding of subjectivity as nonunitary and fragmented is a move toward more positive acceptance of the complexities of human identity" (p. 178). Furthermore, it would be misguided to assume that these fragments of identity are not continually shaping social interaction and, for researchers specifically, the research process. As researchers, we must recognize the ways in which our experiences, aspirations, questions,

rationalizations, and all aspects of our identities, influence how we see the world and indeed how the world sees us.

My status as an educator-researcher was cause for a significant amount of caution. One of my primary concerns at the outset of this project was that students would feel unduly coerced into participating. To mitigate these possibilities, I was careful to not present the study in such a way that would create additional expectations for students, academically or otherwise. While I needed to inform students of the opportunity, I chose only to present the work in group settings so that no students felt singled out. These included a few email notifications and short, informative presentations to the full class. All of the students who ultimately asked to participate in the study were students who I had taught in either one of the discussion groups or the spring seminar. This made sense to me, as they were inherently the students who knew me on a personal level and would thus be interested in participating in my project. However, it was important to me that these students did not feel specifically targeted. Ultimately, the energetic requirements of the study had much more to do with personal interest than commitment level. Since the project spanned a full academic year, scheduling interviews was a flexible process.

My positionality as educator created further complications surrounding the validity of the data itself. My position at the University prompted a number of students to refer to me using a range of confused aliases that included: Mr. Peter, Professor Randall, and Professor Peter; none of which were accurate or requested. I was responsible, in part, for their experience in the Cluster course and, to some degree, their grades. I believe that ultimately, this hurdle was successfully avoided, indicated by a few students expressing that they did not enjoy the course or significant sections of it. By the time I was conducting the majority of the interviews, two quarters had already been completed and I was only teaching a few of the students in my spring seminar. So

their grades for these prior quarters, of which I was ultimately only responsible for grading a portion of, were already completed. Therefore, despite my assurance that there were no strategic advantages to participating in the study or to providing inflated testimony, the actual circumstances and timing of the interviews made this assertion an inevitable reality for many. On the flipside, the majority of students decided to not participate in the study when given the opportunity, which suggests that there was very little, if anything, indicative of overbearing compulsion.

Beyond the initial complexities of recruiting participants, several other aspects of my identity, beliefs, and experiences inform my intentions in this research process—including my own educational journey. As the son of a teacher, I was raised in a family that valued school. My father taught math at Buckingham, Browne & Nichols, a small private high school in Cambridge, Massachusetts that my three siblings and I attended from age four (starting in pre-kindergarten at the elementary school) until we graduated from the high school at eighteen. I was not a very good student at first, but I always loved the practice of attending school. I loved my friends, my teachers, and many of the academic, artistic, and athletic experiences the school offered. Furthermore, my teachers had the patience, skills, and resources to wait out my early indifference to certain classes, without which I am sure that I would not be in graduate school today. I am well aware that my experience in school, and my affection for the institution, is not the norm. I was exceedingly fortunate to be able to call this place home for so many years, and in many ways, it still feels like home when I return. But the place that feels the most like home is not the woodshop or the soccer field, although those places have a special magic to them, but rather an old camp in the woods of Chesham, New Hampshire, called Camp Marienfeld.

Each year since 1957, BB&N has brought the freshman class to these woods for Bivouac, a two-week outdoor education program in which students chop wood, carry water, cook their own meals over fires, build A-frame shelters and latrines from twine and samplings, and bathe each morning in the crystal-clear waters of Silver Lake. Students surrender their laptops, cellphones, and candy, in exchange for axes, twine, and old, scorched cookware. The program guides are a mix of faculty and alumni, who return each year for the community, memories, and the oddly calming experience that accompanies this place and the lifestyle it enables. For as long as he has been a teacher, my father has been a part of this program, and throughout the years, my family has spent a lot of time there.

Although I do not remember it, my mother tells me that I attended my first Bivouac when I was nine-months old. By eight years I was chopping wood and trading the split logs with freshman students in exchange for attention and hot chocolate. On rainy days, my siblings and I would forage for birchbark to get the fires started and retie knots to secure A-frames that had blown down in the night. By the time I was a freshman in high school, attending Bivouac with my own class, these practices were second nature. And the beauty of them is that they never change. When I returned to Bivouac after college as a guide, fires were still lit the same way, A-frames still required the proper knots, and it was still a good idea to fetch water.

Bivouac is a far cry from living *off* the land. Meals consist of macaroni and cheese, boxed jambalaya, and other entrées that are forgiving to novice fire-builders and, more often than not, novice cooks. However, Bivouac does require that one live *on* the land in ways that are increasingly less common in modern society. Every aspect of life, from cleaning dishes to having a warm place to sleep at night, require more effort, attention, and skill than the modern equivalent. Throughout the day, guides and students might walk eight to ten miles, all to attend

to basic human needs that might be satisfied at a 7-Eleven back in Cambridge. However, at Bivouac, commonly overlooked aspects of life take on new meaning. From day to day, and hour by hour, the weather matters beyond supplying a topic of conversation. Getting clean requires a deep breath of bravery before plunging through the mirror of the lake. Even placing footsteps along an uneven path requires presence and awareness, lest you twist an ankle, flatten a mushroom, or disturb an eft.

There are lessons learned at Bivouac, in the woods, in ecological systems, in nature, that cannot be learned in other settings. My time at Camp Marienfeld made me fluent in communing with elements of the natural world, elements that otherwise I would have little relation to. In my studies of ecoliteracy, I am most interested in how students learn to understand the natural world in a way that connects with their very sense of being: to be present in their actions, and to be aware of the implications. My time in nature brought me to this work, but learning about food systems is a worthy application of it. How often do we eat something without considering the thing itself, where it came from, and the journey, or many journeys, it made to end up on our plates? As stewards of the Earth, it is our responsibility to know and to continually attend to our practices and their implications.

Case Study Research Design

This study is most aptly described as a qualitative case study. Yin (2013) describes a case study as a study that is bounded in scope to one particular group or example. Key features of a case study, as described by Asmussen and Creswell (1995), include the following: 1) the identification of a case, 2) a system bounded in a specific time and place, 3) multiple sources of information, and 4) extensive description of context. Such qualities offer the scaffolding for multiple "layers" of analysis. Stake (1978) suggests that "case studies will often be the preferred

method of research because they may be epistemologically in harmony with the reader's experience and thus to that person a natural basis for generalization" (p. 5). Rich description of context not only allows for nuanced understandings of the case at hand, but also offers the foundation for applying relevant interpretations to other cases and related, over-arching theoretical constructs. "Because of the universality and importance of experiential understanding, and because of their compatibility with such understanding, case studies… have an epistemological advantage to other inquiry methods as a basis for naturalistic generalization" (Stake, 1978, p. 7). Merriam (1998) confirms this notion of appreciation for case study generalizability afforded by contextually nuanced and comprehensive understandings. Merriam writes: "Anchored in real-life situations, the case study results in a rich and holistic account of the phenomenon. It offers insights and illuminates meanings that expand its readers' experiences. These meanings can be structured as tentative hypothesis that help structure future research" (p. 199).

In this case, the study was bounded by a first-year general education "Cluster Program" course at UCLA: *Food: A Lens for Environment and Sustainability."* UCLA operates on a three-quarter academic schedule, each quarter lasting ten weeks with the option of additional coursework over the summer. Each quarter, from fall to spring, students who are enrolled in the Cluster Program receive credit for one UCLA General Education (GE) Requirement. Should a student elect to continue the Cluster all the way through to the final quarter in the spring, they receive two additional requirements: the college's writing requirement (Writing II) and an additional GE course of their choosing – based on the specific Cluster course. So there are significant academic incentives for students to not only take the Cluster Program, but to stick with it throughout their first year. That being said, the expected commitment of these courses is

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higher than that of normal introductory-level courses offered by the college. Typically, students receive five units per quarter for a regular lower division course, but they are awarded six units per quarter for Cluster courses.

The Cluster Program is a collection of ten interdisciplinary courses which are exclusively for first-year students. Each course centers upon one particular topic for a full academic year. The program is a "curricular initiative that is designed to strengthen the intellectual skills of first-year students, introduce them to faculty research work, and expose them to such best practices in teaching as seminars and interdisciplinary study" (UCLA Undergraduate Education Initiatives (UEI). Other popular Cluster courses include: "*Biotechnology and Society*," "*America in the Sixties: Politics, Society, and Culture*," and "*Mind Over Matter: The History, Science and Philosophy of the Brain*." The courses offer a wide range of educational opportunities and beneficial student outcomes, as documented by the Office of Undergraduate Evaluation and Research Division of Undergraduate Education Reports that have been released periodically over the Cluster Program's twenty-year history. The courses are taught by a team of ten faculty and instructors from a wide range of disciplines, offering students a sample of different teaching styles, research methodologies, and subtopics of interest. Given the range of topics and instructional styles, first years can inform their later academic decisions and course selection based on what types of learning they gravitate toward. The institutional reports have found that students who participate in the Cluster Program are more likely to graduate with higher grade-point averages, and the continuity of engaging with a learning community of 200 first-years over the course of an entire year bears a host of additional academic, emotional, and social benefits for students.

The Cluster Program offers a valuable unit of analysis for this particular study for a number of reasons. As a General Education course designed specifically for first-year students, there are no additional academic expectations or prerequisites beyond the fact that the students were admitted to the university. Predictably, the students enrolled in the *Food: A Lens for Environment and Sustainability* course were attracted to the course content in some way, otherwise they would have taken another Cluster course. However, the initial propensity to learning about food systems and sustainability does not indicate that they will major in a related field, such as: Environmental Science, Ecology, or Biology. In fact, due the structure of the college graduation requirements, it is highly likely that students in the course have no intention of further study in the field. Cluster courses typically do not count toward major classes; therefore, it is academically expedient for a student to take a Cluster Program that does not overlap with the requirements that their pre-major courses will ultimately satisfy. And while this predicament may be a hinderance to a student taking the Neuroscience Cluster and then planning to major in Neuroscience, for the purposes of this study, it evens out the inevitable sample skew of this study toward students who are interested in these issues. From a purely logical perspective that assumes informed student choice and freewill (which I would later learn were compromised assumptions at best), the students who enrolled in the Food Cluster were interested enough to engage with the topic for a year, but probably not interested enough to major in it. This unique educational context actually offered a dependable, engaged, and academically inexperienced sample, ideal for informing educational programs designed for a broad audience.

Setting

The study took place at UCLA, a large public research university in Los Angeles, California. The University enrolls 30,000 undergraduate students, the majority of whom grew up

in California. Despite a definitive commitment to global citizenship and social engagement, the University's mission statement does not explicitly present any institutional obligation to the development of student ecoliteracy or to sustainability initiatives. Nor does the college have any environmental science, sustainability, or ecoliteracy course requirements for students. That is not to say that there is not ample opportunity for these types of academic and extracurricular experiences on campus. UCLA offers a variety of major and minor programs including: Earth and Environmental Science, Environmental Engineering, and Food Studies. Beyond the classroom, the college offers a wide array of environmental and sustainability-focused student clubs, events, and organizations, such as: The Environmental Student Network, the Sustainability Action Research Program (SAR), and DIG: The Campus Garden Coalition. In 2003, the University of California developed *The Sustainable Practices Policy* which "establishes goals in nine areas of sustainable practices: green building, clean energy, transportation, climate protection, sustainable operations, waste reduction and recycling, environmentally preferable purchasing, sustainable foodservice, sustainable water systems." These institutional policies were the result of a student-led initiative, the California Student Sustainability Coalition (CSSC), which still operates on campus today as *E3:* Ecology-Economy-Equity. Despite these environmental guidelines, the University of California has faced significant criticism from students and faculty for its failure to divest institutional capital from fossil fuel company securities, which currently constitute three percent of the institution's public holdings of 4.2 billion.

Course Content

Perhaps the most important factor influencing what students gained from their experiences in the Cluster course was the content and structure of the course itself. As explained

in the prior section on Research Design, *Food: A Lens for Environment and Sustainability*
consisted of three consecutive courses throughout the academic year. The fall and winter courses
comprised of three, one-hour lectures per week that the full class of 160 students would attend.
Lecture courses were taught primarily by faculty, with the occasional guest lecture by a visiting
professor or industry expert. Fall lectures focused on relationships between agriculture, ecology
and biodiversity, and issues pertaining to food production and water systems. The spring featured
lectures on air quality, climate change, energy production, nutrition, and incorporated research
on social and anthropological research on food. Given the wide range of topics covered over a
relatively short period of time, the course design allowed for an overview of many topics rather
than an in-depth study of any one in particular. (See Appendix A for a full structural overview of
the course.)

     The lectures were complemented by two-hour, weekly discussion sections of 20 students,
taught by one of the teaching fellows. These smaller group sections enabled further digestion of
lecture topics and facilitated the lab activities and writing assignments throughout the year. The
lab assignments were designed to help students develop quantitative research skills and included
the analysis of carbon footprints, energy costs related to food production, and population growth.

     Midterm and final exams were closed-book and consisted of multiple choice, short
answer, and long-form questions. Students were tested on their "knowledge of definitions
important to an understanding of the environment, concepts about how environmental systems
function, and issues related to the interactions of humans with the environment." (See Appendix
B.)

     In addition to these academic requirements, students were required to attend one field trip
per quarter. These outside-the-classroom experiences overlapped with the course content in some

way, but were also designed to be a fun departure from it. Some examples of trips were: a botanical tour of campus, a walk through the Santa Monica Farmers Market, sorting food at the Westside Food Bank, and a trip to the Kindred Spirits Care farm. (Full lists in Appendices A and C.)

A complete syllabus for each quarter including grading rubric, reading selections, and written assignments are listed in Appendix A. What follows here is a brief excerpt from the fall syllabus, framing the intentions and content of the course:

This three-course Cluster will address one of the most pressing issues of our time – the relationships between the world's rapidly growing human population and the global environment that makes human existence possible – through the lens of food. The connections between food and the environment are complex, encompassing scientific and social factors. We will discuss pressing issues including biodiversity loss, nutrient cycling, land conversion, climate change, sustainable energy, chemical pollution, antibiotic resistance, fresh water quality and quantity, equitable access to healthy food, and dietary trends. We will investigate how our food systems impact all of these topics and the many exciting solutions that are under development. Each lecturer will present the concepts, perspectives, skills, and tools that his or her academic discipline can contribute to the formidable task of restoring worldwide environmental health. The courses are designed for students from all backgrounds and should appeal to those who wish to learn more about current environmental issues widely discussed in the public and scientific media.

The spring quarter functioned much differently than the previous two, and consisted of weekly three-hour seminars with groups of twenty students. The topics of these courses were

much more focused, relating to the specific expertise and research interests of the course instructor. These topics ranged from: agriculture in film, environmental issues in Amazonian cities, food security and water conflict, and my own spring seminar course on rewilding, which examined food from an ancestral and evolutionary perspective.

Participants

This study followed the journey of twenty, first-year UCLA students who were all enrolled in *Food: A Lens for Environment and Sustainability.* From the outset, none of the students were declared Environmental Science majors, although as the year progressed a few of them expressed interest in this possibility. Students joined the study at various points throughout the year and were given the opportunity to participate all the way through spring quarter. All of the participants had me as an instructor at some point during the year, and twelve of the twenty participants elected to take my seminar in the spring.

The students came from a wide range of academic and familial backgrounds. All except four had grown up in California, which is actually representative of the college's 80 percent in-state enrollment. Additionally, all but four students were female, which is also indicative of the ratios of the class as a whole. For a full breakdown of the participant demographic characteristics, refer to Figure 1 in Appendix A.

Recruitment

All students enrolled in the Cluster course were given the opportunity to participate and were encouraged to do so. Recruitment took the form of a short series of in-class announcements, class-wide emails, and posts to the class' online notice board. All of the participants continued the Cluster Program through for the full academic year, although this was not a requirement nor necessarily anticipated. Recruitment for the study began in the fall quarter,

when it was not a guarantee that they all would continue in the course. Given that there was no material benefit to participating in the study, the students who gravitated toward it were typically those with whom I had developed a certain degree of rapport (see Creswell, 2012). This mutual goodwill enhanced and deepened our conversations, allowing for the richness in data that I was hoping to achieve with this type of inquiry. Interviewing someone who is compelled to speak with you out of their own motivations and desire to interrogate a particular topic is a very different and much more rewarding experience than interviewing someone who is present because of external obligation or prize. I was both grateful for and intrigued by the conversations we had, and I cannot be sure that it would have been as profound had I taken steps to bolster participation.

Data Collection

This study relied on three primary pillars of data collection: participant observation, interviews, and writing samples. Individually, each approach offers different access points to the thoughts, perspectives, and experiences of the participants. Collectively, these varied qualitative approaches offer multiple levels of data verification, a process that Denzin (1970) describes as multiple triangulation. Similar to how a researcher might unintentionally influence interview responses with the wording of their questions, the tone of their voice, or emitting various interpersonal social cues, each form of data collection (or overt response elicitation) inherently informs the nature, ideas, and presentation of the response. Multiple triangulation across several forms of data collection works to mitigate the impact of these often-unintentional influences, allowing for themes in the data to emerge across a larger, more varied data set. In addition, having multiple approaches allows for the discovery of meaningful insights that might otherwise go unearthed if left to the dutiful, but limited, excavation of a single methodological approach.

Several types of data were collected throughout the course of the study: audio recordings from one-on-one interviews with students, in-depth field notes and reflective writings of my experiences as an instructor in the class (see Emerson, Fretz, & Shaw, 2011), select written assignments of students, and course materials. I relied on each method to create a comprehensive and multidimensional depiction of the students and their experiences in the class.

Interviews ranged from thirty to ninety minutes. Some students I formally interviewed on multiple occasions and others sat for only one. At the outset, I explained the purpose, process, and the anticipated overall arch of the conversation. These initial conversations about expectations also allowed for the opportunity to gain informed, written consent (Glesne & Peshkin, 1992). (See Appendix C for the full participant consent form.) It was at this point in the study that each participant was promised confidentiality. It was my assumption, based on Bogdan and Biklen (2007), that confidentiality was the best means of distancing participants from the possibilities of harm and to enhance the likelihood of honest responses. In retrospect, I am not sure if this was entirely necessary or perhaps, advised. Had I remembered Baez's (2002) critique of this practice, I might have chosen otherwise. Baez writes:

> If qualitative researchers see themselves as political activists as well as researchers, they must resolve another dilemma: they have to reconcile their conflicting responsibilities as researchers/protectors and activists/exposers. The consequences of these choices, however, are only vaguely discussed in the literature. I make a philosophical case for recharacterizing confidentiality from the liberal–humanist notions of the individual, privacy and harm to one that accounts for the possibilities of other liberal–humanist notions: critical agency and transformation (p. 35-36).

It is possible that not guaranteeing confidentiality would have removed an unnecessary veil from the research process and enabled a greater sense of collaboration among participants. This methodological perspective is in line with Tierney (1993), who describes how the definition of self, in this case the researcher's definition of themselves, "represents a dialectical process between author [or researcher] and subject to the extent that both interviewer and interviewee shape and are shaped by one another. In the final analysis, 'narrative product' is thus mutually defined and shared (p. 120). Along these lines, changing the names of participants in pursuit of confidentiality is as unadvisable as changing the name, and thus a key aspect of the "definition of self," of the researcher—something I have not done. Tierney goes on to explain the role of narrative in the lives of both the participants and the researcher. "The social, cultural, and historical contexts in which individuals are embedded play an important role in the creation and substantiation of what individuals come to define as reality" (p. 129). Perhaps confidentiality is a small price to pay to mitigate unanticipated risks, but it is important to consider the relative effects on the potency of the research product or on the power of the shared narrative created in the research process. Richardson (1990) writes:

> Most significant are the transformative possibilities of the collective story. At the
>
> individual level, people make sense of their lives through the stories that are available to
>
> them, and the attempt to fit their lives into the available stories. People live by stories. If
>
> the available narrative is limiting, destructive, or at odds with the actual life, people's
>
> lives end up being limited and textually disenfranchised" (p. 129).

Ultimately, pseudonyms were employed throughout, but I am open to the possibility that some of the benefits of participation (as described by Glesne & Peshkin, 1992) were unnecessarily squandered in my eagerness to do no harm.

The trajectory of the interview involved two distinct phases: 1) discussion of the students' upbringing and experiences with relation to food, nature, sustainability, and other indicators of ecological knowledge, and 2) discussion of their experience in the course and exploration of the ways in which it shaped their understanding of certain issues or impacted their lives. (See Appendix D for a list of interview questions and the full interview protocol.) Interviews were "semi-structured" (as described in Seidman, 2006) in that I had general framework for the conversation outlined in my prepared questions, however we were not beholden to it. A semi-structured approach allows for the individualization of an interview and the opportunity to pursue points of interest that arise throughout. The built-in freedom to take the interview in any interesting direction depending upon the responses and cues of the participant was vital to the quality and depth of the conversations. Based on Spradley's (1979) recommendation, questions were posed in a natural, relatable, and conversational style. "By being aware of your [the researcher's] own specialized vocabulary and cultural assumptions, you are less likely to impose your own opinions on the interviewees. It is the interviewee's ideas you want to hear, and you don't want to block that communication by putting your own assumptions in the way" (p. 19).

In my capacity as an instructor, I attended lectures, led discussion groups, taught a spring seminar course, chaperoned field trips, and served many other roles that I documented as a participant-as-observer. "The designation 'participant-as-observer' rather than the traditionally used term 'participant observer' underscores the fact that the person identified as researcher is more than a passive onlooker in the system he studies" (Babchuk, 1962, p. 226). These first-hand experiences allowed for the incorporation of various forms of non-verbal, contextual, and interactive data into the study (see Geertz, 1994). This type of fieldwork was recorded in post-

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participation journaling. While I documented a great deal of my notable experiences throughout the year in this way, narratives that included study participants were included in my written analysis. In addition to my own notes, I also incorporated other forms of written material such as student assignments and course documents. (Refer to Appendix B.)

Morse (1995) writes that for qualitative researchers, "data adequacy" is reached when the researcher is no longer learning anything new from continuing data collection (p. 147). In truth, I cannot say that this phase ever occurred. While I was certainly forming connections between what different students were reporting throughout the data collection process, the study never got to the point where I was not learning something new. Nor was I ever able to predict the ideas or experiences a student might have with respect to issues of the environment, sustainability, climate change, diet, or any other matter. Perhaps this would have been achieved to some degree, at least from a probabilistic standpoint, had I pursued a larger sample, but as I have previously stated I believe that it would have come at a cost. To me, this predicament suggests two opposing hypotheses: first, data adequacy or saturation inevitably breaks down at further depths of inquiry and complexity of analysis, or second, and perhaps more likely, that this study is merely a work in progress. And while I have not been able to logically parse the two, these hypotheses highlight a key element in this study and educational research at large. This study is designed to inform educators, educational curricula and practices, and institutional policy. The data presented in this study speaks to a very specific context at a particular time. As such, it can only ever possibly explain a sliver of the larger social narratives. And yet there is a worthy and often overlooked quality in deeply contextual data that is not captured by surface-level analysis and that is essential to informing the required nuances of educational policy.

Upon conclusion of the data collection process, students were given the opportunity to correct the record or, if necessary, elaborate on the narratives and ideas that they had contributed. Member checking involves taking data and initial interpretations back to participants for further, collaborative review. Lincoln and Guba (1985) describe member checks as "the most crucial technique for establishing credibility" in qualitative research (p. 314). The process allows for participants to evaluate and consider the initial analysis of the researcher, providing opportunity for further consideration of central findings, clarification of misinterpretations or incomplete ideas, and new understandings.

Analysis

At the end of the academic year, my focus turned from data collection to analysis. While the process of data collection was decidedly open and flexible, analysis offered a complementary opportunity to apply greater structure in order to organize and interpret the immense amount of information that had been collected. Altheide and Johnson (1994) suggest that "how knowledge is acquired, organized, and interpreted is relevant to what the claims are" (p. 486). Therefore, this section aims to provide a natural history of the analytical methods and to illustrate my logical progression in transforming data into argument. Glaser (1965) reports that doing so is a key element to the validity of research. "Another way to convey credibility of the theory along with the use of illustrations is to use a codified procedure for analyzing data… which allows readers to understand how the analyst obtained the theory from the data" (p. 443).

Data analysis proved to be a much slower and more involved process than I had originally anticipated. Going from gigabytes of raw data to a written work requires a series of transformations, the first of which was transcribing the interview audio recordings. The various transcription software I tried could not reliably decipher the individual linguistic variants, my

own tendencies to speak softly and mumble, and the suboptimal audio recordings, so I resigned to manually transcribing them myself. As interviews were completed, I would transcribe them in the weeks that followed. Interviews varied greatly in length, as even shorter interviews in the 30 to 40-minute range could produce twenty-page transcripts if the participant was a particularly speedy talker. Although the process was painfully slow, directly correlating to my words-per-minute count, it was time well spent. Listening to an audio recording of a conversation you had earlier that week allows you, or perhaps forces you, to relive the experience in a completely different way. You notice things about the experience, the content, and how things were said, that you don't notice in real time. I would argue that, given the semi-structured and interactive quality of the interview process, the process of data analysis actually begins during data collection. However, for me, the reflective elements of analysis began in these early stages of transcription.

Although my newly transcribed data eagerly awaited my attention, by the time spring quarter came to a close, I desperately needed a break. Having just completed my first year of teaching, summer offered a welcome pause. Many scholars have discussed the importance of incorporating multiple researchers into the coding and analysis process in order to provide consensus in interpretation (Huberman & Miles, 1994). While hiring multiple additional researchers was not a realistic possibility for this study, I would like to think that the several-month hiatus between transcription and coding had something of a similar effect. I claim to be no more objective than I would have been had I begun immediately, but the break was an important first step in developing a refreshed, energized, and distanced perspective—which is arguably necessary for thoughtful and clear thinking on any matter. If employing multiple perspectives in

the analysis was not in the cards, there was ample use of the distancing effect of time. My

partner, advisor, and committee likely had mixed feelings about this tact, but I stand by it.

From this somewhat removed perspective, I began coding the following fall. Coding is

the process of ascribing relevant tags to particular data points, making it easier to assign

categories, organize themes, and develop interpretations (Saldana, 2012). The process allowed

me to not only identify the specific content that was in the dataset, but also to begin building an

interpretive framework above these structural building blocks (Coffey & Atkinson, 1996; Seidel

& Kelle, 1995). The first round of coding reflected what Corbin and Strauss (1990) describe as

open coding. "Fragmenting" the data into these conceptual components provided interpretive

markers that identified the content of that section of data (Bernard, Wutich, & Ryan, 2016).

Based on the recommendation of Corbin and Strauss (1990), I found it useful to use participants'

own words in developing these first codes, as it allowed their voices to persist throughout these

intermediary levels of analysis.

The second phase of the coding process involved organizing the first round of codes into

relevant themes or categories. Sample categories include: "familial background," "experiences in

nature," and "food choices." In this phase, I found myself using both a top-down and bottom-up

techniques, as I broke down some of the larger categories into smaller, more digestible chunks,

while grouping smaller categories (such as "food documentaries" and "food books" into "food

education.") For this section I began ascribing my own conceptual markers more readily in an

effort to begin thinking about how the narratives would translate into writing. All coding was

done manually (Basit, 2003), which I found particularly useful for this phase of the analytical

process. Grouping codes into larger categories required shuffling large portions of text, and I was

grateful to not be confined to a fifteen-inch computer screen. Tesch and Tesch (1990) propose

that categorization as a process of "data distillation" is not merely necessary to make the data more manageable, but is in and of itself an integral outcome of the interpretive process.

The final round of coding, which at this point was a thematic analysis, involved mapping the categories I had established to my three research questions outlined in Chapter One, included below for reference:

1) What do college students learn from the critical examination of food systems?

2) How do students integrate these ideas into their beliefs, decisions, and behaviors?

3) What pedagogical and institutional practices best facilitate ecoliteracy development?

It was in this stage that I began making decisions about which information "fit" into the larger analytical context of the study (Dey, 2003). While the first two phases had been focused on developing internal clarity, this step began to consider the ways in which the data might be presented externally in the form of this research paper (Gough & Scott, 2000). My goal was not simply to document student experience, perceptions, and ideas, but ultimately to inform larger educational narratives.

By this point, the full conceptual framework for this writing lay across my living room floor. My initial research question gave way to three additional sub-questions, which gave way to several categories that spoke to each, which gave way to examples in the form of student narratives. All that was left was to transform this framework into a single, linear narrative, while defending my handiwork relentlessly from strong gusts of wind and from my three-year-old cat, who is liable to claim any loose leaf of paper as her own.

Writing this paper was not only the final stage of the process, but also offered the final, vital piece of the analytical process. In writing, things became clear that were uncertain before, and, at times, certain elements became more complex or open to interpretation. In these

instances, my colleagues and committee members were vital in offering their own interpretations of student narratives and helping me aspire to clarity in instances that had lost focus. Like Tierney (1995) and Kimmerer (2013), I am of the opinion that *how* something is said is just as important as *what* is said. Writing, as a recursive process, not only requires that we refine our interpretations, but also that we relay them in a way that reflects our values and encourages the desired effect.

Chapter Summary

This qualitative case study examines college student ecoliteracy as influenced by a year-long course on food systems and related environmental issues. The study follows twenty students through *Food: A Lens for the Environment and Sustainability*, which is part of the UCLA Cluster Program. Data was collected through a series of in-depth interviews, document analysis of course materials and assignments, and fieldnotes. Interview recordings were transcribed and all documents were coded in a multistage process designed to identify themes and important narratives that informed the research questions. This chapter provides epistemological explanations for my research process and explores my positionality as educator-researcher.

Chapter Four: Ecoliteracy Development

"How was break?"

It was a pity to be back. Not because I was anything less than thrilled to be starting the spring quarter, but because the room my seminar on "Rewilding" had been scheduled in had no windows. The air was stale and smelled of plastic and dry-erase marker. For someone who had spent most of their spring break in the Sierras, it was a stark and unpleasant contrast. And apparently, not just for me.

"I worked on a farm!" It was not the most common or exotic spring break activity offered by the class, but it was the most enthusiastically stated. The desire to learn more about farming and to spend time working outdoors had prompted Laura to seek out an organic farm near her home in Southern California, and she had offered it her assistance—free of charge. The whole year, I had been curious about how students were internalizing the information they were learning, and it was usually not until I sat to interview them that I learned the many outward expressions it took. Often, these included changes in diet (or considering them), sourcing food differently, becoming involved in different groups on campus, or even challenging the ideas or perspectives put forth by their friends and families. But working on a farm was different. She had traced her food back to its roots. It is one thing to say that you are a foodie or an environmentalist, it is another altogether to become a farmer, forager, chef, or geologist. The former are merely interests on a sliding scale of priorities. The later are identities forged in expertise and experience. Furthermore, the farm was ninety minutes from campus, if she timed it right with Los Angeles traffic, and she intended to continue to work a few hours per week throughout the upcoming quarter.

"What kinds things do they have you doing?" I was curious what had made working on a farm such an enticing opportunity.

"Well, I did a lot of hoeing… And weeding."

Silence fell as the rest of the class looked up. Perhaps her time on the farm was not as far removed from the average spring break experience as we all originally thought. I did my best to keep a straight face. I tried so hard. But after a few seconds, as the group looked at Lisa, waiting for her to check herself, and then back at me, to see what my next question might be, a smile bit the corner of my lip and the class erupted in laughter.

"Hoeing and weeding" set the tone for rest of the year. The silliest thing that could have been said, had been said, and it had come forth in brilliant honesty. Laura stood by her statement, despite further collective analysis, because that was her truth. From that point on, the class carried an openness that was not merely the result of students feeling safe to share their perspectives, but more importantly because, for the most part, the others listened. By this point, the class had been together, in various groupings, for the better part of sixth months. Friendships had formed, some had started dating, and others had become too familiar to not care about. As for me, a 28-year-old TA who was apparently not above laughter when things were funny, I too was a mere mortal. I could be trusted.

It is within this context and with this background that I share these following narratives. All the students had moved from their childhood home to live on campus for their first year of college. Some of them had wonderful roommates, others did not. Some of them knew how to eat and sleep well, and how to take care of themselves despite the rigors of the academic year. Others did not or could not. In learning about their experiences at school, their families, and their upbringing, we discussed all manner of triumphs and challenges. I will forever respect the

students' openness and generosity in this process. There was no material gain in participating in this study. While I hope that each student enjoyed the class and found a reflective appreciation for the interviews, at the most fundamental level there was a strong base of selflessness and the desire to make things better for those who come after them. Given the monumental task of global sustainability, the selflessness of lighting the way for future generations is not to be overlooked. In the sections that follow, I strive to make their insights and reflections useful to educators, researchers, and policy-makers, interested in nurturing ecoliteracy among college students.

This chapter addresses the first of three research questions, which is: What do college students learn from the critical examination of food systems? To answer this question, I incorporated narratives that spoke to two important factors: first, knowledge that brought to the classroom, and second, the lessons they learned in the class. The former is illustrated in the following sections that incorporate narratives from childhood and high school, their familial context growing up, and prior education experiences. In the section on Changing Perspectives, I discuss the ways in which students processed new understandings from the course content.

Background: Navigating the Ecological Food Web

All ideas about food and what constitutes proper human nutrition are all based on overarching theoretical foundations of human nature and the appropriate role of our species in ecology. Consumption by definition involves some degree of external impact, and it is clear that many students had grappled with these ideas long before they reached UCLA. Each student had eaten food for almost two decades, so there were no blank slates. That is not to say, however, that everyone was starting in the same place.

> *Jade: I lived in Paraguay for two months, and so I've seen a pig slaughtered. And then*
> *I've eaten that pig. At the time it didn't bother [me] somehow, I don't know.*

Peter: Why do you think that is?

Jade: Because meat is very central to Paraguayan culture and a lot of their food has meat - almost too much if you ask me. But it's so important to the culture and the food. It's just part of life… I know the pig was raised [by] my family… and they live pretty good lives. Although I wouldn't say that the slaughter was that humane.

Peter: The slaughter was not humane?

Jade: I mean it was humane, but [the pig] took a while to die because they cut its neck and let it bleed out. They had a dog, and it kept lapping up the blood. I guess I have a pretty solid stomach.

Peter: You handled that fine?

Jade: Yea.

Peter: …That's one of the things that everyone sits with at some level as soon as you become aware of where your food comes from… There's some level of hypocrisy in terms of what you know and how you're acting on it, right?... And for a lot of people, like myself, it'll be something around meat. If you eat meat, there's some level of avoidance in terms of where [it came] from. I don't know if I could've - in that scenario - I don't know whether I could have killed the pig.

Jade: Yeah, my host mom would snap a chicken's neck, and then we'd eat the chicken. I thought, even at the time, 'would I have been able to snap the chicken's neck?' And I'm still not completely sure. I just don't know. And why would somebody? My host mom could easily do it. She does it all the time - every time we ate chicken. She took one from her yard and killed the chicken. I just don't know [if] I could, and that's the weird thing.

[Something] I think of a lot when eating meat is: could I have killed the animal I'm going

to eat? And I don't know.

Peter: I think you could…

Jade: I think I could.

Peter: …I think it would be one of those things where over time it would become

something that maybe…

Jade: It would. I definitely think I would. I think the first time I would like not want to do

it, but then I would do it. Then I would think, "Oh, dinner."

Jade's experience was unique in that most students did not have such a hands-on experience to draw from. Even in this case, the "hands-on" aspect was hypothetical, and the experience was actually based on a newfound transparency and proximity to the process. In order to eat meat, animals die. But there are a wide range of possibilities in terms of how they are killed and the quality of life they live up until that point. Jade's experience was noteworthy because she was able to witness, if not conduct, the totality of the process. As a bystander to the slaughter, Jade was faced with existential questions that would not have necessarily surfaced had she purchased the bacon in little strips from a store: Was she willing to take a life, or have a life taken on her behalf, in order to sustain her own life? Was it necessary? Moral? Or even significant? After repeating the process enough times, she predicts that she would think "oh, dinner." Sometimes these questions can be answered deliberately, grounded in lived experience, rigorous study, or at least a solid moral foothold. But Jade went on to explain that this was not always the case:

Jade: One of my cousins has been vegetarian for a very long time: four or five years. As

long as maybe six. My sister has been vegetarian for… She's younger than me, but she's

been vegetarian since probably three - two or three years. Since the day my mother said

"You can eat this meat…" (It was veal.)

And my sister was like, "What is that?"

And my mother said "Baby cow." My mother gave her the ultimatum: she can eat the

veal or go vegetarian. And she's been vegetarian ever since.

Peter: So your mom, to make her eat her dinner, created this somewhat arbitrary

statement of: do this the rest of your life or eat this? And your sister seems very strong-

willed.

Jade: She also likes to say, if anybody else eats meat: you're eating 'dead blah' or you're

eating 'dead pig.' So I've only been vegetarian for three or four months. I mean, I

accidentally had meat at UCLA because I got in the wrong line and got like something at

B-Plate [cafeteria] that had meat on it. And didn't realize it for a while.

She explained further:

Jade: We're just not big meat-eaters in my family, so [on Thanksgiving] we cook tofurkey

and turkey. The tofurkey is also there for when we mis-cook the turkey, which happens

every year.

Peter: Every year you mis-cook the turkey?

Jade: Well, my grandma used to cook it, and she would put it in her solar oven and it

would always be a cloudy day. They don't have an oven at her house, so then they'd stick

it in the microwave. They'd take the turkey out of the microwave, and it'd just be raw on

the inside, and nobody would eat it.

Decision-making is, at best, a fickle process. Even with a clear view of the options, an

ironed-out value system, and a sense of purpose, it can be difficult to strike the intended

outcome. We are imperfect beings, and the world is a complicated place. When it comes to something as simple as choosing what we eat, or deciding how we cook it, the process can be a full production, an apocalyptic ultimatum from your mother, or, on Thanksgiving, simply a steady stream of mishaps. Jade and her siblings made decisions based on the information they had, the options that were available to them, and, perhaps most importantly, their relationships.

Upbringing and Familial Practices

As we reflected on students' childhood experiences, it became apparent that eating had just as much to do with family as it did food. Family life and parental understandings of ecology, nutrition, cultural values, and sustainability provided the educational baseline upon which all future information on food, sustainability, and ecology was evaluated. Food is a natural aggregator, but breaking bread took a wide variety of different forms and the process of producing a meal was even more varied. Who cooked what, and how they did so, reflected cultural and traditional influences, and individual skills and appetites. Each respective environment shaped student understandings, tastes, and expectations around food and how it is prepared. And sometimes nobody cooked at all.

> *Ana: My dad travels a lot for work during the week, so it was just my mom and my sisters. And my mom doesn't like cooking, so we would mostly just get takeout. Yeah, there wasn't much cooking. [My dad] likes cooking a lot, and he's good at it. But when he does cook, it takes a long time, so he doesn't like doing it that often. And he wasn't home that often during the week, so once a week he would barbeque or make some elaborate meal. My mom's extent of cooking was making salads: putting random things together on a plate. She hates cooking.*

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In her description of her parents, Ana could not have depicted two more different attitudes toward cooking. On the one hand, her father loves cooking elaborate meals, while her mother seemingly avoids it altogether. But their respective attitudes are not merely dependent on skillset. Meals have a greater significance when her dad cooks not simply because he loves it and is good at it, but because he is home. While her mother may throw together a seemingly "random" assortment of vegetables during the week, the expectation is higher when they are all together on the weekends. These meals receive additional attention.

Some students participated more fully in the kitchen than others, and those who engaged more readily typically enjoyed cooking more.

> *Ava: I love cooking. I liked cooking growing up, but my mom literally wouldn't let me go near the stove for like the first ten years. I think I wrote about that in my UC application… I had to intern in my mom's kitchen for like ten years before I could do anything. And it really taught me patience, because she really did not let me do anything besides mixing eggs and the very basic stuff. But I really like it… I think my mom thought I was really like too curious because… If you touch a stove and it's hot you're going to learn to not do it again, you know. I'm that person where it's like: touch, it's hot, I'm [going to] touch it again to see if it's still hot. Like track if it's still working.*

Ten years is a long time to intern at anything. It is hard to tell whether Ava is entirely serious about her regimented training or whether this is a lighthearted encapsulation of her relationship to her mother. From our conversation, it did not seem like her mother enjoyed cooking as much as Ava did, but it was apparent that her mother understood cooking as a form of love. Nourishing her family was both a nutritional and emotional exchange.

Ava: (My mother) cooked because she wouldn't want us to eat out. My mom's a health freak. I think that's the reason I really like food too… She never ate fast food. She hates chocolate. She hates anything with added sugar and when she adds sugar to her meal it's not even half, it's like a quarter of a teaspoon. [She] would purposely go out of her way to not use certain [ingredients], and I think that kind of just spoke to her character. She was just really focused on making sure we were eating good food, and then also the whole thing of eating together. She really believed in having everyone sit down at the end of the day and just be a family. Because we're obviously all over the place during the day: we're at school, my brother's at sports practice, it's not like that. And both my parents worked growing up, so at the end of the day she always just wanted us together. And the funniest thing was like she always complained about having to cook after coming home from work: like the "second shift" sort of situation; she'd always complain about it. But she said that she does it purposely so we could be a family.

There is some implication here that without a meal together at the end of the day, then they could not be a family. Ava establishes an interesting dichotomy: a healthy meal with family was not purely a function of a family, but the very definition of one. In this way, family is not something you are, but rather something you do; a lived practice, a verb. To this end, her mother felt a constant pressure to provide a compulsory meal for her busy family, despite the fact that she had worked a long day herself and was not necessarily looking forward to the duty. To her mother, seemingly benign experiences such as afterschool sports practices and eating out at restaurants were actually viable threats to their familial construct.

It was a common trend that the burden of familial preservation, whether by prioritizing communal meals or providing the proper nutrition to live long and healthy lives, was not equally

distributed. Parents, naturally, shouldered much of the responsibility. But for as much as dinner was a glue to hold families together, it could also be a cause of tension.

> *Amanda: I just remember growing up my mom being very much a stickler for foods. She would get kind of upset, because she would make us eat healthy things. And she would basically spend hours in the grocery store, looking through the ingredients. When I went shopping with my dad, he would say, "Pick whatever looks good." And so I always remembered [that: with] my dad alone, it's more fun to go shopping. But it wasn't until middle school, when I realized that my mom was really doing something good for our family. And I started to appreciate that she was going through the effort to look through the ingredients and to be conscious about what she was buying at the grocery store. So my dad was the one providing Pop-Tarts and bad cereals and things like that. And my mom was the one that would buy like whole grain bread, and she would buy all of the vegetables… And she was actually really good at cooking, because she had to use such a wide variety of things.*

Family nutrition was not just a parental concern. In particular, students who had historically struggled with their weight or who participated in athletic competition growing up, eating healthy food was a priority.

> *Marisa: I was always health-conscious because of ballet. So I was always watching documentaries. I think I was first interested in vegetarianism because I heard it was healthier to not eat meat, and then from there [I] started realizing the environmental benefits.*
>
> *Peter: Did you feel any different when you made that transition did you notice any differences in how you felt or in your body?*

Marisa: I think like my mentality towards food became healthier. [In] ballet there's a lot

of eating disorders. So I started focusing more on eating healthy rather than eating less

calories if that makes sense.

Marisa was not the only student who had become vegetarian for health reasons, only to

become more committed to the lifestyle or to transition into eating vegan, based on their

newfound interest in environmental issues. These transitions came with a number of difficult

adjustments, many of which I will discuss in later sections. However, one element that is

important to include here is that the students were not the only ones along for the ride. Much like

my own high school brigade against high-fructose corn syrup in which I cleared my mother's

pantry without consent, when a teenager develops an extreme perspective on what they are

willing to consume, this radical behavior can be at odds with the familial norms. Most, of the

students who took a journey or sabbatical down the path of veganism were still dependent on

their parents for buying their groceries and preparing at least some of their meals. Some parents

were more accommodating to these new diet requirements than others. And it was not

uncommon for families, even those who were willing to entertain new fixings, to serve a hefty

side dish of chastisement as retribution for the abnormality or inconvenience. But not all students

experienced these rocky transitions.

Maggie: I think that who your parents are makes a huge difference because I have seen,

in a lot of scenarios, parents not being supportive of their children making different

dietary choices. So I know my parents are both pretty liberal and pretty out there. So

when I went vegetarian my mom went wild, and she loves to buy all these different

alternative products for me. And she'll call me for Thanksgiving and make sure that I

have tofurkey and whatever. So I can see why for other families it's not the same and it

makes it so much more difficult.

When it came to preparing dinner, it was not always the parents who accommodated the needs of their children. Cynthia, for example, took an active role in addressing her father's health issues by researching different types of food he should be eating and having her mother incorporate them into that week's shopping.

Cynthia: My dad would get sick sometimes and then I would look up different fruits and vegetables that prevent [the illness] or steered towards [getting] better…

Peter: How did that inform what you ate as well or was it just using a food as medicine?

Cynthia: No I started eating [like that] because I was like, "Oh, I don't want to get sick. This is good for me." So I started learning about like different fruits and different vegetables, and I like to tell my mom and then she would start getting them…

Peter: What did you use primarily as resources?

Cynthia: Just pure Google.

While Cynthia attributed her ability to care for her family to the effective search parameters of Google, the transition she describes is actually much more significant. Caring for her father in a way that he could not, or did not care, for himself, represents a foundational switch in the dynamics of their relationship. Cynthia's family, seemed to take this transition in stride, embracing the new ideas and perspectives of their daughter and readily applying them to their established practices.

Out of all of the students I interviewed, none of them said that food was an unimportant part of their lives. But that did not mean that they necessarily knew how to cook or eat in a way that reflected their stated values. Cynthia relied on Google to address one particular concern

about her father's health, and those lessons quickly translated into better eating for the whole family. Other students relied on books, documentaries, or YouTube videos and blogs to learn about their specific interests in food. Besides Ava's ten-year internship in her mother's kitchen, no student had had any type of formal education when it came to food. And nor had their parents, the ones charged with the thrice-daily task of feeding them.

> *Sophia: So we buy whatever food was the cheapest option, but then my aunt would tell my mom, "You should eat organic. You should drink raw milk. You should buy from the farmers market." And my mom took her advice and did all of this. But like she didn't really have a reason. I asked her "Why do we need to spend [three times] more to drink raw milk?" I didn't understand why. But she was like, "Oh, that's healthier for you." And I was like, "Why?" She's like, "It's just healthier, okay?"*

Other factors, such as financial resources, food availability, and nutritional knowledge played significant roles as well:

> *Lisa: Okay, I ate a lot of fast food because first of all, we didn't have... My parents worked a lot, so like they were always on then run… So we always just passed through McDonald's and stuff. And we didn't really get very nutritious food, and I feel like my parents don't have the best knowledge of nutritious food at all. We're still working on it a lot.*

Listening to students talk about their culinary upbringing, or lack thereof, and the relationship they had developed with food, made me acutely aware of the enormity of the production of feeding a human being. We eat often. And putting a meal together for a group of five or so after a long workday is a monumental task, not to mention ensuring that it is healthy and delicious and satisfies the dietary requirements of each person. It is no wonder that fast food

companies and food production corporations spend billions of dollars per year making the process of feeding a family more convenient and that society, by and large, takes them up on the offer. Students, parents, everyone did the best they could for themselves and the ones they loved, despite the fact that most day-to-day decisions were based off different information and different value systems.

Student Backgrounds in Food Education

While many students developed varying skillsets and knowledge under the daily tutelage of their parents, most actually took it upon themselves to learn more about food and the environment throughout their high school years. This exploration took the form of science classes in school, personal booklists, and, famously, Netflix documentaries. The more formal options, such as AP environmental science, were not universally available to all students who might have been interested.

> *Cynthia: San Bernardino is one of the poorest counties in California in terms of sustainability and learning about the environment. I never had… It's not really… There's not many trees… I don't know how to describe [it]… Anyways, the high school I went to didn't offer environmental science or any of that. I took biology and it did help a little bit in the first quarter of the [Cluster] class, but I know some students told me like they found the Cluster easy because of AP environmental science... So I never really had any exposure to topics regarding sustainability or food.*

It was interesting to hear Cynthia grapple with the concept of ecoliteracy as a privilege. To Cynthia, environmentalism is green space. It is trees. It is the freedom to study an academic subject that is not required by the school. A subject that is reserved for rich kids in the city and not, as she puts it, for those who live in San Bernardino.

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However, just because a school offered a course, did not mean that every student took it. In Chapter Two I make the argument for universal ecoliteracy in higher education, but the same could be said for high schools and earlier academic experiences. Learning about the environment and ecology and considering how humans fit with it all is an odd luxury. If it is not a financial luxury, it certainly is viewed as an academic one by some students.

> *Laura: They did offer Environmental Science in my high school, I just didn't take it. I took biology instead, but the classroom seemed really cool - what they were learning, and when I came here I thought it would be cool to learn more about it.*

This was the sentiment of most students with regard to environmental studies: "I don't know much about it, but I would like to learn more." However some students stumbled into their ecoliteracy development a little more coincidentally. Audrey was one of those students.

> *Audrey: I feel like I have a background in some of it, but I did learn a lot of new material this year. So senior year [of high school] I took this really cool French class, and it's funny because it was a language class, so we were supposed to be learning a lot about French language. And it ended up being a social justice class where we would talk about current events and [do] a little bit of French. We talked a lot about diet, and I decided to become a vegetarian based on the stuff we learned and the documentaries we watched about environmental science... Eventually there was a guy in my class and we bonded and ate lunch together and finally he persuaded me to jump the boat and be vegan. I've done a lot of research, so I came into UCLA knowing that I wanted to take an Environmental Science class just to get a more scientific background, and this Cluster was perfect.*

I was not able to tactfully follow up on what happened with the lunch date who had such a profound impact on her life, but one thing that had obviously stuck was her new developing interest in environmental issues, particularly in their relationship to food systems. This newfound interest had spurred conversations, lunch dates, and further research beyond the classroom. How many educators dream of the day that their students resonate with course materials so veraciously that they continue to pursue academic studies in the topic far beyond that which is expected or required of them?

For such inquiries, a number of students turned to or happened upon documentary films – particularly those found on Netflix.

Jade: We watched a lot of documentaries on Netflix about food and it was mostly the environmental impact, but also like the social impact of who is harmed by the production of meat. Or sometimes, who are the people that I don't see that live near the pig farms that have fertilizers like pig manure sprayed right next to their house. [It] just seemed like such a terrible system that I just didn't want to support it.

Peter: Do you remember which particular videos? It sounds like there was maybe more than one?

Jade: Yeah, I watched a lot. I watched most [of them]. I watched a lot. I've watched 'Food, Inc.' two or three times. I've watched 'Forks Over Knives.' I liked that one. I think that was it. Some of them did talk about the adverse health impacts of [meat] consumption, you know, what we talked about in the Cluster. Why am I forgetting the word…: antibiotic resistance. But also, I'm not even entirely sure if you know personally if the adverse impacts and consumption on your body are true, but I just figured that's another reason not to [eat meat] if it is [true].

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The prevalence of Netflix as a catalyst for dietary change was both fascinating and troubling. The dramatization of scientific research has both the ability to captivate and mislead audiences very effectively. A common trajectory for students seemed to be as follows: initial documentaries about health and or physical performance would lead to future cinematic experiences about environmental concerns. To a similar effect, perhaps I could have written a study titled "*Netflix to Thought: How Documentaries Change Diets and Create Environmentalists.*" Ultimately, students reported a wide range of newfound perspectives depending on the documentaries they had the proclivity to watch. Jade continued to express her concern, especially regarding one film in particular:

> *Jade: [It was] not very trustworthy [out] of all the documentaries. I'd just analyze it for believability. I was so annoyed because this particular documentary… I went online and it got good reviews! And I was just so surprised and [it] just seems like a large infomercial packaged into a truth-telling documentary.*

Other students turned their attention toward social activism. Thomas, for example, started a recycling club for his high school. Previously, the school did not recycle. It makes you wonder what they did with all those fowled-up Latin quizzes and such. Fortunately, the new recycling club acquired a giant pod to store the school's recyclables, which they delivered to a plant at the end of the year. The money they were given from bottle returns was donated to the school's special education program. Not too bad for a bunch of seventeen-year-olds. Thomas' enthusiasm for environmental efforts only grew from there, and he created a Lettuce Club: a hot dog eating contest, but with lettuce.

> *Thomas: And I got real excited, so for my senior year I created a Lettuce Club. I encounter some problems: liability issues; teachers not wanting to advise a program*

where they ate a head of lettuce as fast as possible. It ended up going rogue. At the Club

Rush, like an Activities Fair sort of, where everyone gets to sign up for clubs, I couldn't

get a table because I didn't have an official club. So the night before I made two posters,

and I slung them over my front and my back. And I walked through the Club Rush, and

all the info was on there. I became sort of the talk of the town. And then The Man came

over and said, "You can't be wearing that here." I said, "What's the matter? I can wear

whatever I want, right? As long as it's not distracting in class?" He wouldn't have any of

it. So he confiscated it from me, and I felt like a martyr. He was removing it from me, and

I was like, "Go ahead, do it." The people had already seen me. They silenced me too late.

It was too late for them. It was at that stage where everyone already knew what was

going on. That was the most exciting point of it. The actual Lettuce Club was nice, but it

was sort of cozy in that all the people who showed up were just people that I knew. All the

people who competed were seniors which was a problem because Lettuce Club relies on

underclassmen to stay alive. The gist of it is that the winner of the competition becomes

the president the next year.

Peter: Sounds reasonable.

Thomas: Sounds reasonable. But naturally, if all the competitors are seniors, it defaulted

to a junior who was watching but not competing. Her brother was competing. I gave her

the crown, but... it was unlikely that it was going to continue happening at my school. I

thought: no worries, once I get here [to UCLA], I'll just join the Lettuce Club that they

had.

I share Thomas' story because it is a hilarious story of rebellion. But more importantly,

Thomas demonstrates the power of the individual in communal and systemic change. As a

junior, he started a recycling program at his school, before any adult or the administration decided it prudent to do so. Not to mention, that this endeavor created additional funding for another school program. His next contribution, although he did not invent the concept, was to endow his school with a vegetable eating contest, Lettuce Club, in which participants would devour an entire head of lettuce as quickly as possible. One could argue that, as a non-sanctioned club, the debauchery of Lettuce Club was merely for sport. But in light of Thomas' prior achievements at the school, this perspective is incomplete and without nuance. As a parody of a traditional hotdog eating contest, which is no doubt a relatively grotesque and not particularly sustainable endeavor, Lettuce Club offers a clean, environmentally friendly alternative, free of nitrates, preservatives, or other chemicals that may cause the contestants long-term physiological harm. It is farcical consumption. More importantly however, Thomas has a natural capacity for bringing people together in ways that are productive, ethical, and enjoyable. In a world that often views the environmentally conscientious option as the more expensive, at times pompous, and less enjoyable alternative, these qualities in a student leader should be cherished.

While Thomas was disappointed to learn that UCLA unbelievably did not already have a Lettuce Club, there was little in the way of him bringing the group to campus. Under the new and improved name, Lettuce Feast, the organization held its first annual competition in the spring. No stranger to exorbitant entertainment budgets, colleges and universities would do well to note that Thomas was able to host a hilarious, inclusive, and effectively carbon neutral spring social event at the cost of five heads of lettuce.

One thing all of these educational pursuits have in common is that they were not institutionally motivated. Rather than students taking advantage of environmental or ecological education opportunities offered by their schools, each took the initiative to pursue a better

understanding on their own. Whether their incentive was social notoriety or Netflix and chill, student were, for the most part, left to their own devices in exploring these interests. From an institutional perspective, these are significant opportunities left unattended. And while it is convenient to think that students have all of these resources and initiative, and that 'they're fine,' it is important to note that we do not treat their capacity in mathematics this way. We do not burden students with the responsibility of figuring out numbers on their own. Why should food or environmentalism be any different?

> *Audrey: I went 15-16 years just eating all of this food. I never questioned what was in it, how good it is for me. And then, when you go through such a quick transition, it's like "woah." It's not hard to say no because I can just be like, "no, I'm not eating nachos." But I feel like it's going to take a gradual transition for probably the rest of my life for the temptation to go away.*

Charlotte shared a similar experience:

Charlotte: I was pescatarian from January 1st of 2017 to December 31st of 2017... I knew it was better for the environment not to eat [meat for] moral and ethical reasons. But I didn't really know the environmental statistics... I knew red meat wasn't good for you. I feel like you've probably heard it on the news recently, they said, "Red meat does have its benefits," and it just goes back and forth a lot between like being good for you or bad for you.

My purpose here, as with the larger context of writing this, is not to judge the appropriateness or effectiveness of peoples' decisions, but rather to understand the thought, perspective, and awareness that goes into making them. If you put aside the question of whether eating vegan or pescatarian is medically advisable, the certainties I derived from both Audrey

and Charlotte's experiences is that they made significant, life-changing decisions with real consequences on their health and ecological impact, but both admit to doing so with wavering degrees of enthusiasm and confidence in the evidence they had considered. Depending on the specific source (television, social media, a book), the relative topic (health, ecology, environmentalism), and the many possible incentives for that source to present information that supports a particular narrative, in-depth analysis on any of these topics could lead a student to drastically different conclusions. Health, ecology, and environmentalism are multifaceted constructs. And the conversations about each become infinitely more complex when considerations for what is best for an individual are carried out with simultaneous considerations for society, the planet, and other beings. Most students in the Cluster, and whom I interviewed, were not vegan. However, it is interesting to note that even the students who ascribed to more restrictive diets, were still confused about why they were doing so and the relative cost-benefit analysis of their choices.

Vague and conflated depictions of scientific research by media sources were not the only interpretive layer that added confusion. Other special interests such as corporate advertising, industry lobbyists, and religious groups each had their say on a wide range of health and environmental topics. Noah described his experience at a Christian School in the Dominican Republic, which heavily flavored the science curricula with convenient religious assumptions.

> *Noah: Growing up in a Christian school, you kind of have to think twice about*
>
> *everything. Because you hear a lot of radical stuff sometimes, so you have to form your*
>
> *own opinions, you know. And then also science was always changing. They were telling*
>
> *me eggs are healthy and then, all of a sudden, eggs aren't healthy. And now eggs are*

healthy again. Everything I read might just end up changing, so I take everything with a

grain of salt… I don't really know what is true and what's not reliable.

Noah described himself as hypercritical and skeptical of appeals to authority. While I certainly do not advocate for gutting high school and elementary school science programs, perhaps there is something to be said for eliciting students with such a critical distrust of information sources. However, for each critical thinker like Noah, you would have to wonder how many students learn the polar opposite: the ability to accept information at face value. Noah describes another detrimental possibility, which is decision paralysis. If no information can be trusted, then there is no basis for logic.

Changes in Ecological Perspectives

The findings up until this point, have examined student experiences, influences, and education, prior to their involvement in the Cluster Program. What follows is a discussion of student experiences during the program and the perspectives they developed. As they became aware of new information and ideas, they began to integrate these new possibilities into their understandings and belief systems. The benefit of working with college students is that you can ask them directly about their experiences and, barring any misperceptions or motivations to the contrary, they will provide thoughtful and introspective answers to your questions.

In assessing his experience in the Food Cluster, Noah maintained much of his institutional distrust that I described in the previous section. I have to say, in a highly competitive academic environment that, at times, emphasizes grades and 'correct' answers to the detriment of creative and original thinking, Noah's critical perspective on the course materials was refreshing.

Noah: I've always tried to figure [it] out on my own. I think climate change is real. I

mean, I'm pretty sure it is after taking this Cluster, but before I wasn't really sure… So I

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guess what interests me is: are there any sustainable alternatives to eating vegan,

because and besides [the fact that I] just I wouldn't do it, I don't think you can get a vast

majority of people to become vegan, personally.

It was interesting to see that as Noah came around to this realization on climate change,

he immediately jumped to a relatively extreme position on the spectrum of sustainable food

choices. In reality, there are an infinite number of possible diets, each varying in their relative

degree of sustainability depending on how the food is produced and how far it travels. So the

dichotomy, vegan or not vegan, is not very useful when comes to individuals taking steps toward

more sustainable choices.

Other students also gravitated to large, overarching concepts, and faced similar

difficulties with applying these ideas to their own lives:

Maggie: The most interesting thing I [learned about was] the relationship between the

government and the economy… All the crazy statistics about how our food is being

produced, and how it's contributing to climate change. I kind of assumed it would be that

bad. But then it's still kind of shocking to hear… That was kind of discouraging though,

when you're constantly being bombarded with all these facts about this giant system. And

that it's all negatively impacting our environment. How am I as an individual going to

contribute enough to realistically alter that system? Especially at my age and especially

considering I don't even get to choose the food that I eat, because I eat from a campus

that buys the food, and I don't know where it comes from.

Maggie's sentiment of feeling overwhelmed was common, particularly at the beginning

of the year. While many students had general notions about the state of the world, they were

often disappointed to learn the degree to which environmental degradation occurs. Louv

describes this common sentiment in ecological education as "ecophobia," a fear of ecological deterioration. "'If we fill our classrooms with examples of environmental abuse, we may be engendering a subtle form of dissociation. In our zest for making them aware of and responsible for the world's problems, we cut our children off from their roots.' Lacking direct experience with nature, children begin to associate it with fear and apocalypse, not joy and wonder" (Louv, 2008, p. 134).

In addition to feelings of despair, students also expressed surprise at the relative role of food systems in this process, compared to other more commonly targeted industries such as transportation. Maggie describes her interest in both the systems-level perspectives on the economy and the role of government in environmental issues, but these new revelations were met with despair that the power and role of the individual is seemingly insignificant.

Laura: I never really gave much thought to the role of agriculture in the environment. I just thought it was a necessary evil that we had to feed ourselves. I felt like the Cluster [course] really opened my eyes. I guess that there's another way for us to be sustainable and still keep ourselves here. I guess the biggest thing that I learned was basically just about corn and soybean production: just how dependent we are on it and basically it's a cash crop for the United States, and it doesn't have to be.

As one might suspect, the class seemed to have a different effect on students who had studied similar material previously and those who were new to it. For students like Laura, the lectures on monoculture farming offered drastic realizations about the global food system. Students who had prior experience seemed to have less dramatic revelations the second time around.

Charlie: The first two quarters was covered a lot by AP Bio and by, I suppose, outside knowledge of the subjects. My mom always liked reading the kinds of books we read in the third quarter of this class, so she used to give me a lot of them. Because I had read similar literature I felt like I had an okay understanding of the material before me, but I did still…. I learned more third quarter than I had the first two quarters in terms of new information.

It perhaps comes as no surprise that Charlie felt that he learned the most in his spring seminar. The nature of the spring electives is such that students are able to discuss and actively engage with the content more readily. These later interactions are perhaps more rewarding because the entire class has the contextual background from the first two quarters of primarily lecture classes. For the most part, students shared a similar gratitude for the impact of the course on their lives, understanding of the world, and their general outlook.

Amanda: I honestly think that the Cluster was my favorite class of this entire year. It opened my eyes to a lot of different perspectives and it showed me that there are so many things to be learned, so many things that are unknown. But exploring the solutions and options we have now is part of progressing toward a future that is more sustainable… The more I learn, the more I realize what I don't know… that there's so much that I'm unaware of. There's so much that we haven't explored yet. Its a very humbling experience to be educated, especially at UCLA… There are so many perspectives so many disciplines, so many people that are just extremely intelligent, who are leaders in their research. And you realize that even they don't have answers to everything.

Amanda articulates both an empowering and troubling experience. Learning about grave problems is an ordeal, but to go one step further to learn that these issues not only allow for but

invite your opinion is an uncommon experience for undergraduate students. When it comes to issues of the environment and the Anthropocene, there are no definitive answers.

> *Amelia: I feel like we went more in depth [in the third quarter], so I got a better understanding. If someone asked me, 'how does the climate work?' I can explain it better. I feel like I have more credibility now… Overall I have a better understanding of the environment and agriculture than in the last quarter. In the seminar we covered like a lot of different topics and a lot of information that was really valuable. It's the kind of topics that we all think about but really have no depth [of knowledge to draw from] when we talk about it because we just haven't simply put the time and effort to read about then and do research.*

In this case, Amelia felt that she was able to better inform some of her previously held ideas about environmentalism by reading more and by developing her understanding of ecological systems, such as climate. As student understandings of environmental issues became more nuanced, they started seeing the world in new ways:

> *Maggie: It's a huge cultural thing. [You] never notice how often meat is on the menu at every restaurant until you're a vegetarian or vegan… So if it's such a cultural norm, then [people] don't feel guilty participating in it. And especially if it tastes good.*

As a somewhat reluctant vegan, Maggie was aware of the prevalence of animal products in her cultural context. She assumes that people do not feel guilt due to the wide availability of meat products in stores and on restaurant menus. While I can appreciate that having fewer meat options in favor of vegan friendly choices would make it easier to be vegan, I am not sold on the idea that meat scarcity would foster more widespread guilt. If killing animals for meat causes guilt, then we would expect less relative levels of guilt from fewer meat options. However,

perhaps the equation is more complicated than this, and what Maggie is describing is the reaction to specifically choosing meat in a hypothetically, non-meat-oriented culture. Maggie went on to describe a friend who, when confronted by animal rights activists about the ethical necessity to eat vegan, he agreed with them on all accounts. However, he was still unwilling to change his lifestyle. Whether we were talking about eating healthier or eating more sustainably, a commonly shared incongruity was, 'I know I should, but I don't or just don't want to.' But Maggie's perspective on her vegan lifestyle in a non-vegan context is emblematic of the complex web of incentives and motivators that drive different types of behavior. For other students, the motivating factors for a more sustainable diet were not centered upon the guilt of consumption, but rather the reverence of a deeper connection to the natural world.

> *Lisa: Even to go into the garden was crazy to me. Because I've never seen food grown. I was just so embarrassed. I'm like such a city kid right now. I've never seen what a tomato tree looks like, just because, you know, it's not around me. But it was so interesting to see that, and I feel like more people should know where their food is coming from.*

It was fascinating to hear students' emotional responses from simply stepping into a garden for the first time. The UCLA vegetable garden is a small batch of twenty beds or so, tucked away on a hill behind the dormitories. This brief class excursion to the northside of campus conjured equal measures of embarrassment, wonder, and harmless confusion about tomatoes. A bold cocktail to be sure, and the story was told with a great deal of giddiness. She had seen behind the corporate veil of packaged convenience, and all it took to facilitate this revelation was for the Gardening Club to plant some swiss chard on a remote campus hill.

These new, accessible, and compelling lessons on food were effectively and quite naturally translated into broader understandings of the natural world. In their discussions of food,

students talked about soil nutrients, toxicity, and nitrogen cycles. Conversations about meat consumption became conversations about ethical and efficient farming practices and climate change. A section on fishing led students to learn about oceanic policy, waste management, and acidification. It is impossible to talk about unprocessed, "good food," without discussing the systems and resources upon which it depends; and, transitively, the people who eat it. If they care about food, which all the students did, then they soon realized that they also care about sustaining the ecological systems that support it. And once they understood that connection, they were also interested in optimizing their participation in the process.

> *Kevin: I never really understood how food is made, and what constitutes "good food."*
> *And in terms of sustainability, I didn't understand what it meant to be sustainable. My*
> *family recycles all their plastics, and so I considered them sustainable. I realized there is*
> *a lot more to sustainability than recycling. There are a lot more components*
> *psychologically, culturally, and individually that really shape how we can call ourselves*
> *sustainable…*
>
> *Peter: What were some of the things you learned over the course of the year that stuck*
> *with you?*
>
> *Kevin: Just how interconnected nature is… How the Earth seems to be in a very delicate*
> *balance, and how human intervention turned that balance in more ways that we can*
> *realize.*

Chapter Summary

This chapter examines the impact of a sustainability-centered curriculum on college student ecoliteracy. In order to assess development in this capacity at the individual level, it was important to understand their prior familial and educational influences. These foundational

elements of childhood and early adulthood informed the worldviews and habits that mediated new understandings of ecological systems and their individual impact on them. Each student I interviewed reported surprise about, and often an intellectual gravitation toward, at least one particular idea around food systems or sustainability. Whether it was resource consumption, waste production, greenhouse gases, or over-fishing, students connected with concepts and research that informed their particular diet and habits. That did not always mean that assimilating the two was easy. Conflicts readily arose between common perceptions and scientific research and between health or cultural influences and sustainability initiatives. The next chapter illustrates the ways students grappled with these incongruities.

Chapter Five: Integration of Ecological Perspectives

Having developed more nuanced understandings of ecological systems and the industrial processes that provide their food, students were faced with the complicated task of incorporating these new perspectives into their lives. For many, this process was easier said than done, as doing so often required the development of new habits and practices that were not always compatible with their external context or even contradicted other internal values. The narratives shared in this chapter are designed to address the second of three research questions, which is: How do college students integrate ecoliteracy into their decisions and behaviors? I have grouped the response to this question into several themes that work to address various aspects of the question. The first section, Food Identity Politics, explores many of the social experiences that both enhanced and mitigated the application of ecoliteracy in their lives. The following two sections include narratives of action, and include the ways that students said that their lives changed as a result of this educational experience.

Trophic Identity Politics

In my second year of graduate school, I found a linguistics class on political humor and somehow convinced my department chair that it should count toward my degree in education. As a retired class-clown, I thought it would be fun to deconstruct years of psychological warfare and disruptive tactics in an ironically formal educational setting. And it was. But one of the lingering side effects is that when I hear jokes now, I pay special attention to them. The very nature of a joke requires that it is easily dismissible as such, making it a useful tool for honest critique. Humor cannot be baseless. It must connect with reality or some established narrative. There is always a kernel of truth or it is not funny. So, naturally, when Ava shared her friend's joke, I began looking for the kernel:

Ava: 'How many vegans does it take to change a light bulb? None, because [the] bitch

can't change anything.'

It's so terrible, but that's the one joke [my friend] repeats to me all the time… And I tell

her, I'm not vegan, and she's like 'but you're acting like one.' Because now I'm more

conscious of the world around me. I usually didn't care if someone ate beef... I ate beef

all the time too, but now I don't eat beef because that's one the thing that really

resonated - it just stuck in the back of my head. Shit that [joke is] terrible.

I agreed, it was pretty cutting. In spite of the fact that Ava was not strictly vegan, her

transition to what she believed constituted a more thoughtful and conscientious diet was heavily

policed by her nameless friend. The scenario highlights the ways in which student decisions

implicitly affect those around them and not always in a positive way. It is unclear from the

context why Ava's friend felt threatened by her new behavior. Ava says that she "didn't care if

someone ate beef" in the past tense, leaving her present attitudes and concerns unaccounted for.

Her friend may have felt inconvenienced by having to accommodate the more restrictive diet, or

she may have felt guilty about her own eating habits in comparison. Perhaps she did not want

Ava's identity to change in a way that might affect their relationship or force her to reconsider

her existing perception of what it means to be vegan.

The underlying premises of the joke are pretty straight forward. On the surface, it sets up

as a cliché 'dumb' joke, hypothesizing that one person who eats a vegan diet would not be able

to complete the simple household chore of changing a lightbulb – otherwise, why ask the

question in the first place? The delivery of the punchline is much more poignant, however,

suggesting that there is no number of vegans that would be enough to complete the task. The

ultimate twist of the knife is the underlying belief that vegans are so stupid that they attempt to change larger socioeconomic systems that they are entirely incapable of affecting.

This is the kernel of truth.

There is also some derogatory, sexist rhetoric sprinkled in for good measure, offering an additional dimension of unbridled critique on the stereotypical vegan identity: a woman who (falsely, according to the pretense) assumes she can make a difference in the world. No doubt this is harsh judgement from a friend, and it puts Ava on the defensive. Ava's insistence that she is *not* vegan further emboldens the assumed premise that this would be an undesirable identity. Even though Ava does not ascribe to this identity, her decisions and exploration in alternative eating habits are additionally checked by her friend's retort that she is "acting like one;" an equally unacceptable condition.

Under the pretense of a lighthearted joke, Ava's friend is able to interrogate, with regularity, Ava's decisions about the food she eats. While this may seem like relatively harmless banter, it is important to unpack the foundational clash of worldviews and the aggressive application of hierarchical dominance. As discussed in the previous chapter, dimensions of student identity that form decisions about food consumption are fluid, but there are significant implications for students navigating these preferences. Kahn (2011) explains, "Part of what makes pedagogy against microaggressions so difficult is that these acts are often perpetuated by people who are unaware of the representative nature of their behavior and who may not even consciously intend to communicate hostile messages through their actions" (Malewski & Jaramillo, 2011, p. 58). In the narrative shared above, I would surmise that Ava's friend *does* *"consciously intend to communicate hostile messages,"* but what is not entirely clear is why she would choose to do so.

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So whereas some students experienced positive changes in their relationships due to their new perspectives on food, sustainability, and global systems, other students found that their new ideas and practices incited tension or conflict in their relationships. Furthermore, the joke highlights a key recurring concept that caused significant confusion throughout the year: What is the relationship between diet and identity? In Chapter One I make the argument that, at the molecular level, we actually become what we eat, but the sociocultural level is more complicated. At what point does a behavior, such as not eating a particular type of food, become a socially ascribed identity? To Ava's friend, Ava was a vegan, not because she ate a vegan diet, but because she was "acting like one." This notion vaguely implies a set of attributes beyond the food Ava chooses to consume and also a relative assessment of value. The statement suggests that, to her friend, exhibiting a vegan philosophy or ascribing to vegan practices, puts Ava in either a privileged or inferior position—either, or both, of which are seemingly unpalatable to her friend.

Amanda described her experience navigating these constructs as her diet changed.

Amanda: I described my diet as being pescatarian, vegetarian, [then] vegan... It was basically one long transition towards reducing my meat intake. I agree that these labels aren't necessarily positive, and I actually don't tell people I'm vegan, because I don't see myself as vegan. My mom actually had a big influence on me by telling me, "don't do this religiously…" Instead of calling myself vegan, I usually just say, "I enjoy mostly vegetables."

In class, the majority of ideological forays were waged over the identity constructs of meat-eating. The concept of killing animals for human consumption tugs at complex web of perspectives on human evolution and cultural influences on diet, the morality of hunting and

farming animals, the health consequences of an omnivorous diet, and the environmental impact of widespread meat consumption: a delicate, highly charged storm of ideas and possibilities.

> *Sophia: I don't think I would ever choose to identify as vegan. I don't really agree with the ideal: 'They're animals, they deserve to live.' They're animals, but we have to eat them, but we could change the treatment of them. But we shouldn't just say, 'We shouldn't eat them at all.'*
>
> *Peter: So why do we have to eat [them]? I'm going to push you a little bit on this, why do we have to eat animals?*
>
> *Sophia: Well, I don't know. In the beginning we were hunter-gatherers. So we eat whatever we found [like] plants, but we also ate animals. I think our bodies need the protein that comes from meat. So I don't think we should deprive ourselves of that.*

As one of the first assignments the class read and summarized *Land, Irrigation Water, Greenhouse Gas, and Reactive Nitrogen Burdens of Meat, Eggs, and Dairy Production in the United States* by Eshel, Shepon, Makov, and Milo (2014), which compares the relative environmental impact of common animal food products. By all measures accounted for in the article, and by a significant margin, beef is the least sustainable food. So for college students who were looking to actively reduce their carbon footprint, addressing their intake of red meat was an easy place to start. As such, the article proved to be a likely catalyst for a number of students who decided to start eating vegetarian over the course of the year.

> *Charlotte: This was the first thing we learned with Eshel, that beef uses so much more resources than everything else. Honestly, beef is my favorite. I love red meats. So that was a huge motivating factor for me just cut down my intake of that. I've had a good run for three months now of eating meat again. So I'm probably going to go back to not*

eating meat, probably after finals. At this time I think I'm doing it for the environment.

We learned so much in the class, and I literally just wrote a whole research final paper

on being vegetarian, so I feel kind of bad if I don't listen to my own advice.

Cynthia also reduced the amount of beef she ate and became more conscientious about other mysteries in seafood production:

Cynthia: I eat less beef. I encouraged or I'll tell my friends little facts about their food

that they're eating or the effects it causes. I remember writing about fish and how it's

mislabeled, and I'll tell my friends when we're out getting sushi. I'm like, "Did you know

'this' percent is mislabeled?" And they'll be like, "Cynthia, stop."

Cutting out beef offered a high reward in terms of ecological impact, without necessarily interrupting or even significantly altering students' dietary habits. Without much effort, students could switch out steak for other, less resource dependent meat options while forgoing the social implications of opting out entirely. But this step was often the first domino in a long chain of dietary decisions, and many students continued to refine their diets in other ways.

Shey: So throughout the year I've definitely started eating a lot less red meat. That's just

been one overall thing. A lot less red meat, a lot more fresh fruits and veggies, and I like

it, so it worked. And then for a solid like 3 to 4 months I cut out all processed sugar. Not

processed sugar, but I didn't eat any sweets and that all felt right. So I did that and that

was really good, and just trying the different stuff from the book and seeing how it made

me feel afterwards was really good.

One of the benefits of studying food is that the return is immediate. When students study Shakespeare, they have to wait until their exam to demonstrate their knowledge, lest they get arrested for prancing around the quad in revealing tights or find themselves socially ostracized

for texting in pentameter. Alternatively, the best opportunity for students to apply newly acquired knowledge of food is their next meal. Each meal offers unexpected prompts to retain the information and also an opportunity to decide whether they would like to change their habits because of it.

In the wide spectrum of ways in which students integrated ecoliteracy into their lives, Kate was more steadfast than most.

Kate: The one thing I got from the whole program was, eat less meat. Well, don't even eat less meat, don't eat meat at all. If people were vegetarian and vegan… I mean, I eat meat, but I was wondering if there were different ways. I'd like to learn more about sustainably eating meat instead of saying, "Cut out all meat" in and of itself. I always felt like everyone was just constantly bashing on the meat industry, and it's like don't eat meat altogether because that's how I feel and you all shouldn't eat meat. They're all like "I don't eat meat, none of y'all should eat meat. This is the lifestyle to go [with]. It's so much healthier." But I'm not dying. I don't have severe illnesses from eating meat, so I don't think it's that bad.

In the context of students describing how much their lives have changed and the relative impact this educational experience had on their understandings of the world, Kate's comments seem stark in contrast: "I'm not dying… so I don't think it's that bad." What she is ultimately saying is that she is unwilling to change her lifestyle, which in this context just means that she is going to continue living and eating like an average college student. From that perspective, it is a completely reasonable thing to do. Furthermore, to her credit, she also cites exactly where the course lost her. As she is unwilling to give up meat, Kate would have liked to learn about other steps she could have taken toward more-optimal habits of meat consumption.

For the average college student, critically examining their regular intake of industrially farmed meat products brings forth the same questions of hypocrisy as the Nike shoes that both Amanda and I were sporting. For the most part, animals live and die out of sight, and the prepackaged chops in grocery stores and the grilled steaks served in restaurants do little to prompt further inquiry into the process of how it got there. These thoughts are easier ignored. And just as I was not advocating for Amanda to *not* buy Nike shoes, I did not encourage Kate or any other students to stop eating meat. I eat meat, beef included. But what I do think is important for myself and students is the inquiry into the processes and systems in which we participate and the active reduction of the hypocrisies we enact.

This section may have read as a general endorsement of veganism for college students, but it is not intended as such. It is true that many students, based on the information they encountered from the course, decide to reduce or eliminate certain types of animal products from their diets. But some students, given the same educational experience, actually drew entirely different conclusions. Having read texts on evolutionary biology and Indigenous diets, Audrey developed new perspectives on her own veganism practices and actually ended the course less adamantly vegan than she began.

> Peter: You went vegan senior year [of high school]. Has that waivered at all?
>
> Audrey: Yes actually a few weeks ago, I was like, what am I doing this for? I just had this middle-of-the-year crisis.
>
> Peter: A few weeks ago being December?
>
> Audrey: No, two weeks ago... I don't know. Is this beneficial for me? Or am I just holding out on all the foods I don't eat like cake and cookies? Because I don't eat anything with dairy in it, so the typical nachos and burger and burritos; those are foods that I liked to

eat when I had a regular diet. Not that I kind of started to miss it, but I was like, 'Is being

vegan worth the food I'm not eating?'

...Peter: What triggered you to start [questioning] something that you've been doing for

about a year? In terms of being [vegan]...

Audrey: ... There's a meat-eating propaganda and I've realized there is [also] a vegan

propaganda... And it's really interesting to see how those two interact and it's really

easy to be like, "I'm vegan now," and then follow all the vegan propaganda the reading

those books I had to take a step back and be like, "Wait a minute, let's do some science."

Audrey's story illustrates how ecoliteracy can inform a wide number of outcomes. While

most students consumed, or thought about consuming, less meat once they became aware of the

environmental impact of the industrial meat industry, Audrey actually softened her stance on

meat consumption. She realized that she had made decisions that, unbeknownst to her

previously, benefited particular corporations. Audrey realized that that the media diet that she

had consumed throughout high school sponsored a particular agenda and was therefore in some

ways detached from the scientific literature. For Audrey, ecoliteracy development involved

understanding the potential biases of scientific and nonscientific sources and questioning

corporate authority in pursuit of intellectual independence.

Ecoliteracy in Action

If students became more ecoliterate over the course of the year, then it would follow that

their enhanced ecological perspective would lead to subsequent changes in the ways in which

they participated in the system. And indeed, this was the overarching trend that I witnessed. As

students became more ecologically aware and empowered in their knowledge of sustainable

solutions, they proceeded to incorporate these new ideals into their lives. However, the degree to

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which students changed their behaviors and the ways in which they did so varied widely. Common transitions included: altering eating habits, switching academic majors or minors to Environmental Science, and joining sustainability-centered clubs and on-campus initiatives.

The changes with the most significant and immediate impacts were often the smallest. As students paid more attention to what they were eating and how it made them feel, they experienced a number of health benefits.

Pete: [Based on] anything you've learned over the course of the year, did any of your behaviors change?

Charlie: The first two quarters of the Cluster definitely made me eat healthier.

Pete: In what ways?

Charlie: I eat so many more vegetables now.

Pete: That's a great thing. Do you feel better?

Charlie: Yeah, I feel better. I actually put on my freshman 15 my senior year of high school and then dropped it in college.

Charlotte had a similar experience:

Charlotte: I eat a lot less. I don't really care about shedding my weight, but before I got to UCLA I was 105 pounds, after the first quarter I was at 120 and that's a big weight gain just first quarter. I gained the "freshman 15" in my first quarter and that's because I was always at the dining halls… I don't have that switch that tells me to stop eating. I've never liked wasting, so I don't waste my food. I come in with my eyes bigger than my stomach, get like six plates of food, and sit there and finish everything... And so I think from the course, now I'm starting to eat less. I don't know if it was in the book or if it was in lecture, but [I remember the quote:] "[Eat] until you're eight parts full." So I'm trying

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to do that more — not eat so much where like I feel dead after every meal. Because that's how I ate before. I've actually I started that this quarter, and I've lost six pounds. So it's working.

Student health, as it pertains to learning, is one of the more overlooked aspects of education. If we view students as positive, active participants in social change, their effectiveness in this capacity is relative to their health and overall wellbeing. Healthy students can learn more, do more, and be more for longer. So despite the fact that "eating so many more vegetables" and feeling great may sound trivial, it is likely to have a profound effect on Charlotte's overall wellbeing.

However, it was not just the health benefits that took root. Amanda described the ways in which she aspires to be an example for herself and others when it comes to enacting environmental responsibility:

Amanda: I don't live entirely zero waste or anything like that. And there's a lot of things I can improve in my lifestyle. I know that I can. But I think it's more about intention and prioritizing. I think that by holding certain values and not just saying them and preaching to people, but actually acting on them makes more of an effect. So not necessarily going on being like: why are you Postmate-ing? or why are you throwing away that straw? But instead, by behaving in ways that you would wish other people would act, you make more of an impact. So I'm not the type of person to tell my friends that what they were doing is bad or horrible. I just kind of set an example myself, and I will take my plastic straw out or purposefully not order things that come in Styrofoam or plastic… And my friends are very aware that I'm environmentally conscious. I think I've had an effect on my roommates as well, where we actually [have] fun with each other to promote reducing

our waste. We have a trash bin and a compost bin and make the trash as small as possible and compost the majority of our waste. So that affected how we eat as well. Because now we don't eat a bunch of things in wrappers, we eat more things that are alive, like fresh foods; things that you could compost… I think everyone just feels better in the long run, because they feel like they are not being harmful to the environment.

As student behaviors changed, so too did their relationships. Changes in eating habits, use of 'disposable' plastics, or change in water or energy-use naturally impact the people with whom those activities overlapped. In Amanda's case, her attitudes around trash, recycling, and compost required, or at least strongly encouraged, the involvement of her roommates. However, Amanda also makes a very clear distinction between her own decisions and her expectations of others. Many students reflected on how careful they had to be when communicating their new ideas or habits to friends and family.

In the following narrative, Lisa describes how she tactfully broaches the topic of nutrition with her father by casually referencing readings from the class:

Lisa: Usually it's when he picks me up on Fridays to go back home. I would just be like, "Hey dad, so I'm reading this book 'The Jungle Effect,' and I would start to tell him what the chapter was about or [for example,] cold spots: places where there's not a lot of certain diseases...

Her father had suffered from a number of diet-related health issues, and the course material offered a means of broaching the topic in a more comfortable way.

He comes from a little village in Mexico, (where) they still [speak the] Indigenous [language]. I went two summers ago. And their food was so interesting: their coffee tastes so good because they get the coffee beans themselves and they make their own

flour… everything tasted so much better. I didn't want to leave. So I was just talking to him about all that because when he was over there he was very healthy, and then he came over here [to the United States] and a couple years ago he got surgery because he got diverticulitis, which is a stomach digestive thing where he had to get like part of his intestine [taken] out. So I was just talking to him about what he thought changed about his diet, and it was so interesting because he was actually interested too. We were able to talk about something that we usually don't [discuss], and then more about his background. It was so interesting to see how his diet changed from how he used to eat over there…

My mom's basically the one that drives what we eat at home most of the time. She's the one who cooks. She's the one that goes grocery shopping… I have told her about the changes we could make, but I'm not there to grocery shop with her right now during the week. So I'll get home and whatever's in the fridge, we'll eat, but I'm really excited to get back during the summer because that whole added sugar thing… was crazy to me. [It was] just a wake-up call to pay more attention to what we're eating. So I feel like I want to go grocery shopping with her and just be like, "Mom, this is the better option."

Charlotte found that with her friends, she could be more forthright.

Charlotte: I was having dinner with this guy I'm talking to, and he was talking about how like he has pre-diabetes and high blood pressure or whatever and I open the book, and we're reading about good diets, and I was like, "You know, I'm going to give this book to you after I'm done…" Yesterday one of my friends told me that his brother has Crohn's disease. And I opened the book; incidentally it's talking about Crohn's disease, and I'm like: how is this book so relevant?

Not only was food relevant in meaningful ways to everyone in the class, but it was also relevant to everyone they knew. Students learned how to alleviate the unnecessary suffering of people they loved and found methods of presenting the information in ways that were not overwhelming.

Charlotte: I don't think it's just me that's sharing this information with their friends. I'm always telling my friends information that they don't really care about... A lot of my friends don't want to give [meat] up. But during first quarter, I talked to them a lot when it was just about the environment, and personally, for them, they don't feel like their little decision matters or will affect that much. But I think when I start showing them that diet book they'll think very differently.

The same tactics were used for sustainability efforts on campus, where students made individual decisions for themselves and then encouraged others along the same path. As Thomas found, this was not always an easy task, particularly at scale. Thomas had become involved in a number of campus groups and reflected on the difficulties of activating his community beyond his friend group.

Thomas: Pretty much this whole time I've been working with Team Green, I've been looking for ways to nudge people in a better direction without explicitly telling them: "This is better for the planet; this is better for you...." That sort of thing. The example that I've been focusing on for pretty much the whole year is the thing about the trays. How people don't use trays unless you want to look like you don't go here... And that was kind of interesting to me because the campaign to reduce tray usage is focused on reducing water use, because the trays are difficult to clean and they require more water. But the norms don't focus on the water use. The norms focus on [the fact that] you look

kind of stupid if you have a tray… People make excuses like, "I don't have time to think

about this sort of thing…" If it's not a conscious decision. If you're doing it because you

don't want to be ostracized, then all of a sudden you will have time for it, you know?

If Thomas was not operating on behalf of Team Green, his efforts in social engineering

would be more than a little disconcerting; but his point is well taken: What motivates individuals

is not always logic, but rather the possible social or emotional consequences.

Left alone, a tray can just be a lunch tray. It can carry out its life cycle of utility and

subsequent washing, day in and day out until grey-colored trays no longer fit the aesthetic of the

dining hall redesign. In which case, they are inevitably canned, recycled, or repurposed by a

daring student with the propensity for sliding on things.

Or, a lunch tray can be a statement of community norms and standards, as Thomas

suggests. For each student who carries their plate and drink in their hands, one tray's-worth of

water is theoretically saved. Here we run up against the perpetual argument of insignificance.

The relative impact of one tray unwashed is not meaningful in the long run. The effects of small

habits become meaningful over a long enough period of time or across the millions of college

students eating lunch every day. Furthermore, there is a thought-process required and a new

identity assumed, for someone to become a non-trayer. Ultimately, Thomas hopes to align this

identity with that of the normative culture.

Thomas: I want to find out ways that I could lessen my footprint, and I want to find a

reason to [make it] easy for other people to reduce their footprint, so it seems like food is

an easy way to do that. When I held Veg Pledge earlier this quarter, it sort of felt like it

was really easy to get people to say, "Yeah I'll go vegetarian for a week." And then it

sort of became... it felt like you were simultaneously making a bigger decision than just

turning out the lights when you leave a room or washing your clothes in cold water, that sort of thing. I guess it is easier to be more mindful about the environment when it's something like food that you're focusing on.

Peter: So when you think about reducing your carbon footprint, what are some of the ways you've always tried to do that and what are some of the ways you try to do that now?

Thomas: Turning off the lights is a no brainer when I leave a room or leaving them off if I don't really need them…. washing clothes in cold water, washing full loads of laundry, taking shorter showers… They feel trivial to me because I've been covering them for a month, which is why food feels more meaningful. One thing that's different is that I've been cutting out red meat completely. I've been trying to eat vegetarian more frequently. That just feels like it's had more of an impact than the other things I've been doing.

Charlotte found that what she learned in the Cluster directly informed other classes she was taking.

Charlotte: I'm taking Econ 1 right now, and when we were talking about food policy in class I got so into it because I know [about it]. A lot of them were saying they don't think that taxes will work [to curb consumption habits], because they'd personally don't see how a few cents affects them. I know some of our peers in discussion thought that. But in Econ you learned that the marginal buyers are affected, maybe not you yourself, a few cents doesn't deter you from buying soda. But 'corrective taxes' actually work, and it I love that it ties in.

If these narratives have demonstrated anything, it is that as students make changes in their lives, and begin to share these changes with friends, those changes potentially ripple

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throughout their community. The network effect of ecoliteracy can be strong with the right framing and delivery. When students develop compelling ideas about how they want live their lives, they find gentle ways of sharing these ideas with others.

> *Thomas: We did this thing at the beginning of the year, and we had all these water facts: Did you know that a pound of beef consumed something like a thousand pounds of water. And someone would look at that and go, "Wow that's a lot of water." And 10 seconds later they turn around and keep eating their hamburger. And I get that. For people that's a lot to ask someone to change because they know what they're doing is wrong. That sounds accusatory… People are living their lives for different reasons; it's not always about environmentalism. That's not always at the forefront of their minds. You can educate somebody, but unless they're already receptive to education or actively seeking it out, they're not really going to retain the information, so I feel like generally education tends to be only a temporary [solution]. We ran an energy game, a hill-wide competition to reduce energy consumption... The norm is that during February you want to try to conserve energy, and then after that people kind of say, "Okay, I've done my part." It's not as important to do that anymore. And even though we educate people throughout the event like, "Hey this is better for your health, or for your wallet, or these are really small things you can do to live more sustainably." People don't keep that in mind after the event is over. They have to make room for other things in their mind, I guess.*

While student involvement in University initiatives are important indicators of local community activism, the power of students as consumers ultimately extends beyond the campus. UCLA is one institution out of a global web of corporations that impact environmental issues. These seemingly disparate entities were not top of mind for most students. In many of the same

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ways that food production is hidden from public view, other industries are no different and require the same degree of educating consumers on exactly what business practices they are supporting. Just as Lisa had never seen food grown, most students have probably never seen a car get built or a sweatshirt made. In light of her developing attitudes toward food, Amanda wrestled with these incongruities:

Amanda: [Take] Nike for example. I have to say that I've bought several products from them. I don't even agree with a lot of the things they do, and I think that their products are generally very low quality. And I'm not necessarily the biggest fan of Nike, but yet, as a hypocrite, I buy their product because it's a common part of college culture. Everyone has a pair of Nike shoes. I think that boycotting only works to certain extent, and I think that in order to get these companies to be more environmentally minded or get them to have more better values, it has to have consumers drive their market - to have consumers holding these companies [accountable] – we'll be like, "No. We want to see that your whole process is transparent and ethical." Their primary goal is to please consumers and have consumers that support them. So that would make them start to change their ways. I think instead of opposing them, I think we just needed change the culture of the consumers and make them prioritize those things in order to make companies change their minds. Because they only do it because [they are] for-profit [businesses]… They're not going to do it because [they] think it's a good thing. They'll only do it if they have to.

So much of what Amanda shares about her understanding of her behavior follows logically, right up to the point of identifying her own hypocrisy. Much like Maggie's omnivorous friend who completely agreed with the vegans, at the pivotal moment of action, the congruous, logical arguments fail to dictate behavior without the appropriate incentive. Despite trying to

convince herself of the contrary, or perhaps simply as a process of rationalizing her behavior, Amanda's logical fallacy is as follows:

1) Corporations like Nike only respond to profits.

2) By shaping consumer values we can impact profits, thereby influencing corporate practices.

But not if we buy the shoes!

Having walked all the way to a logical conclusion, Amanda circumvents it because she actually wants the shoes. The most important premise dictating the inevitable outcome is not their disagreeable business practices, or the low-quality product, but that everyone in college has a pair of Nikes. I highlight this instance because Amanda was one of the few students brave enough to tackle these unsettling notions. My purpose here is to explore the ways in which ecoliteracy shapes behavior, which makes this an important example to consider. When it comes to ecoliteracy as a means of social transformation, it is important to recognize that ideas and information do not automatically translate into new behaviors or actions. Students maintain complex value structures upon which decisions are based, and new information is not always easily or quickly integrated—especially if the required action juxtaposes alternative priorities and established habits. As seemed to be the trend, Thomas offered a pertinent slice of wisdom:

> *Thomas: People choose the path of least resistance… If you want people to get a good education about something, excluding things like mind control, you would need them to want to do it. And so far, I don't know how to get large groups of people to want to do something unless there's some incentive, and then again they're looking at the incentive and not at the thing that they have to do. They view that as a task almost… I don't really*

know how you can get someone to be well-educated about a topic if they're not actively

pursuing it.

Bruins in the Garden

As students became more critical about the food they put in their mouths, they also

developed an interest in tracing it back to earlier steps in production process. One of the writing

assignments allowed students to plan a garden and write about the decisions they would make in

creating it. The alternative was a traditional research paper, so a number of students gave it a

shot. UCLA has a number of student-run gardens and vegetable beds, which became useful

resources for students hoping to test their green thumbs.

Jade: I go to the garden workshops. I like it because I really want to learn how to grow

plants. All my attempts have been utter failures, except I can grow tomatoes - which I

hate tomatoes - but I can grow them.

Kate voiced a similar interest:

Kate: [The class] low-key got me wanting to start gardening more. But where I live it's

not that great. It's so much easier in California to grow something than it is on the East

Coast. Because the East Coast has seasons and the West Coast doesn't. my house doesn't

get a lot of sun, but here there's sunlight all the time.

Once again, what Kate lacked in enthusiasm she made up for with invaluable critique.

She is absolutely right that sunlight is necessary to grow anything. And her desire to garden,

even if she believes it is a lost cause, has her thinking about her home in a different way. Here,

she is considering her home as a place to produce her own food. She may ultimately come to find

that people have been growing things in New Jersey for quite some time, so it is possible if she is

diligent.

Of all the students who expressed interest in gardening, perhaps none were more serious about it than Laura. In her senior year of high school, she had a dream that she wanted to be a farmer and actually enrolled in the Food Cluster to further advance this possibility.

Laura: I had a dream that I wanted to be a farmer, that I wanted to own my own farm, and I thought (it'd) be cool to learn how to run [a farm]. I thought that's what the Cluster was essentially going to be about: what food to eat, what not to eat, how to grow it, I guess. But it was a little more science-based, a little more… - it's great also - but that's really why I wanted to take the Food Cluster, because I thought it would help me be a farmer.

Peter: Do you still want to be a farmer?

Laura: Yes, who wouldn't want to be a farmer?

Peter: That's a good question. What are you planning on majoring in? UCLA does not offer farming…

Laura: I have honestly no clue at the moment. I changed my mind every week like last week I wanted to be a teacher or major [in teaching].

Peter: So not a farmer? A teacher and farmer?

Laura: Maybe farming as a hobby - a hobbyist farmer, not to sustain myself on. This week I was talking to my uncle and he was like, "You should be a doctor." I was like, "Okay, cool. Yeah, I'll just be a doctor."

Over the course of the year, Laura would come to realize her dream and become a part-time farmer, or hobbyist farmer, as she might put it, at an organic farm near her home. However, despite her interest in it, farming did not stack up to her family's hopes or expectations for her

career path. For a prosperous career, better to be the doctor than the farmer supplying the metaphorical (organic) apple per day.

It is easy to dismiss farming as an unrewarding endeavor or gardening as an unserious hobby. However, in truth, there is possibly no skillset more imperative to existence than the ability to procure food. For students, gardening proved an enjoyable means of connecting with the earth, learning a new skillset, and tasting the expansive flavors of food grown right. Dig a little deeper, and what you have are students who are, for all intents and purposes, entirely self-reliant. If you can grow your own food and sustain yourself, you are ultimately beholden to no one. Political systems could fall, markets could collapse, but through it all you could survive. A garden can be a leisurely place to putter and lower your heartrate, or it can be the ultimate trump card.

As students considered their future in food and the role gardening might play, perhaps none surmised it as romantically as Maggie:

Maggie: Ideally, at some point I'd like to become vegan, especially when I can make all my own food. And I would want to shop at local farmers markets and buy stuff that's seasonal, being produced at the right time, and not on [sent on] big ships across the world. And then I'd also like to have my own little garden in the backyard. I think that would be so cute and fun, a nice little thing to have not a huge, sprawling anything, but just like a little plot and where I [grow] carrots.

Gardening offered a common desirable outcome, but also a seemingly impractical outlet for busy college students. Some students, like Laura, carved out significant allotments of time for the serious endeavor of farming or the Gardening Club. But beyond that, the activity did not become a predominant feature in students' lives. Instead it remained a quaint feature of future

possibilities when time and space are available in greater abundance. Perhaps the seed was planted for harvesting later on. But at the very least, the introduction to gardening taught students that food comes from a real place. It comes from the Earth, and you can actively facilitate its growth. Just as with any other process, it can be sustainable and healthy when attended properly, or unsustainable and unhealthy when neglected.

Chapter Summary

For many students, the information presented to them in the Cluster Program had a direct and meaningful impact on their everyday lives. As students developed more comprehensive understandings of the ecological systems in which they participate, they could no longer make decisions in ignorance of these new understandings. Whether these ideas changed the habits or perspectives held is ultimately another matter altogether, but there is no going back. Unlike many college courses that navigate complex abstractions, historical obscurities, or remote literary canon, the study of food is not easily ignored once the bell rings and the chairs are pushed in. However, this reality of applied learning does not make it easy. And in fact, I believe there is a strong case to be made that it makes learning much more difficult.

With food, there are real-life consequences for the perspectives that students carry with them beyond the classroom. Each meal is an opportunity to further integrate their perspectives and understandings into their lived reality. However, there is a marked difference between knowing something and acting upon it. The first step is logical, requiring openness and critical capacities. Action, on the other hand, is complicated by situational contexts, cultural influences, availability of options, and personal physiology. Learning to navigate theoretical and conceptual frameworks in everyday lived reality is perhaps the most important skillset a student can leave school with when they graduate, as everything that has been learned must now be translated and

applied to new experiences and contexts. However, it is also arguably one of the most lacking. The following chapter explores the ways in which educators and institutions may best support learning that is interconnected with context.

Chapter Six: Ecopedagogy in Practice

One of the central purposes of this study is to inform educators and institutions on the ways in which they can shape educational experiences that enhance ecoliteracy among their students. This chapter addresses the final of three research questions, which is: What pedagogical and institutional practices best facilitate this type of learning? To answer this question, I rely heavily on student feedback and their explanations for what worked and what did not. This discussion is grouped thematically in two sections. The first discusses the in-class experience, reflecting the course content, various teaching styles, and the course structure, which varied significantly throughout the year. The second section incorporates the larger student experience at UCLA that shaped the student experience, including first-year orientation, the colleges food programs and dining hall options, and the way that the Cluster Program fits into the larger academic experience and graduation requirements.

Teaching and Course Content

Invariably, student experiences reflected not just the content of the course, but also how the information was presented. In Chapter Three, I discuss a variety of factors that make this course unique, compared to most other courses offered at the university, such as: the course is exclusively for first-year students, it lasts an entire academic year, and, perhaps most notably from a pedagogical perspective, each quarter is taught by multiple faculty from different disciplines. The ready arsenal of professors and teaching fellows with varied backgrounds and research interests equipped lectures with a high degree of expertise on a wide range of topics, but this structural advantage was not without challenge.

Kate: Having four professors for two quarters is kind of a lot for me. Just switching back and forth all the time. You get used to one and then all of a sudden Week Five, "BAM!" You get another professor, and you have to learn a whole new person's way of teaching.

Kate's depiction of the instruction each quarter is accurate. Typically, one professor would teach the first half, and then they would swap out in the second half of the quarter for a new subject with a different instructor. Each professor had their own teaching style, and some students found it difficult to pick up on each as quickly as the schedule of the quarter required.

Ana struggled to parse the difference:

Ana: I liked how there were multiple professors, but at the same time I'm not sure that I really liked it…

Beyond instructor transitions, there were also significant subject changes for students to wrap their heads around. As an introductory course, students were less surprised to be moving through content with broader strokes, focusing on nitrogen cycles in soil on one day and then solar energy the next.

Thomas: It just feels like a normal classroom how you would cover topics. You moved from, "Okay, we're going to be studying atmospheric science for the next few weeks. Here are the things you need to know about that sort of thing..." There wasn't a unique structure to it, which is fine because it was still good lectures, but it definitely feels different.

By design, the course covered a range of topics, and not all topics were of interest to everyone. Charlie described a sweet spot where prefered teaching style met personal interest:

Charlie: People get more out of the professors they like, so I had a professor that honestly… the atmospheric science just sort of bored me to death, so I don't remember

much of that – outside of the one lecture where the guy came in… Even the little stuff

about the different types of knives you use while cooking, down to the Letters to a Young

Farmer, I found very interesting, because I'd seen stuff by Michael Pollan and a few of

the other people who were included in the letter in the past. Once it got to good lecture

and better study material I ended up liking it a lot more. The stuff that Massimoto said

about peach farming and living a life of tranquility. [It] was a romanticized way of

looking at farming, and I like romanticized ways of looking at anything, so that was my

largest takeaway from the first two quarters.

One of the many balancing acts of a first-year survey course is achieving the appropriate

level of depth and difficulty without alienating students who have extensively more or less

experience. For students like Charlie, who had taken environmental studies classes previously,

there was significant overlap in content.

Charlie: I mentioned that some of the information felt a little redundant to me because I

learned some of it in high school. I think that's just a catch-22 of being in a Cluster

Program, because you're in it for such a long time. And I think if you begin with those

redundancies you hit a wall of disinterest, and you're kind of… or at some points I wasn't

sure I wanted to move forward with the Cluster but I felt obligated to because I wanted to

earn the extra GE credits. I'm happy I kept with it now, but I didn't really enjoy the labs

that we had to do the first two quarters, so… Redundancies in information is the largest

barrier to enjoying the entire thing. But I can't think of a way to mitigate that.

I can certainly empathize with Charlie's attitude toward content that he had learned

before. As a student, it is easy to switch off when you know where a lecture is headed or, at least,

you think you know. But even for completely novel information, if the material was not

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presented with a fresh perspective or open for interpretation and further analysis, it could still miss the mark. To Kate, the course felt like a forgone conclusion with little room for student perspectives.

> *Kate: I guess the one thing that was kind of interesting was the research paper from last quarter, because I did the victory garden one. I guess that was kind of cool. Other than that it was kind of all things that [I] already heard of in high school. I feel like it was just kind of beat to death in general: don't eat meat or beef, it's really bad for you and the environment.*

However, as they say, one person's "beat to death" is another person's "barely clobbered." Cynthia found herself wishing that more time had been spent on issues to further flesh-out some of the possible solutions for environmental issues.

> *Cynthia: I think a good thing to incorporate was just solutions, like how could we attack these problems. Because we started identifying them, and we learned about them - the causes, the reasons why they're happening, but we never really learned about how to fix them. And we kind of touched on it in our own research papers, but personally I wanted to know more about it.*

Cynthia touches upon an overarching, conceptual question that is perhaps more indicative of the subject matter rather than the structure of the course, which is: what is the role of an individual in solving systemic problems? Given the fact that there are a large number of things that any of us can do to reduce our environmental impact and to live more in harmony with nature, what is the appropriate course of action? The question of what we should do must be answered at the individual, institutional, and societal levels, but the individual does not necessarily have direct control over the second two. And for these collective efforts, the

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individuals within them might choose to pursue very different types of environmental initiatives, if at all. As Cynthia notes, the way that the Food Cluster addressed this variance was by offering greater freedom in selection as the class progressed. Earlier assignments in the fall were standardized, and for the most part students wrote about the same or similar things. But by the end of the quarter, and increasingly so in the next, students could choose the topics for their research papers and, come spring quarter, they selected the seminar that best suited their interests.

> *Charlie: I wish that the third quarter was a class unto itself that people could just go and take. I don't know how that would work because the curriculum is not that well-defined, but it makes me sad knowing that people are not going to get that experience without going through two quarters of the Cluster first. I mean, you can take other Writing II classes but that one in particular is valuable enough to be its own stand-alone thing.*

There were a number of advantages to this individual project-based approach. To begin with, students were more engaged when they were able to pursue topics of their choosing. In my spring seminar, the dynamics of classroom discussions changed as students became experts on certain topics, and the quality of conversation increased as a function of better-informed perspectives.

What Kate's and Cynthia's critiques have in common is that they both aspire to greater nuance in perspective and understanding. For this reason, students held particular reverence for their spring seminars, which were more participatory than the fall and winter lectures. While students were exposed to far more information in the fall and winter quarter lectures, the spring allowed for the deeper, richer conversations. Students would frequently have alternative perspectives on the ethical and moral implications of different possible solutions to

environmental problems. Amelia suggested that not only were these ways of understanding the course material more interesting, but that they also assisted in retention.

Amelia: I do think that sometimes we go too much into the nitty gritty… like the nitrates and the chemicals that make up the particles. Maybe this is just speaking for myself, but these kind of things, you don't register them… I feel like the topics we addressed, when it's more theoretical is easier to remember, although the scientific evidence is important. And I'm happy we studied that, but sometimes it would be a bit too [much]… And it's the kind of stuff that students learn and then regurgitate and then completely forget. Whereas when it's more conceptual and if there's like discussion you can remember it more easily.

It is important to share these critiques and evaluations of the course because that is ultimately how things improve. As a Cluster Program course, the Food and Sustainability class serves a number of roles, such as: it is an introductory class for students interested in sustainability, environmental studies, or food studies, and it satisfies the college's general education requirements for science and writing. Furthermore, it aspires to educate students on a topic that potentially has a profound impact on their health and the environment. These are lofty ambitions for a class of 160 students.

Invariably, students got the most out of the educational opportunities that engaged their personal experiences and interests. In the age of instant information, there is a new educational premium on slowing down and addressing the needs, interests, and aspirations of an individual, at a specific time, at a specific place. Perhaps all knowledge is not as universal as we would like to believe. To walk the world as a UCLA student, in the chaparral hills of Southern California, is a unique, contextual experience. There are certainly overlaps with other experiences in other places and at other universities, but to assume they are the same would be to use a lunch tray at

Bruin Café without any expectation that Thomas will give you the eye. Globalization masks

local context, but it does not erase it. Technology invites us to become increasingly detached

from the physical world, the natural world. And while students may not necessarily need to know

how to find drinking water in the hills or forage the landscape to live their everyday lives, the

role of education is to connect: to connect the individual with where they are; to make them

belong. The most memorable and impressionable experiences students had all year typically did

not happen in a classroom. Rather, they were a walk in the garden, an edible plant tour of

campus plants, or a stroll through the farmers market. Life is still lived, even when so much of it

is uploaded.

> *Shey: The field trips are honestly some of the coolest things ever. I went on the walking*
>
> *tour of UCLA campus and that was really, really cool. I really just enjoyed that and then*
>
> *the farmers market was probably the coolest thing in the Cluster actually. Because now I*
>
> *go to the farmers market relatively regularly after I went there [with the class].*

Institutional Context and Structure

> *Peter: What made you pick this Cluster in particular?*
>
> *Anika: Food. I saw food. I did not read after that. (Laughter.) I did not read about*
>
> *environmentalism and sustainability, so it was a shock the first day of class.*

Students arrived at UCLA with a wide range of expectations, rationale, and, to some

degree, false premises or misconceptions. For the most part, students learned about the Cluster

Programs during orientation, where New Student Advisors (NSA) reportedly push it pretty hard.

> *Ava: I actually heard about (the Food Cluster in) orientation where my NSA was telling*
>
> *us the Cluster is a really good way to like get all your GE credits out of the way. And I*
>
> *was kind of new to all of it, because again I didn't really plan on going to college, so I*

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had no idea how anything worked. and I was looking through a little pamphlet of what

the Cluster satisfies, and I was like, "Oh, that's a pretty good deal." [My NSA] did say it

was going to be a lot of work, and I was kind of like, "How much work can it be?" It

turned out to be a lot of work.

From a purely academic perspective, a Cluster class is inevitably a win. Students are

advised to look for Cluster classes that offer General Education requirements outside of what

their intended major or majors necessitate. Doing so avoids doubling up on coursework that

satisfies a single requirement. If all goes well in a Cluster, students receive credit and move on to

other academic pursuits. The trick, however, is finding a Cluster class in an academic field that

the student has no plans of majoring in, but also that they are interested enough in to study for a

year. Even if a student ends up not enjoying their experience in the Cluster, for whatever reason,

they still reap the benefit of the additional General Education credit. The only possible academic

downside to this program for students academically is that if a student loves their class and

decides to switch their major to something similar because of it, from an academic requirements

standpoint it makes sense to drop the Cluster. Indeed, there were students who enjoyed the

Cluster so much that they did not continue it for the entire year because it would no longer

satisfy requirements that their new major would not satisfy as well. From an institutional

perspective, this may just be the cost of doing business. But from an educational perspective, it

makes very little sense that the students who are most excited and interested in the coursework

typically do not reap the same benefits as students who do not. Over the course of the academic

year, it was disheartening to see students who were leading discussions and the pinnacle of

engagement quit the program.

Kate: I took environmental science my senior year of high school and that's why I took

the Cluster, because I thought it would be easy. Yeah, I thought it would be an easy

transition, but then I realized college is so much harder than high school.

After students successfully navigated their first course selections, they then had to take

the classes. For the Food Cluster, the workload was substantial in the fall, but dissipated

somewhat over the course of the year. Partially, this was due to students developing the

necessary skillsets to succeed in college level courses, and it created a quasi-weeding-out effect.

Students who made it through the first quarter anticipated that they could make it through the

rest. And while only a small percentage of students failed or dropped the course due to academic

difficulty, many found that the first quarter was disproportionately challenging compared to the

rest, and the instructors seemed well aware of this reality.

One of the benefits of this structure was that it set a high bar for initial expectations.

Perhaps for a yearlong class, it is easier for instructors to gradually lower expectations, rather

than heighten them. However, for students adjusting to college life, it could also be viewed as an

undue hardship. It would seem that courses should get more difficult and strenuous in relation to

student abilities, rather than the inverse.

As to be expected, academic performance was not the only thing on students minds when

they signed up for the Cluster Program. Packing up and leaving home for the first time in your

adult life bears with it a host of exciting new opportunities and intimidating circumstances. Even

by the end of the year, some students had not truly connected with the classmates they had

become so accustomed to spending time with.

Anika: I don't really have someone that I think… [I would see as a] best friend… I didn't

know anyone coming in, like I didn't take it with someone that I knew. You see them

around and you spend a whole year with them so you say hi, you smile. Instead of

ignoring them…

Peter: So do you think that is indicative of your other classes at UCLA? Its hard to get to

know people?

Anika: Yes.

Peter: Why is that?

Anika: I don't reach out. I'm not the person to start conversations. So I just sit there

alone in the back or wherever.

Peter: Is there more you could do?

Anika: I could introduce myself…

Anika takes ownership for the fact that she feels disconnected, and, in our conversation, I indulged that line of thinking. After all, you do not always choose your circumstances, but you can choose how you respond to it. But from a bird's eye view, this is clearly not the whole story. All told, UCLA has just under 45,000 students. For many, its easy to get lost in the current, and the reality is that not all students will not have a seamless transition to life on campus. Educational programs that have a direct impact on student wellbeing, like the Food Cluster, are critical to providing students with the necessary tools to care for themselves in what can be a disorienting environment.

Lisa: Fall quarter, when I came here… I was eating very, very unhealthy. For the whole

first quarter, just because you can go get pizza, and you can get this and you can get that.

And then slowly as we started talking about diet as we started talking about like all these

things and meat and where it comes from and all that stuff. I have decreased my intake of

meat. I'm not going to say I've gone vegetarian or anything, but I eat with more

awareness now. This is coming from a place where animals aren't treated right. Just like

all these things after we watched 'Cowspiracy,' my diet just got a little better. And then

during this quarter when we were talking about sleep, I was like, "Oh my god, this makes

so much sense." Because usually I try to get at least six hours at minimum. But then I

realize that that's not enough because I'm always moody and tired or I'll have crashes

throughout the day. So I've moved it up to 7. And I want to move it up to 8 because I feel

like it's really important. It's stuff that we don't really pay attention to because sometimes

it's not a priority. Because like we're first-year students and we're like, "Okay, maybe I'll

stay up late today to finish this work." I feel like it comes down to: do you want to be

healthy or do you want to get a degree?

Lisa's story demonstrates that students make their own decisions, and, when equipped

with the right information, they can make decisions that are beneficial to their health, both in the

present and in the future. I would not go so far as to say that institutions do not care about the

wellbeing of students, but given the rates of stress and sleep deprivation among college students,

it is fair to say that institutions are ineffectual in supporting student health (Walker, 2017). It is a

tall order to assume that students participate fully in their chosen pursuits and their community,

when they are so severely compromised physiologically.

With respect to the dining services at the school, many students appreciated the ways in

which they could easily adapt their eating preferences to new ideals.

Shey: It's so funny because I eat ten times healthier when I'm here than when I go

home… When I'm home, my parents don't have food around because they're busy so they

usually just eat out, and so I'll be left with only like nothing fresh, or if I want something

fresh I'll have to go to the store. So I'll be snacking on peanut butter and weird stuff like

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walnuts and it's just it's so much easier to just schedule what I eat here. Because I eat

way healthy here. I love UCLA dining. That's my favorite thing about UCLA probably.

However, serving food to 45 thousand students per day is no simple task. For students who adhere to more restrictive diets, the options are not always as favorable. Audrey described her experience eating vegan on campus:

Audrey: I think the school has a policy that for each meat dish they need to have a

nonmeat dish but that nonmeat dish does not have to be vegan. So Covell might have a

lasagna with meat and then they'll have a lasagna with cheese and that is their meatless

meal, so then it's vegetarian but it's not vegan so I appreciate that there's a meatless

option—but they're just not there yet.

Jade also identified something that dining services do not, and perhaps cannot, provide: a deeper connection to the process of preparing food.

Jade: The dining hall food is really good, but I miss cooking.

Peter: You miss cooking…?

Jade: I really miss cooking, because it's a nice freedom because you can cook whatever

you want, and you have leftovers. You can't take food out of the dining halls. They have a

warning: They're like, "If we catch you stealing (I'm not sure if they meant food or

silverware) you'll get kicked out of the dining hall for a year"… Or maybe the rest of the

quarter.

The Food Cluster primarily studied the life cycle of food and the implications of inefficiencies and malpractice from a systems perspective. However, when we consider a person's connection to the food that they eat, cooking is the process that links the individual to the larger ecological system. Cooking transforms ingredients into food, but depending on the

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skill, knowledge, and ideas of the chef, the process can look quite different. It was unexpected, but inherently obvious, that a critical and conscientious student would long for greater access to and ownership of this essential human practice. An ecological perspective on any system assumes importance on these, often overlooked, links in the chain. The study of food is tracing it back to its source, and the source is always more interesting and complicated than it initially appears.

College students today have the privilege of having hot, delicious meals prepared and waiting for them. As they should. I am not advocating otherwise. But as with most large food operations, the process by which food makes it to the plate is largely kept out of sight and out of mind. It is as if students have more important things to do than participate in the production and preparation of the food that nourishes them. Perhaps they do. From an institutional perspective, the divide between student and process feels like missed educational opportunity. What could student participation look like? What changes would students request if they saw more of the process? How could UCLA as an institution develop greater ownership over the food that they serve? It is worthwhile to consider these questions, because they have the potential to steer us toward healthier, more effectual, and more sustainable campus communities.

When we consider the role of college to teach students about food and other dimensions of sustainable consumption, academic opportunities must be top of that list. Even for students who do not anticipate majoring in environmental studies or a similar field, and perhaps *especially* for these students, sustainability education could still have a profound impact on the ways in which they live their lives.

> *Charlie: I don't think [the class] aligns well with my major or career goals, but I think it*
>
> *aligns well with what is, in my opinion, necessary aspects of a well-rounded education. I*

would say that I or other people would need to take something like this to get a proper

academic perspective on the world around them, even if it's outside of their major.

While the students I talked to were not actively seeking additional graduation

requirements, it was apparent that many considered it an oddity that sustainability was not on the

list.

Ana: [UCLA] could probably make this a GE requirement, some environmental or health

class; [similar to] how we have the diversity requirement. We have to take three science

classes, one of those could be required to be an environmental one… I think that would

be a good idea. Nobody would question that.

Others, however, were not convinced. Cynthia suggested that creating a requirement

might negatively impact attitudes toward the subject.

Cynthia: I don't think we should make it a requirement that people dread. It's just one of

those things that I think the responsibility lies on those who are interested. If you fall into

[the class] then you're responsible… You could influence others to help you and support

you, but you can't really expect them to do the big work.

Cynthia suspects that providing ecoliteracy to those who are not interested is a fruitless

endeavor. And, to a certain degree, she is right. However, this perspective is inconsistent with the

college's interpretations of other academic ideals. Just as a college's budget may be understood

as a representation of institutional priorities, so too can an institution's requirements be

indicative of educational priorities. By Cynthia's logic, the college should not have any general

education requirements, because inevitably each subject elicits a handful of students who would

rather not sit the class. I do not completely oppose this notion, but I do not believe that is what

Cynthia is insinuating. She is suggesting that a noble few will pick up the slack of the rest, which

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feels like a mischaracterization of the probable solutions to systemic environmental problems. However, if the college does view ecoliteracy as a priority, then precedent suggests that it should be included in the student repertoire. To do otherwise would imply that it is not as important as the rest.

Internal consistency, however, does not address the fundamental problem of student attitudes and motivations that Cynthia alludes to. Are requirements effective means of transformative education? Or do they, as Cynthia suggests, dampen student outcomes?

Thomas: [As an institution, we need to] rebrand ourselves as more environmentally conscious. If you want to talk about the tribe thing and what people are leaving the school with, make it so UCLA is emblematic of a sustainable institution. And when people leave UCLA, I want them to be like, "I went to UCLA," and someone would inevitably ask, "Oh, isn't that the really green school?" It's like, yes, it is, the really green school.

Stepping away from his role as student activist, I interpret Thomas' idea of eco-branding as less of a grassroots movement and more of an institutional directive from on high. Thomas invites the possibility for institutional reconstruction that is outwardly and unrelentingly sustainability motivated. However, it is certainly possible for an institution to have a small environmental impact, independent of the attitudes and relative ecoliteracy of the individuals within it. Either way, the opportunity remains.

Chapter Summary

Experiences in the classroom and institutional structures both shaped student perceptions of the course. The Food Cluster offered students with the opportunity to study something that was of great significance in their lives and connect it to larger systems that they might not otherwise feel connected to or chose to pursue academically. The focus on food was not only

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central to the positive education experience but also to getting students enrolled in the class in the first place. Furthermore, the Cluster Program is an effective pathway toward graduation requirements, which is effectively conveyed during the first-year orientation program. While student experiences varied widely, there were a number of consistencies regarding their education experiences in the Food Cluster. Many students felt most engaged and challenged by the spring seminars, however, it is important to note that is also the time when they would have the greatest amount of prior knowledge to draw from and also the greatest opportunity to apply it.

Chapter Seven: Discussion of Findings

The only war that matters is the war against wildness.

All other wars are subsumed by it.

Miles Olson, *Unlearn, Rewild* (2012)

The student narratives and experiences conveyed in the previous three chapters reflect the importance of food systems education in college and, in a more general sense, the necessity of increased curricular focus on ecological understanding and integration. In Chapter Two, I discuss the significance of sustainability-centered curricula as it pertains to the vitality and longevity of global, ecological systems and environmental protection. Relying on the themes discussed in prior analysis, the focus of this final chapter is to discuss the impact of ecoliteracy development on the college student experience. The purpose here is to engage the individual student in such a way that embraces ecological relationships that regularly go unattended. These relationships include their friends and family, but also the plants, animals, soil, water, and air upon which they entirely depend.

In the upcoming sections, I reflect on my experiences in the spring seminar and explore the possibilities of frameworks such as "rewilding" to inform educational experiences in food. In my discussions of pedagogical recommendations, research implications, and opportunities for future research, I incorporate analysis of ecoliteracy development within the context of a number of prevalent topics in higher education research that relate to student experience, including: college affordability, professional prospects after college, and student learning.

Rewilding Higher Education: An Evolutionary Perspective on Learning

When spring came, I was privileged with the opportunity to teach a small seminar on the topic of rewilding. Twenty students enrolled in the course, and it is fair to say that if not for their own research, they were flying in blind. Due to an administrative error for which I claim full responsibility, my course synopsis never made it to the registrar. In an honest mishap, not dissimilar from the ploys so many students had pulled over the course of the year, I had submitted a draft of my erratic notes, rather than the completed course description I had spent the winter perfecting. Needless to say, nobody gave me the heads-up that my seminar topic sounded somewhat deranged, so I took it as a compliment that some students decided to sign up for what could have been a course on knitting for all they knew.

The course was titled *Rewilding: In Theory and Practice*. Put simply, rewilding is the process of making something wild again. The concept of rewilding was born out of conservation ecology as a means of restoring ecosystems to their pre-industrial-human state (Walker, 2017). This model has been used across the globe to reinvigorate the fertility of landscapes, to embolden faltering or displaced species, to increase biodiversity and stabilize habitats, and to offset the destructive impact of human beings on the environment.

The process of rectifying ecosystems relies on an honest assessment of human impact. There are very few places on Earth, if any, that have not been significantly impacted by human activity, and ecological biodiversity suffers considerably as a result of human land development. So it is difficult to maintain the viewpoint that we exist *within* the ecological network rather than an external imposition. Ecological studies typically make a distinction between that which is human and that which is natural, in order to assess human-caused environmental imbalance (Moran, 2016). However, the disassociation of human beings from the natural world, while

pragmatic, is fundamentally inaccurate and philosophically unsound. Humans are just as natural as any other species, despite our evolutionarily unique abilities and the circumstances that define our ecological significance. Our meteoric rise to the top of the food chain, though unprecedented, would not be ecologically unstable if not for our inability to meaningfully self-regulate, threatening the very systems upon which we so desperately depend. We must therefore not think of ourselves as separate from nature, but rather we must recognize that we are a massively influential part of it. As such, nature is not something we must actively seek out, but rather something with which we are inherently intertwined and must come to understand better. When applied to the human condition, the perspective of rewilding resituates human beings in relation to the natural world, ecological systems, and our sociobiological evolutionary history.

In recent years, rewilding has taken on new applications beyond ecological reparation; it now functions as a critique of the forces of civilization, including the gradual and widespread disassociation between humans and ecological systems (Haines, 2017; Monbiot, 2013; Olson, 2012). Drawing from 200 thousand years of Homo sapiens evolution, the reconsideration of human beings as natural and even, originally, wild animals is a perspective that informs a wide range of new research in fields such as nutrition, sleep, medicine, movement, and relationships. While civilization as an ever-growing organism is quick to consume advances in food production, transportation, trade, and technology, our human bodies are much slower to adapt: misinterpreting artificial light sources as sunlight, readily storing processed sugars as if these sources of cellular fuel were scarce, and downgrading cardiovascular and musculoskeletal systems to occasionally life-threatening levels in reflection of our increasingly sedentary lifestyles.

In the spring seminar, we compared hunter-gatherer food practices to the modern American diet. In doing so, we explored concepts of wildness and domestication through this evolutionary historical perspective. The course reconsidered the advent of agriculture from these anthropological and physiological perspectives, and explored the ways in which our evolutionary past can inform our present day choices.

Beyond our exploration of ancestral diets from around the world, what struck me was the relationship between students and the overarching philosophical questions the perspective of rewilding elicits: Why do we eat what we do? Why do we *do* what we do? These questions are particularly pertinent to college students, who are given a long list of checkboxes that must be ticked before they are rewarded a degree. Philosophical questions that might reduce enthusiasm for the process are rarely encouraged. Particularly for high achieving students like those who end up at UCLA, if there is a bar, they get over it, and if there is a hoop, they jump through it. They have succeeded in a highly competitive learning environment because they are so responsive to external challenges, but they have little incentive to ask: Who put up this hoop? Why is it here? Are there better hoops? Can we set up a slide instead?

College could and should be the perfect environment for this type of intellectual and personal exploration, but it is hindered by external presuppositions about success and what students should want for themselves. I took great joy in telling my students that they did not need to come to class, anticipating and receiving an audience of perplexed stares. I was not sending them away, but rather removing the pretense of obligation. Obviously, there were still consequences for nonattendance (a fine line perhaps), but the choice was theirs.

Institutions are, by definition, the antithesis of wildness—which I interpret here as the expression of free will and a connectedness to nature. So many aspects of students' lives are

preordained by expectation, or at least the perceived expectations, of parents, teachers, coaches, and institutions like UCLA. For many students, adherence to these external forces dictates their success in a traditional sense, but they can also create a distraction from deeper pursuits that may speak to their inner nature, passion, or the expression of these truths. When students develop ecoliteracy, they learn about a completely different set of external conditions set forth by their physical environment. The paradox of ecological education is that it is both the most empowering and perhaps least immediately significant educational pursuit a modern student can engage in: Who needs to know how to navigate the land, build a functional shelter, or forage for edible plants, when you can call an Uber, rent an Airbnb, and order dinner from Postmates? Our immediate reality does not require knowledge of local fauna, seasonal weather patterns, or how to hunt. The individual and collective consequences of this knowledge gap, however, are revealed over time. As ecological systems deteriorate, so too do our bodies.

The relevance of our physical bodies as an integral component of ecoliteracy is not to be overlooked. In *Toward an epistemology of a brown body* Cruz (2001) describes how the physical body informs education experiences. For Cruz, the incorporation of the physical body and the associated characteristics of identity were essential for transformational development and honest recognition of the self in a sociocultural context. Cruz writes:

> In its current emphasis on all that is analytic and cognitive, the absence and elusiveness of the body in educational research defines and delineates any consideration of how new identities, particularly the emerging identities of Latina/o lesbian and gay youth, are being invented within a contestation of dominant discourses of race, class, gender, and sexuality. For the educational researcher, understanding the brown body and the

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regulation of its movements is fundamental in the reclamation of narrative and the development of radical projects of transformation and liberation" (p. 657).

Our physical presence in the world is both deeply personal and highly public, connecting the individual being to sociocultural narratives of scrutiny, oppression, and privilege. Our bodies greatly inform our experiences in the world but they are overtly ignored in educational contexts. In the study of food systems, however, the human body and its individual preferences are the basis of discourse and understanding. Over the course of the year, as students developed a greater understanding of their relationship to ecological systems and food production, these concepts were inextricably interwoven with their physical lived experiences. Bodies in relation to land determines what foods are local. Our physiology defines what foods and nutrients are essential. As students' perspectives on food changed, so did their diets. And as student diets change, so must their bodies and their day-to-day experiences of them. Through food, a literal transfer of energy from the environment into the body, students simultaneously developed new tools for evaluating their own physical wellbeing and that of the external environment. Bodies are the nodes of the complex ecological web of existence; they are the points in time and space where decisions and actions manifest.

As a means of strengthening our connection to the natural world, rewilding efforts typically make use of localized processes and technologies. However, the trajectory of education in general is headed toward greater and more widespread implementation of increasingly sophisticated technology, and there are obvious systemic and individual benefits to this trend. The totality of scientific knowledge can be accessed on a relatively cheap laptop, tablet, or phone. Students anywhere in the world can virtually sit-in on lectures from the top experts in any field. Collaboration on research projects has never been faster or easier. But the convenience and

inevitability of technological advancement comes at a cost that has not been appropriately addressed. As students put more and more attention into virtual spaces, they participate less in their immediate, physical space. We have started to see the impact of technologically-oriented and largely sedentary lifestyles in people's postures (Guan et al., 2016), cognitive patterns (Clayton, Leshner, & Almond, 2015; End, Worthman, Mathews, & Wetterau, 2009; Park, 2005), and, perhaps most importantly, in their feelings of connection (De Choudhury, Counts, & Horvitz, 2013; Jelenchick, Eickhoff, & Moreno, 2013; Lin et al., 2016). As the significance of the physical or natural world deteriorates, so do we.

The ultimate risk, as I understand it, is not that our bodies lose function, but that human beings lose meaning. Technology advocates for cheaper, easier, and better ways of doing practically anything. Initially, machines made physical work safer and easier for people. Then, computers and the internet made information available for people to interpret and analyze. And while the internet transformed the ways in which we learn and do work, machine learning, and artificial intelligence will inevitably remove us from the process entirely. There are few functions of utility that a human can do, that a machine somewhere cannot already do better: not play chess, not invest, not diagnose illness. Humans are imperfect, and machines are not only consistent and unlimited, but now malleable and adaptable. The question for higher education is not *how can our students compete with machines*, because they cannot, but rather, how can we infuse meaning and empathetic capacity into students' lives? Why study anything if Google can answer it better? And for institutions: why invest in student learning and development when the process is comparatively expensive and takes so long?

Rewilding and other naturalistic and ecological perspectives offer a possible antidote to meaninglessness. Ecological awareness and understanding clues us into a biological reality with

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which we are becoming increasingly disengaged. Sears (1964) went so far as to deem ecology as a "subversive subject," recognizing that ecological understandings inherently call into question incompatible social norms, including: production for profitability rather than utility. For important health, ecological, and social issues, greater technological ability is a ready answer with a weak history of performance. We already have the capability to live healthily, to live in balance with the natural world, and even to rejuvenate it. What we presently lack is the collective capacity.

Pedagogical Recommendations for Ecoliteracy Development

There is probably a myriad of excellent entry points to developing college student ecoliteracy, depending on student interests, backgrounds, and contexts. However, for a large class of students with diverse academic experiences, food proved a powerful method of contextualizing and personalizing sustainability education. It is a travesty that food is so fundamental to our existence, and yet as a society we know so little about it. To a large extent, the modern food system is hidden from view, and even in some cases forbidden from being openly discussed. Even if we knew where our food comes from and how it is harvested, perhaps we would not know other preferable options to implement. These ironies make food an interesting and dramatic backdrop for conversations about sustainability. Furthermore, the conclusions students arrive at, though they may be quite varied, can be immediately applied. Over the course of the year, students tried different ways of eating—for a meal, a week, or a month, and did so wholeheartedly or halfheartedly. It did not really matter because they could always course correct. The next meal was always just a few hours away.

For the most part, living on campus and eating in dining halls made it easy for students to apply what they learned—in terms of the types of food they consumed, if not the way these foods

were sourced. The social context around eating also allowed for students to share and even test their new perspectives by conversing with skeptical or curious friends.

While there are certainly educational imperatives to ecoliteracy that hold true to systemic issues and institutional responsibility, there are also fundamental and personal lessons that make these types of experiences even more essential: as students learn about ecology, they also learn about themselves. Health and self-awareness, in terms of one's relative impact and responsibilities, may be the most important thing an institution can provide their students. The most rewarding aspect of teaching the Cluster Program was observing as students took responsibility, not only for themselves, but also for their family and friends. Students taught their parents and siblings and dinner dates how to be healthier, how to live better, and how to mitigate their ecological impact on the world. These are not always easy topics to broach, and yet they are the most worthwhile.

At the institutional level, colleges could and should be doing more to educate students on issues of the environment and sustainability. It is arguably the most important present function. All other social problems worth addressing fall by the wayside if the Earth is uninhabitable, but it is not a zero-sum game. The gradual road toward increased environmental toxicity, climate severity, and resource depletion or unavailability, is one of exacerbated suffering, disease, and conflict. For an institution like UCLA, endowed with not only historically unprecedented resources but also with the responsibility of educating youth, the failure to prioritize environmental education and activism in the institutional mission is immoral and shortsighted.

One of the central directives of the course was to make content informative and relevant to students' lives. The universality of eating as a human experience makes food a useful tool in this regard. Even within this general context students needed the freedom to explore their own

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interests within it. While research papers were an effective means of developing expertise in a particular topic, the most enthusiasm and engagement came from the assignments that were more applied, such as the Victory Garden paper. While students did not actually create a garden (wouldn't that be something!), they did go through the creative and instructive process of designing one. Compared to a traditional research paper, these projects allowed for higher levels of personal expression and investment. Students were incentivized to make sure their plans were not only logically sound and efficient, but also optimized to produce their favorite things to eat.

The Victory Garden assignment also fed what became a growing hunger for students, which was for practical, meaningful, and achievable solutions to the environmental issues they were learning about. Projects like gardening, student clubs, and field trips were not only popular because they were fun, but they also grounded and contained their efforts in time and space. They no longer had to solve climate change as a whole, rather they just needed to show up for that specific task. These avenues of applied learning made other experiences feel clerical in comparison.

The study of food as a physiological necessity within an ecological context provides a compelling framework for the ways in which energy and information are transferred throughout the learning process. Food, as culturally informed packets of biofuel, is inextricably connected to the learning in that it provides the necessary nutritional and energetic precursors. Without the energy to focus on the course material, students do not learn. Learning in education research is rarely understood in biological terms, however it is important to note that all forms of thought and cognitive processing are a direct result of biological processes. The field of neuroscience has been preoccupied with these relationships between information and neurology for decades, however the findings in this field have been slow to permeate educational spaces.

Diet is one of many factors that have been shown to mediate neurogenesis (Stangl &

Thuret, 2009). However, similar findings have been found with regard to sleep, exercise,

meditation, medications, and interpersonal relationships (Dranovsky & Hen, 2006; Galea et al.,

2013; Lucassen et al., 2010; Luders, Toga, Lepore, & Gaser, 2009). By connecting the

nutritional needs of students with larger concepts of sustainability and ecology, the study of food

offers a reinforcing cycle in which learning can be physiologically supported by improvements

in diet. In my view, one of the most significant pedagogical implications of this study is the

suggestion of this holistic view of the student that incorporates the physiological foundations of

learning. How might courses and institutions structure themselves differently if health was

recognized as not only a necessary precursor to learning but an integral part of the process?

Common tropes of college life such as overbearing stress, all-nighters, and binge-drinking would

have to be abandoned, and colleges could play a much more meaningful role in facilitating these

opportunities for health-oriented learning.

Study Implications

The institution of higher education is at a crossroads. For decades, scholars have

advocated for the societal significance of higher education; that institutions serve a public and

civic utility through learning opportunities and research (Chambers, 2005; Kezar, Chambers, &

Burkhardt, 2015). While these ideals hold weight philosophically, the reality is far more

problematic as young people are increasingly and disproportionately shouldering the financial

burden of the higher education system (Baum, Little, & Payea, 2011; Burdman, 2005; Robb,

Moody, & Abdel-Ghany, 2012). This trend complicates the perspective that education primarily

serves shared interests and furthers the notion that students are individual consumers of

educational products (Giroux, 2002, 2006). However, as with any consumer model, there is a

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tipping point. Demand only exists as long as people value that which is on offer. And while, perhaps counterintuitively, rising costs have not curbed demand for college degrees, economic shifts on the horizon may influence how students perceive these costs in relation to the value they receive.

Presently, the cost of a college diploma is viewed largely as the price of admission to a successful career and subsequent financial security (Burdman, 2005). However, advances in the development of artificial intelligence and robotics will drastically reduce the amount of human labor required in a wide range of industries (Cath, Wachter, Mittelstadt, Taddeo, & Floridi, 2018; Russell, Dewey, & Tegmark, 2015). So what happens when a college degree costs a quarter of a million dollars, but offers little guarantee with respect to financial return? Institutions would do well to consider that the current path leads to offering lesser value for individuals and society.

When we evaluate the ecological system of higher education in its entirety, it is easy to recognize imbalance. The winners: institutions, university presidents, football teams, and corporate interests; and the losers: indebted students and the would-be college students who are too (fill in the blank, this word is open to debate) to go into debt. Ecological systems however, cannot withstand severe imbalance in the long-term. Systems must correct themselves or collapse entirely, as even the sharks die when there are no more fish.

While this may appear to be a bleak outlook for students and institutions, it is my hope that this crossroads may prove to be an opportunity to reconnect with values, missions, and purposes that may have been overlooked in recent history in favor of institutional strength and financial viability. Perhaps this moment trumpets the resurgence of the humanities in seriousness and funding. Perhaps it offers increasing opportunities for interdisciplinary study and prosocial initiatives.

This study offers one avenue through which education can be a practical endeavor in growing economic industries that embraces the intrinsic value of person, place, and ecological balance. Classes such as the Food Cluster at UCLA provide students with the capacity to connect in new ways with their environment, community, and the systems in which they actively or passively participate. Feeding ourselves is the first thing we are taught as children and yet the health of society by and large would suggest that we do not quite have it nailed. The simplicity and convenience of modern food options masks a system that is wrought with complexity, technological advancement, profits, cruelty, and disease. In the pursuit of technological advancement and scientific research, universities actively perpetuate these misconceptions with relative departmental funding (Giroux, 2002)—thus valuing, technological solutions over social solutions to these problems. While technological advancement is important, it is not all consuming. And we are falling increasingly behind the exponential curve of discovery in terms of our appropriate application of newly developed technologies.

The path forward for higher education is one of greater, not less, societal significance and requires the resumption of a banner left in the dust long ago. Although, perhaps this time we cross out the 'higher' part and just go with 'education'—or 'later' education, should we get the ages of students confused. But for too long higher education has conflated two quite different meanings for education: learning and prestige. And by allowing one to pass for the other, we have lost sight of the greatest value these institutions have to offer, such as teaching students how to consume in a way that enhances the vitality of the planet rather than detracting from it.

Opportunities for Further Research

What is true or perceived at one time in one context is not inherently so at all times in all contexts. Such is the nature of discovery and learning. My experiences with students and my

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subsequent reflections on these experiences left me with far more questions than I originally set out to answer. This study is one of many that will be needed to paint a portrait of the current state and future potential of ecological education in an increasingly global society. As a single case study, the meaning gleaned from these pages should be compared with other cases in order to develop and test larger, overarching frameworks for ecological education (Yin, 2013).

Perhaps the most logical next step is to explore the significance and bounds of self-selection on these types of student understandings and outcomes. The students who participated in the Food Cluster Program indicated some degree of interest in the topic simply by selecting the course. And while this course still remained quite general in scope and accessibility, the question of how to reach students who are indifferent or averse to learning about ecology and sustainability remains unanswered. To consider the world beyond oneself is in and of itself an act of compassion. To hoist that experience upon someone seems counterintuitive if not implausible, like trying to force someone to relax by yelling "relax!" The motivation must come from within for the content and behavioral changes to truly take root.

This perspective calls into question the effectiveness of ecoliteracy to evoke change as a college requirement. Ultimately, it would stand to reason that increasing the number of students taking sustainability-centered courses would also increase the overall level of ecoliteracy in the student body. And while I believe this to be an accurate hypothesis, in that students would develop new understandings and perspectives on ecological systems and their role within it, without the motivation to engage with the material, it is difficult to judge the relative impact the course would have on student behavior. In terms of developing a wider degree of engagement, a plausible next step might be to conduct a similar study with students who do not share the same enthusiasm for the course material and who enroll in it out of obligation.

Conclusion: Developing Ecological Relationships

One might think that teaching college students about the food they consume is a fine idea, but a little late in the human life cycle. By the time students reach college they have been eating for eighteen years and have developed almost two decades of ideas, preferences, and habits. Ideally, students would learn about food systems much earlier in their academic careers, perhaps at the very beginning; however, colleges have the responsibility to tailor curriculum to the needs and abilities of students. This study shows that, when given the opportunity to learn about their role in food systems and the larger socioecological context, college students incorporate these new understandings into their lives and habits of consumption. Doing so inevitably changes not only their relationship to the outside world and how they choose to participate in various systems, but also their understandings of self. Connecting the individual student to the complexities of external systems deepens students' relational understandings of identity and should be of primary interest to all types of institutions throughout the educational journey.

That being said, learning about food and other ecological relationships can be emotionally draining. There is a certain levity to ecological ignorance that comes crashing down with the realization that so many of our societal defaults are destructive and, in many ways, desperately inadequate. The norms of commercial food production offer "products" that are heavily processed, chemically preserved, nutritionally deficient or decidedly harmful, and nonlocal. An educated person who is aware of these detrimental attributes, both to the environment and themselves, will identify the ways in which the established system fails to support their values and priorities and, with sufficient knowledge, energy, and resources, will seek out alternatives. However, as industrial food practices become increasingly harmful and

secretive, the process of sourcing quality and ethically produced food requires increased ecological awareness and ever-greater initiative.

Perhaps the most powerful experience that came out of this year was the collective emotional transition from despair to hope. It was a journey that I too experienced, alongside my students. As we learned about the current and projected levels of consumption, pollution, population growth, ocean acidification, and the degradation of soil, remaining chipper was no easy task. Each class we learned a new way in which humanity was in over its head and headed in the wrong direction. But over the course of the year, the tone gradually shifted. Shock and despair are paralyzing, unsustainable states. Eventually, you have to move, and you might as well move in the direction that makes things better.

Over the course of the year we explored the many complexities of each problem, and from the newfound awareness we developed deeper understandings and improved modes of participation. Some solutions were given to us, such as Kimmerer's (2013) presentation of the *Honorable Harvest* from *Braiding Sweetgrass*, which was assigned reading for all students in the winter quarter as we explored the social and cultural implications of sustainable food practices. *The Honorable Harvest* is Kimmerer's written interpretation of Indigenous practices regarding ecological reciprocity:

> *Know the ways of the ones who take care of you, so that you may take care of them.*
>
> *Introduce yourself. Be accountable as the one who comes asking for life.*
>
> *Ask permission before taking. Abide by the answer.*
>
> *Never take the first. Never take the last.*
>
> *Take only what you need.*
>
> *Take only that which is given.*

Never take more than half. Leave some for others.

Harvest in a way that minimizes harm.

Use it respectfully. Never waste what you have taken.

Share.

Give thanks for what you have been given.

Give a gift, in reciprocity for what you have taken.

Sustain the ones who sustain you and the earth will last forever.

At first glance, these lessons may seem far too simplistic. Asking permission before taking something is reminiscent of kindergarten ethics and sandbox decorum. However, these instructions are not directed to our relationships with other people. Instead, they inform our relationships to the lives and resources that we choose to consume. While we may be used to "introducing ourselves" to other people, doing the same to our food requires a psychological shift in understanding about what food is, where it comes from, and how it should be treated.

The Honorable Harvest became something of a guiding memento for students, who kept it in their notebooks and knapsacks for easy reference. It offered students a useful guide for participation in ecology, rather than any new information about it. There is always more to learn, however turning new knowledge into sustained practice is a more challenging process. Reading about climate change is one thing, and doing so would develop an important dimension of ecoliteracy, but perhaps the more important aspect is how that new knowledge is applied.

The path toward ecoliteracy is a continual and reflexive journey for all of us. The process requires that we not only come to understand the world in a different way, but also that we understand ourselves differently in relation to it. My hope, embedded in this work, is that these relationships between students and the elements of the natural world become stronger and that

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they participate in ecological systems with grace, integrity, and reciprocity. I shall strive to do the same.

Epilogue

"Peace" means returning to one's original nature.

This original nature is the eternal law.

To know the nature's law is to be enlightened.

He who is ignorant of the nature's law shall act recklessly, and thus will invite misfortune.

Lau Tzu, *Tao Te Ching*

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APPENDIX A

Tables and Figures

Table 1					
Participant Backgrounds and Demographic Characteristics (N= 20)					
<u>Name</u>	<u>Gender Identity</u>	<u>Major</u>	<u>Ethnic Background</u>	<u>Hometown</u>	<u>Campus Organizations</u>
Anika	F	Undeclared	Indian, Kenyan	Riverside, CA	Muslim Students Association
Ana	F	Economics	European	San Diego, CA	Surfrider Foundation
Charlie	M	Political Science	European	Wappingers Falls, NY	
Audrey	F	Communication Studies, Political Science	African American	Riverside, CA	
Kate	F	Economics	Korean	Mountain Lakes, NJ	
Sophia	F	Psychology	Vietnamese, Chinese	Alhambra, CA	
Marisa	F	International Development	Italian	Grand Rapids, MN	
Jade	F		European	Walnut Creek, CA	
Kevin	M	Political Science, Public Affairs	Chinese	Medora, CA	
Laura	F	Undeclared	Mexican	Compton, CA	East Yards Communities
Maggie	F	History	European	Danville, CA	
Amelia	F	Business Economics, Environmental Science	Lebanese	Dubai, United Arab Emirates	Ski Club, Sailing Club
Amanda	F	Economics	Korean	Palos Verdes, CA	
Noah	M	Economics	Chinese	Dominican Republic	Rowing Team, Christian Club
Ava	F	Undeclared	Vietnamese, French	Long Beach, CA	
Lisa	F	Undeclared	Mexican	Van Nuys, CA	
Thomas	M	Psychology	Palestinian, Japanese	Mission Viejo, CA	Lettuce Club, Team Green
Shey	F	Communication Studies	Iranian, Chinese, Lithuanian	Laguna Hills, CA	
Cynthia	F	Math	Vietnamese	San Bernardino, CA	E3: Ecology, Economy, Equity
Charlotte	F	Economics, Political Science	Vietnamese	Santa Ana, CA	
Note. All participants were first-year students at UCLA, enrolled in *Food: A Lens for the Environment and Sustainability* Cluster Course.					

Figure 1

Food Cluster Content Overview and Course Structure

Fall Quarter

Lecture
- Agriculture
- Ecology
- Food Production Systems
- Water use in Food Production

Discussion/Labs

Field Trips: Bellona Wetlands, Kindred Spirits Care Farm, Westside Food Bank, Hyperion Plant Tour, Biogeography Tour of UCLA, Stunt Ranch

Winter Quarter

Lecture
- Atmospheric Sciences
- Climate Change
- Energy use in Food Production
- Food and Culture

Discussion/Labs

Field Trips: Kenneth Han Park, UCLA Co-gen Power Plant, Santa Monica Farmers Market, Stunt Ranch, Page Museum, UCLA Botanical Garden Tour, Mildred E. Mathias Botanical Garden, Getty Villa Kitchen Garden

Spring Quarter

Seminar: Rewilding in Theory and Practice

Seminar: Geographies of the World Food Economy

Seminar: Water Conflict and Food Systems

Seminar: Coastal Ecosystem and Marine Fisheries

Seminar: The Culture of Food

Seminar: The Amazonian City in History and Today

Seminar: Agriculture in Film

APPENDIX B

Course Syllabus: Fall Quarter, 2017

GE Cluster/Environnent M1-A/B/CW

"Food: A Lens for Environment and Sustainability"
Sponsored by the UCLA Institute of the Environment and Sustainability

Synopsis: This three-course Cluster will address one of the most pressing issues of our time -- the relationships between the world's rapidly growing human population and the global environment that makes human existence possible –through the lens of food. The connections between food and the environment are complex, encompassing scientific and social factors. We will discuss pressing issues including biodiversity loss, nutrient cycling, land conversion, climate change, sustainable energy, chemical pollution, antibiotic resistance, fresh water quality and quantity, equitable access to healthy food, and dietary trends. We will investigate how our food systems impact all of these topics and the many exciting solutions that are under development. Each lecturer will present the concepts, perspectives, skills, and tools that his or her academic discipline can contribute to the formidable task of restoring worldwide environmental health. The courses are designed for students from all backgrounds and should appeal to those who wish to learn more about current environmental issues widely discussed in the public and scientific media.

Cluster Format: Environment M1 is presented as a three-course sequence in the fall, winter, and spring quarters with each course carrying 6 units of general education credit. Enrolling for the fall quarter guarantees enrollment for winter and spring quarters. Courses will be offered at the same time in the fall and winter quarters to simplify course planning. The fall and winter courses (Environment M1A and M1B, respectively) will consist of lectures and discussions. The spring quarter course (Environment M1C) will consist of small seminar sections of up to 20 students each, in which students will explore specialized environmental topics (see tentative list in this handout).

Course Structure: The format of the course consists of lectures, discussion sections, laboratories, and field trips. A schedule of lecture and discussion topics is attached. Discussion sections will be interactive, with student participation required. In the laboratory sections, students will perform exercises related to the course material.

- Four blocks of "basic" material each presented by a faculty member, taught with a focus on food (2/3 of lecture time)
  o Relationships between agriculture, ecology, and biodiversity
  o Food production, water quantity, and water quality
  o Air quality, climate change, energy elements of food production
  o People, food, and the environment.
- "Case Studies" of focused material presented by all faculty and guest lecturers (1/3 of lecture time)
  o Food from the sea

- o   Agriculture and the California water supply
- o   Food miles and impacts on greenhouse gas emissions
- o   Antibiotics use in livestock and the growing resistance to these drugs
- o   Feedlots versus pasture: comparison with respect to climate change
- o   Aesthetics of the grocery store

Discussion Sections (20 students in each section)
- Two hours per week, entirely conducted by Teaching Fellows. Will include follow up discussions and exam reviews.
- "Labs" will help students quantitatively understand:
- o   Carbon and water footprints of various foods and food systems
- o   Nutrient demands of our food production
- o   Food miles and related energy costs
- o   How to achieve sustainable food production for a growing population

General Education, Honors, and Writing Credit: This Cluster will satisfy four course requirements in the following General Education areas:
- 1 Foundations of Scientific Inquiry in Life Science with lab/demonstration credit
- 1 Foundations of Scientific Inquiry in Physical Science with lab/demonstration credit
- 1 Foundations of Society and Culture in Social Analysis
- 1 of the following (student will choose based on need for GE credit): Foundations of Scientific Inquiry in Life Science (without lab), Foundations of Scientific Inquiry in Physical Science (without lab), Society and Culture in Social Analysis, Society and Culture in Historical Analysis

Students receive College Honors Credit for all three quarters of the Cluster course. Assistance with GE or Honors Credit or course enrollment can be obtained from your academic counselor (College Counseling Service, AAP, or Honors). Upon completion of the entire yearlong Cluster, those students who have satisfied the College's Writing I requirement **by the end of Spring Quarter** (*must be satisfied by other courses*) will receive credit for the College of Letters and Sciences Writing II requirement. Students intending to enroll in English Composition 3 in the Winter or Spring should review the special procedure posted on the class web site for requesting a reserved space in English Composition 3.

Textbooks and Supplementary Reading Materials: Readings will be assigned on a regular basis from the required textbook listed below and from class handouts (see lecture schedule). The following textbook is required (for both the Fall and Winter quarters) and is available for purchase at the campus bookstore: *Environment: the Science Behind the Stories, 6th ed.*, Withgott, J, and Laposata S., Pearson, 2017. The text is available in hardbound, loose leaf, or online formats. It is on reserve at the Powell Library.

Course Web Site: Course materials, including the syllabus and all announcements, are available at the course web site at https://ccle.ucla.edu/course/view/17F-ENVIRONM1A-1

Written Assignments: Three papers, a library tour and one library notebook activity, and four lab exercises will be required this quarter. The labs will be coordinated with activities in the discussion sections, which in turn will be closely related to the lecture material. Details

concerning the requirements for the papers will be given by the TAs in the discussion sections. All assignments will be handed in at the beginning of your assigned discussion section during the weeks listed below:

Assignment	Contents	Week Assigned	Week Due
Writing Assignment #1	Writing a Summary	1	3
Library #0 (part of WA)	Self-guided/guided library tour	2	4
Library #1 (part of WA)	Notebook Activity	3	4
Writing Assignment #2	Annotated Bibliography	3	5
Writing Assignment #3	Civic Engagement Project	4	9
Lab #3	CA Water Balance	8	9
Lab #4	Global health and env. data	10	10

Note: There may also be short written assignments due as follow up from lecture.
Examinations:
Both the midterm and final examinations for this course will be closed book and will consist of mixtures of short answer (a sentence or two), short essay (half page), and longer essay (full page) questions. The examinations will be designed to test knowledge of definitions important to an understanding of the environment, concepts about how environmental systems function, and issues related to the interactions of humans with the environment. Questions on these topics will be drawn from the material presented in lecture, discussion sections, and from the assigned readings. Quantitative and factual material is required in supporting written arguments, particularly in response to essay questions.

Participation: Attending lectures and actively participating in discussion sections are both important aspects of the course, and both will be graded. Twenty of the course's thirty participation points are associated with discussion sections (one point awarded for completing evaluations for section). Five further participation points are awarded for attending and providing reflections on a required field trip. Five points are associated with lecture activities (one point for completing evaluations for lecture & four points for being present during four unannounced presentations during regular lecture time for which attendance will be taken in a form of a brief questionnaire handed out in class).

Grading: The course grade is determined by performance on examinations, written papers, and participation in lectures and discussion sections. The total number of points possible for the course is 300. Half of the grade is related to formal examinations and half to writing and class participation. The total points are distributed as follows:

	Points	Percent
Midterm	60	20%
Final	90	30%
Writing Assignments	75	25%
Lab Write ups	45	15%
Participation	30	10%
Total	**300**	**100%**

Field Trips: All students must participate in at least one of the following five field trips. Final information on field trip options and schedules will be distributed during the first week of classes. The field trips for the Fall are:

- Bellona Wetlands, October 27, 1:30pm
- Kindred Spirits Care farm, October 28, 8:30am
- Westside Food Bank for food sorting, November 4 at 10am
- Hyperion plant tour, Tuesday, November 14 at 12:45 pm
- Biogeography tour of campus, TBD meet at the flagpole by the quad (Dickson Court)
- Stunt Ranch, Saturday, November 18 at 8:15am

Preliminary Seminar Topics for Environment M1C Spring Quarter 2017:

- These are examples of potential seminar topics (Spring 2017 is in the planning stage)
- The Amazonian City History and Today
- Rewilding in Theory and Practice
- Foreign and Familiar: The Culture behind Food Choices
- Gone Fishing: ecology of Pacific marine fisheries
- Food & Social Justice

About the Instructors, Teaching Fellows, Course Librarian & Inquiry Specialist: Population, Food, Global Climate Change and Sustainability

At the end of 2011 the world's human population reached 7 billion. Approximately 1 billion people are starving and approximately 1.5 billion are overweight. At least two billion more people are on the way in the near future. Feeding the global population in a healthy and sustainable way in the face of climate change is an enormous challenge of the utmost importance.

Global climate change is the most sweeping environmental challenge that human kind has yet faced. The primary source of climate change, fossil fuel combustion, underlies much of the structure of our civilization. The impacts of climate change reach into every corner of our lives, impacting human health, food supplies, water supplies, and weather in all forms, from temperatures to severe storms. The impacts of climate change exacerbate the environmental challenges from other unsustainable human practices. Solutions to this complex and interwoven problem are also sweeping and depend on changes made by millions of people, from regular citizens to top regulators. Real, lasting, sustainable solutions must be ecologically sound, economically viable and socially just and equitable.
The fundamentals of these themes will be introduced in the beginning of the first quarter, and they will appear repeatedly throughout the entire course in the context of ecological, hydrologic, atmospheric and cultural issues. Students should strive to integrate the many aspects of human population growth, climate change and sustainability in their own minds throughout the course.

Fall Quarter 2017, Second Quadrant, Water:					
Week	Date		Lec.	Lecture and Reading	Discussions
6	Mon.	Nov. 6	18	**Ethics of Animal Use in Food: Perspective of Gene Baur, Founder of Farm Sanctuary**	Discussion of readings, literature work, and developing ideas for civic engagement project.
	Wed.	Nov. 8	17	**Midterm Exam**	
	Fri.	Nov. 10		**VETERANS DAY – No class**	
7	Mon.	Nov. 13	19	**Water Demand for Agriculture and Scarcity:** Dry and wet regions of the globe; definition of water scarcity; water use globally, in China, and the US; local and regional water balances; strategies for meeting demand for water; planetary boundary for water appropriation; appropriate technology; wastewater demonstration **Reading Withgott & Laposata Ch 15 and supplemental**	Lab 3: Introduction to California water issues NOTE: alternate location (check w/ TA) Discuss civic engagement project. Hanak et al., Managing California's Water, Chapters 4 and 10
	Wed.	Nov. 15	20	**California Water Balance:** Surface and groundwater supplies; options for meeting future demand; water recycling; use of reclaimed water for agriculture—both crops and livestock, introduction to California drought and agriculture. **Reading: Withgott & Laposata Ch 15 and supplemental**	
	Fri.	Nov. 17	21	**Freshwater as a Resource:** Intro to hydrologic cycle; hidden water; issues re: bottled water (quality and environmental impacts) **Reading: Withgott & Laposata Ch 15 and supplemental; U.N. Livestock's Long Shadow, Ch 4.pp.125-144**	
8	Mon.	Nov. 20	22	**Case study:** Food, Water, and Industrial Extraction. Natural Resources Defense Council (NRDC) Western Director Joel Reynolds will talk to us about the proposed Pebble Mine.	NO DISCUSSION SECTIONS THIS WEEK. Please attend OH for questions. (Lab 3: California Water Due – **in class**)
	Wed.	Nov. 22	23	**The ocean as a sustainable food source;** Acid test; impacts of aquaculture—farmed environmental impacts of fishmeal. **Reading: Ch 16 of Withgott and Laposata and supplemental**	

	Fri.	Nov. 24		**THANKSGIVING - No Class**	(Writing Ass. 3: Civic Engagement Project Due – **in class**)
9	Mon.	Nov. 27	24	**Planetary boundary for ocean acidification;** Impacts of agricultural runoff on receiving ocean water: Case studies: dead zones; plastics pollution in ocean due to food packaging and water bottles; **Reading: Ch 16 of Withgott and Laposata and supplemental**	Lab 4: Global health and env. Data NOTE: alternate location (check w/ TA)
	Wed.	Nov. 29	25	**Foodprint calculations:** Land use, nutrients, water use, and energy requirements of various food products and food systems; food miles (Eshel article and other case studies); water used for feed production (quantity and quality issues with using recycled water); planetary boundary for land conversion **Reading: Posted literature articles, sections of U.N. Livestock's Long Shadow Ch 3**	
	Fri.	Dec. 1	26	**Pathogens, metals, and drugs:** Heavy metals from feed in soils and water; organic agricultural contaminants in ecosystems, bioaccumulation factors, comparison of organic vs conventional for chemical content of food and pollution of surface and groundwater. Pathogens **Reading: Withgott & Laposata sections of Ch 14 and UN Ch 4, 140-144** **Nutrient pollution and agriculture:** planetary boundaries for N and P; eutrophication potential of foods, organic vs conventional comparison with respect to nutrient cycling, UN Livestock impact on N cycling **Reading: W&L Ch 5 pp. 123, 126-128, UN Ch 4, 137-140, 144-149**	
10	Mon.	Dec. 4	27	**Antibiotic resistance and pathogens in food and the environment:** Antibiotic residues and antibiotic resistance genes in water and food **Reading: Silbergeld review article on CAFOs and human health, 2008**	Review Final Exam Review Friday (Lab 4: Global Health)
	Wed.	Dec. 6	28	**Role of dietary shifts in achieving climate goals.:** How far can food choices go in mitigating climate change? **Reading: TBD, Wada et al. paper**	
	Fri.	Dec. 8	29	**Culmination, Healthy Sustainable Diets.**	
11	Wed.	Dec. 13		**Final Examination**	

Diversity, Equity and Inclusion

M1A/B/CW Food Cluster is an inclusive course sequence. What does that mean? The simple answer is that we are all in this together. Here are some ideas for how we might achieve our goal.

- Listen respectfully. Don't interrupt, engage in private conversations, or turn to technology while others are speaking. Use attentive, courteous body language.
- Make an effort to get to know other students. Introduce yourself to students sitting near you, learn their names and where they are from.
- Listen carefully to what others are saying and respect others' rights to hold opinions and beliefs that differ from your own. When you disagree with a statement, challenge the idea, not the person.
- Share responsibility for including all voices in the discussion. Try not to silence yourself out of concern for what others will think about what you say. If you have a tendency to contribute often, give others the opportunity to speak. If you tend to stay quiet, challenge yourself to share ideas so others can learn from you.
- Our primary commitment is to learn from each other. We acknowledge differences amongst us in backgrounds, skills, interests, and values. We realize that it is these very differences that will increase our awareness and understanding through this process.
- Speak your discomfort. If something is bothering you, please share this with the group. Often our emotional reactions to situations offer the most valuable learning opportunities. If you do not feel comfortable speaking up, please share your thoughts with a TA or instructor.
- Take pair-work or small group work seriously. Remember that your peers' learning partly depends upon your engagement.
- Keep an open mind and recognize that we are all still learning. Be willing to change your perspective and make space for others to do the same.

Course Syllabus: Winter Quarter, 2018

GE Cluster/Environnent M1-A/B/CW

"Food: A Lens for Environment and Sustainability"

Sponsored by the UCLA Institute of the Environment and Sustainability

Synopsis: This three-course Cluster will address one of the most pressing issues of our time -- the relationships between the world's rapidly growing human population and the global environment that makes human existence possible –through the lens of food. The connections between food and the environment are complex, encompassing scientific and social factors. We will discuss pressing issues including biodiversity loss, nutrient cycling, land conversion, climate change, sustainable energy, chemical pollution, antibiotic resistance, fresh water quality and quantity, equitable access to healthy food, and dietary trends. We will investigate how our food systems impact all of these topics and the many exciting solutions that are under development. Each lecturer will present the concepts, perspectives, skills, and tools that his or her academic discipline can contribute to the formidable task of restoring worldwide environmental health. The courses are designed for students from all backgrounds and should appeal to those who wish to learn more about current environmental issues widely discussed in the public and scientific media.

Cluster Format: Environment M1 is presented as a three-course sequence in the fall, winter, and spring quarters with each course carrying 6 units of general education credit. Enrolling for the fall quarter guarantees enrollment for winter and spring quarters. Courses will be offered at the same time in the fall and winter quarters to simplify course planning. The fall and winter courses (Environment M1A and M1B, respectively) will consist of lectures and discussions. The spring quarter course (Environment M1C) will consist of small seminar sections of up to 20 students each, in which students will explore specialized environmental topics (see tentative list in this handout).

Course Structure: The format of the course consists of lectures, discussion sections, laboratories, and field trips. A schedule of lecture and discussion topics is attached. Discussion sections will be interactive, with student participation required. In the laboratory sections, students will perform exercises related to the course material.

- Four blocks of "basic" material each presented by a faculty member, taught with a focus on food (circa 2/3 of lecture time):
  - Relationships between agriculture, ecology and biodiversity (Fall)
  - Food production, water quantity, and water quality (Fall)
  - Air quality, climate change, energy & food production (Winter)
  - People, food, and the environment. Involves media and research project on food & sustainability (Winter)
- Guest lecturers (circa 1/3 of lecture time)
  - Build & expand on the material presented during regular lectures
- Discussion Sections (maximum 21 students per section)

- o Two hours per week, entirely conducted by Teaching Fellows. Will include follow up discussions and exam reviews.
- o "Labs" will help students quantitatively understand:
  - ▪ Carbon and water footprints of various foods and food systems
  - ▪ Nutrient demands of our food production
  - ▪ Food miles and related energy costs
  - ▪ How to achieve sustainable food production for a growing population

General Education, Honors, & Writing Credit: This Cluster will satisfy four course requirements in the following General Education areas: one in Life Science with lab/demonstration credit, one in Physical Science with lab/demonstration credit), one in the Foundations of Society and Culture-Social Analysis, and one of the following (student will choose based on need for GE credit): Life Science (without lab), Physical Science (without lab), Social Analysis, Historical Analysis. Students receive College Honors Credit for all three quarters of the Cluster course. Assistance with GE or Honors Credit or course enrollment can be obtained from your academic counselor (College Counseling Service, AAP, or Honors). Upon completion of the entire yearlong Cluster, those students who have satisfied the College's Writing I requirement by the end of Spring Quarter will receive credit for the College of Letters and Sciences Writing II requirement. Students intending to enroll in English Composition 3 in the Winter or Spring should review the special procedure posted on the class web site for requesting a reserved space in English Composition 3.

- • 1 Foundations of Scientific Inquiry in Life Science with lab/demonstration credit
- • 1 Foundations of Scientific Inquiry in Physical Science with lab/demonstration credit
- • 1 Foundations of Society and Culture in Social Analysis
- • 1 of the following (student will choose based on need for GE credit): Foundations of Scientific Inquiry in Life Science (without lab), Foundations of Scientific Inquiry in Physical Science (without lab), Society and Culture in Social Analysis, Society and Culture in Historical Analysis

Textbooks and Supplementary Reading Materials: Readings will be assigned on a regular basis from the required textbook listed below and from class handouts (see lecture schedule & class website). The following textbook is required (for both the Fall and Winter quarters) and is available for purchase at the campus bookstore:
Environment: the Science Behind the Stories, 6th ed., Withgott, J, and Laposata S., Pearson, 2017. The text is available in hardbound, loose leaf, or online (see www.coursesmart.com) formats.

Written Assignments: One research paper with media production components and two lab exercises will be required this quarter. The labs will be coordinated with activities in the discussion sections, which in turn will be closely related to the lecture material. Details concerning the requirements for the papers will be given by the TAs in the discussion sections. All assignments will be handed in at the beginning of your assigned discussion section during the weeks listed below (unless otherwise instructed):

Assignment	*Contents*	*Points*	*Week Assigned*	*Week Due*

Writing Assignment #1	Select Agricultural Practice	2	1 (Mon.)	1 (Sat.)
Writing Assignment #2	Title, Topic & Why?	8	1	2
Writing Assignment #3	Annotated Bibliography	15	1	4
Writing Assignment #4	Rough Draft for Peer Review	20	1	7
Writing Assignment #5	Peer Critique (in section)	10	7	7
Writing Assignment #6	Final Paper	35	1	9
Lab Write-up #1	Carbon Budget Lab	15	3	4
Lab Write-up #2	Alternative Energy Lab	15	4	5

Examinations:
Both the midterm and final examinations for this course will be closed book and will include multiple choice, short answer (a sentence or two), short essay (half page), and longer essay (full page) questions. The examinations will be designed to test knowledge of definitions important to an understanding of the environment, concepts about how environmental systems function, and issues related to the interactions of humans with the environment. Questions on these topics will be drawn from the material presented in lecture, discussion sections, and from the assigned readings. The examinations will not contain questions that depend solely on a single fact or factoid (for example, a specific name, date, or number out of context) *unless that specific material has been identified by the lecturer as important enough to be on the examination*; however, quantitative and factual material is required in supporting written arguments, particularly in response to essay questions.

Participation: Attending lectures and actively participating in discussion sections are both important aspects of the course, and both will be graded (see below). Twenty of the course's thirty participation points are associated with discussion sections. Four further participation points are awarded for attending a required field trip, and one further point is awarded for being present at lecture for each of four unannounced presentations for which a response form will be handed out and collected at the end of the lecture. Two participation points will also be given for completing the on-line course evaluations for the lecture and discussion section (available on your MyUCLA page under the M1B course).

Grading: The course grade is determined by performance on examinations, written papers, and participation in lectures and discussion sections. The total number of points possible for the course is 300. Half of the grade is related to formal examinations and half to writing and class participation. The total points are distributed as follows:

	Points	Percent
Midterm	60	20%
Final	90	30%

Writing	90	30%
Lab Write ups	30	10%
Participation	30	10%
Total	**300**	**100%**

Field Trips: All students must participate in at least one of the following six field trips. Final information on field trip options and schedules will be distributed during the first week of classes. The field trips for the Winter are:

- Kenneth Han Park, Saturday, January 20 (30 students)
- UCLA Co-gen Power Plant, Thursday, January 25 & February 22 at 2pm (18 students)
- Santa Monica Farmer Market, Saturday, January 27 & February 10 (24 students)
- Stunt Ranch, Saturday, February 10 (30 students)
- Page Museum, Saturday, February 24 (30 students)
- UCLA Botanical Tour, Monday, February 5 at 1pm (15 students)
- Mildred E. Mathias UCLA botanical garden, Thursday, March 1st at 2pm (25 students)
- Getty Villa Kitchen Garden, Saturday, February 17 at 1:30pm (12 students)

Seminar Topics for Environment M1C Spring Quarter 2018:

- Mapping What We Eat: Geographies of the World Food Economy
- Water Conflict and Security in Food Systems
- Gone Fishing: coastal ecosystems, marine fisheries, and humans
- Rewilding in Theory and Practice
- Foreign and Familiar: The Culture of Food
- The Amazonian City in History and Today
- Food for thought: Agriculture in Film

Population, Food, Global Climate Change and Sustainability

At the end of 2011 the world's human population reached 7 billion. Approximately 1 billion people are starving and approximately 1.5 billion are overweight. At least two billion more people are on the way in the near future. Feeding the global population in a healthy and sustainable way in the face of climate change is an enormous challenge of the utmost importance.

Global climate change is the most sweeping environmental challenge that human kind has yet faced. The primary source of climate change, fossil fuel combustion, underlies much of the structure of our civilization. The impacts of climate change reach into every corner of our lives, impacting human health, food supplies, water supplies, and weather in all forms, from temperatures to severe storms. The impacts of climate change exacerbate the environmental challenges from other unsustainable human practices. Solutions to this complex and interwoven problem are also sweeping and depend on changes made by millions of people, from regular citizens to top regulators. Real, lasting, sustainable solutions must be ecologically sound, economically viable and socially just and equitable.

The fundamentals of these themes will be introduced in the beginning of the first quarter, and they will appear repeatedly throughout the entire course in the context of ecological, hydrologic,

atmospheric and cultural issues. Students should strive to integrate the many aspects of human population growth, climate change and sustainability in their own minds throughout the course.

Winter Quarter 2018, First Quadrant - Climate/Energy/Pollution				
Week	Date	Lec.	Lecture and Reading	Discussions
1	Mon. Jan. 8	1	**Atmospheric Fundamentals**: How the Atmosphere works: Composition and structure of the atmosphere. Reading: W&L 446 –452 Class Reader posted on class website 4-10	Introduction; recap of Fall quarter; writing assignment for the Winter quarter Research paper: Part 1: "Practice selection" due, 5pm, Saturday, January 13.
	Wed. Jan. 10	2	**Air Pollution:** atmospheric processes and removal of matter from the atmosphere; introduction to air pollution, Clean Air Act & EPA Reading: W&L, 452- 464	
	Fri. Jan. 12	3	**Air Pollution continued:** Air pollution & agriculture. Air pollution & Policy: Clean Air Act & EPA Reading: W&L, 465 – 472	
2	Mon. Jan. 15		**No Class. Martin Luther King, Jr. holiday**	Reading: Pacala and Socolow, Climate wedges: solving the climate in the next 50 years with current technologies, *Science*, 305:968, 2005.
	Wed. Jan. 17	4	**Guest Lecture** on Atmospheric circulation from winds to monsoons to El Nino. Reading: W&L 448-452 Class Reader posted on class website 35-38	Research paper: Part 2: Working Title, Topic Summary, & Motivating Question due
	Fri. Jan. 19	5	**Earth's Climate:** Climate, Past	

				climate records, past greenhouse gas emissions, natural and anthropogenic greenhouse warming and the concept of radiative forcing. Reading: W&L 479 – 494 Class Reader posted on class website 10-19	
3	Mon.	Jan. 22	6	**Anthropogenic Climate Change:** Global carbon cycle. Reading: W&L 119-124 Class Reader posted on class website 19-23	Reading: Hubbert, M. King. "The Energy Resources of the Earth", Scientific American, 61-70, 1971. **Lab #1:** Carbon Budget Lab – bring a laptop (http://www.library.ucla.edu/clicc/lending)
	Wed.	Jan. 24	7	**Climate Change Impacts**: Review of evidence of human impact on climate and future climate model projections. Climate change impacts on the physical environment, precipitation, sea ice, glacier and sea levels Reading: W&L 495 – 513	
	Fri.	Jan. 26	8	**Guest Lecture Professor Edward A. Parson (Dan and Rae Emmett Professor of Environmental Law, Co-Director, Emmett Center on Climate Change and the Environment, UCLA School of Law)** on climate change policy	

				Reading: – will be posted on the class website under Week 3	
4	Mon.	Jan. 29	9	**Energy - Fossil Fuels:** Coal, oil, shale, natural gas, fracking, and when will we run out? Reading: W&L 515 - 541	Reading: Jacobson, Review of solutions to global warming, air pollution, and energy security, Energy Environ. Sci., 2, 148–173, 2009. Lab #1 write up due
	Wed.	Jan 31	10	**Guest Lecture Professor Susanna Hecht (UCLA):** Anthropogenic black soils and agriculture in the Amazon basin Readings: TBD	Lab #2: Energy lab Essay Part 3: Annotated Bibliography due
	Fri.	Feb 2	11	**Energy Conservation & Alternative Energy:** Overview and energy conservation; nuclear, biomass and hydroelectric Reading: W&L 541 – 545, W&L 549 – 573	
5	Mon.	Feb 5	12	**Guest Lecture Professor Laurent Pilon (Mechanical & Aerospace Engineering, UCLA)** on microalgae production for food production Reading: TBD	Reading: Wigley, T.M.L., A combined mitigation- geoengineering approach to climate stabilization, *Science*, 314:452, 2006.
	Wed.	Feb. 7	13	**Newer Alternative Energies & Geoengineering:** solar, tidal and wind energy Reading: W&L 577 – 601	Lab #2 write up due
	Fri.	Feb. 9	14	**A very Brief History of Agriculture - Food & Fuels:** Understanding the	

			connections

Readings: Diamond, J. "Evolution, consequences and future of plant and animal domestication", Nature, 418, 2002 | |

			Winter Quarter 2018, Second Quadrant - People/Food/Environment	
6	Mon. Feb. 12	15	Lecture: Introduction to the people of sustainable food & Soil;

Reading: Miller, D. "Introduction: The Jungle Effect" & Miller, D. "Dining in the Cold Spots" with Reflective Writing

*** Midterm Review Session – Northwest Auditorium 6-8pm*** | Video: "Symphony of the Soil" with discussion questions |
| | Wed. Feb. 14 | 16 | ***** Midterm Exam ***** | |
| | Fri. Feb. 16 | 17 | Lecture: Biomimicry

Reading: Miller, D. "Anatomy of an Indigenous Diet" with Reflective Writing | |
| 7 | Mon. Feb. 19 | 18 | **No class —President's Day** | Review and critique research papers |
| | Wed. Feb. 21 | 19 | Guest: Rachel Surls

Reading: Miller, D. "A Diet Lost in Translation" with Reflective Writing & Withgott/Laposata, Chap. 6 (pgs 134-141 & pgs 150-- 154) | Essay Part 4, Rough Draft due by the start of the discussion section
Essay Part 4, Peer Review & Critique of Papers due |
| | Fri. Feb. 23 | 20 | Lecture: "Wes Jackson"

Reading: Miller, D. "Feeding Our Genes or Our Taste Buds?" with Reflective Writing | Discuss Withgott & Laposata, Chap. 6; Malawi Case Video: Dr. Daphne Miller |

			Discuss: "Symphony of the Soil"	
			After lecture, read "Wes Jackson" chapter of Letters to a Young Farmer	
8	Mon. Feb. 26		Lecture: "Dan Barber" Reading: Miller, D. "Copper Canyon, Mexico, A Cold Spot for Diabetes" (bring your Reflective Writing) & Withgott/Laposata, Chap. 7 (pgs 161 - 163 & pps 169 - 180) After lecture, read "Dan Barber" chapter of Letters to a Young Farmer	Discuss Withgott & Laposata, Chap. 7; Video: "Sugar Rush"
	Wed. Feb .28	21	Guest: Seeds of Hope	
	Fri. Mar 2	22	Lecture: "Joel Salatin" Reading: Miller, D. "Crete, Greece: A Cold Spot for Heart Disease" (bring your Reflective Writing) After lecture, read "Joel Salatin" chapter of Letters to a Young Farmer	
9	Mon. Mar. 5	23	Lecture: "Wendell Berry" Reading: Miller, D. Iceland: A Cold Spot for Depression;" (bring your Reflective Writing) & Withgott/Laposata, Chap. 12 (pgs 302-315 & pgs 318-323; Discuss: "Sugar Rush" (bring your responses)	Essay part 5: Paper due Friday at 5:00 PM Friday via Turnitin link on CCLE Discuss Withgott & Laposata, Chap. 12; Malawi Case

					Video: "In Defense of Food" with discussion questions
				After lecture, read "Wendell Berry" chapter of Letters to a Young Farmer	
	Wed.	Mar. 7	24	Guest: Santa Monica Farmers Market	
	Fri.	Mar. 9	25	Lecture: "Michael Pollan" Reading: Miller, D. "Camaroon, West Africa: A Cold Spot for Bowel Trouble" (bring your Reflective Writing) After lecture, read "Michael Pollan" chapter of Letters to a Young Farmer	
10	Mon.	Mar. 12	26	Lecture: "Mas Masumoto" Reading: Miller, D. "Okinawa, Japan: A Cold Spot for Breast and Prostate Cancers" (bring your Reflective Writing) & Withgott/Laposata, Chap. 13 (ppg 332-343) Discuss: "In Defense of Food" video (bring your responses) After lecture, read "Mas Masumoto" chapter of Letters to a Young Farmer	Discuss Withgott & Laposata, Chap. 13; Malawi Case
	Wed.	Mar. 14	27	Guest: Huntington Ranch	Exam Review
	Fri.	Mar. 16	28	Reading: Miller, D. Foraging for Indigenous Foods in a Modern World" (bring your Reflective Writing)	
				Wrap Up Discussion (All) *** **Exam Review** ***	
				*** **Final Examination** ***	

Course Syllabus: Spring Quarter, 2018

The only war that matters is the war against wildness.

All other wars are subsumed by it.

-Olsen (2012)

Course Description

 Put simply, rewilding is the process of making something wild again. Rewilding as a construct was born out of conservation ecology as a means of restoring ecosystems to their pre-human state. This model has been used across the globe to reinvigorate the fertility of landscapes, to embolden faltering or displaced species, increase biodiversity and stabilize habitats, and to offset the destructive environmental impact of human beings.

 The process of rewilding often relies on removing or disassociating human beings from the environment. In reality, however, human beings are anything but removed. There are very few places on earth that have not been impacted by human activity in some significant way. We must therefore not think of ourselves as separate from nature, but rather as a massively influential part of it.

 In this course we will consider rewilding as it pertains to the human experience and our relationship to the natural world. In doing so we will explore concepts of wildness and domestication through our evolutionary history. Over the course of the semester we will learn about the 200000 years of hunter-gatherer communities, we will reconsider the advent of agriculture from anthropological and physiological perspectives, and we will explore the ways in which our evolutionary past can inform our present day.

Expectations

You are expected to be kind, thoughtful, and engaged in class discussions. You are expected to show up to class rested and prepared.

Assignments

The course assignments are divided into three sections: a weekly journal entry, discussion facilitator, and a research paper.

1) Journal: Each week, students will submit a one-page (minimum) journal entry pertaining to a particular prompt. Journal prompts for each week will be given at the end of each class. Entries are to be submitted in a single google doc that is shared with the instructor at the beginning of the quarter and updated weekly.

2) Discussion Facilitator: Each class, two students will briefly present on that week's readings and facilitate the group discussion on the readings. Everyone is required to facilitate at least once.

3) Research Paper: Over the course of the quarter, students will produce a 10-page research paper on a topic of their choosing. The paper should address the following prompt:

Identify an element of modern human society or culture that contradicts the evolutionary blueprint for homo sapiens. Describe the contradiction, and explain whether the modern condition is beneficial or detrimental to human beings.

The research paper will be broken down into smaller, precursory assignments throughout the quarter:

Week 3: Topic Proposal

Week 5: Annotated Bibliography

Week 6: Paper Outline

Week 7: Rough Draft Due and In-Class Peer Review

Week 10: Final Paper Due

Rubric

The course will be graded out of a total of 100 available points. Grades will be determined as follows:

Research Paper: 35 points (Final draft: 15; Rough draft: 10; Outline: 3; An. Bib.: 5; Topic proposal: 2)

In-class Participation & Engagement: 30 points

Journal Entries: 20 points

Discussion Facilitator: 15 points

APPENDIX C

Recruitment Script

Location: Food and Sustainability General Education Cluster Course

My name is Peter Randall, and I am a graduate student in the School of Education here at UCLA. I would like to take a couple minutes of your time to talk to you about participating in my research study. This study examines college student ecoliteracy. You all are eligible to participate in the study because you are enrolled in this Food and Sustainability course.

If you decide to participate in this study, you will be asked to complete a short (one page) demographic survey. In addition, you will be asked to participate in one or two interviews.

Please remember, your participation is completely voluntary. You can choose to be in the study or not. If you would like to participate, we can go ahead and schedule a time for me to meet with you to give you more information and a detailed consent form. If you have any questions about this process or if you would like to contact me about participation, I may be reached at (email removed).

Thank you.

Consent Form

UNIVERSITY OF CALIFORNIA LOS ANGELES

STUDY INFORMATION SHEET

Ecoliteracy in Higher Education

T. Peter Randall, M.A. and Walter Allen, Ph.D, from the *Department of Education &*
Information Studies at the University of California, Los Angeles (UCLA) are conducting a
research study.

You were selected as a possible participant in this study because *you are enrolled in the Food*
and Sustainability GE Cluster for the 2017-2018 academic year. Your participation in this
research study is voluntary.

Why is this study being done?

      This study examines college student ecoliteracy (i.e. their connection with the natural
world and their ecological understanding of environmental issues) through a series of in-person
interviews and participant observation. This research offers not only the opportunity to study
how student perspectives and understandings change over time throughout the course of a
school-year, but also identifies what types of pedagogy and educational experiences are most
effective in promoting ecological citizenship. The ultimate goal of this project is to provide
institutions and educators with recommendations for effective ecopedagogical curricula through
greater understanding of college student ecoliteracy development

What will happen if I take part in this research study?

If you volunteer to participate in this study, the researcher will ask you to do the following:

- *You may be asked to participate in two interviews, 30 minutes to one-hour in length*

- *You may be asked to have your coursework and in-class participation be included in the study*

Types of questions that will be asked include:

- *How do you experience nature?*

- *What environmental issues are most important to you?*

- *How do you work to protect the natural world?*

Interviews will take place in a quiet, private place on the UCLA campus.

How long will I be in the research study?

This project will take place over the course of one academic year.

Are there any potential risks or discomforts that I can expect from this study?

There are no foreseeable risks for participation in this study.

Are there any potential benefits if I participate?

You may benefit from the study by participating in higher education research designed to inform curriculum design, enhance student services, and increase institutional support for

environmental education. The results of the research may contribute to increased environmental awareness on college campuses and more effective institutional initiatives.

Will information about me and my participation be kept confidential?

Any information that is obtained in connection with this study and that can identify you will remain confidential. It will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of a pseudonym list that will be stored in a password protected email account. The data will be stored in a private, password-protected laptop to which only the principle investigator will have access.

What are my rights if I take part in this study?

You can choose whether or not you want to be in this study, and you may withdraw your consent and discontinue participation at any time. Whatever decision you make, there will be no penalty to you, and no loss of benefits to which you were otherwise entitled. You may refuse to answer any questions that you do not want to answer and still remain in the study.

Who can I contact if I have questions about this study?

If you have any questions, comments or concerns about the research, you can talk to the one of the researchers. Please contact: *T. Peter Randall*

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UCLA Office of the Human Research Protection Program (OHRPP):

If you have questions about your rights while taking part in this study, or you have concerns or suggestions and you want to talk to someone other than the researchers about the study, please call the OHRPP at (310) 825-7122 or write to:

<div align="center">

UCLA Office of the Human Research Protection Program

11000 Kinross Avenue, Suite 211, Box 951694

Los Angeles, CA 90095-1694

</div>

Statement of Consent: I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

Your Signature _____ Date _____

Your Name (Print) _____

In addition to agreeing to participate, I also consent to having the interview tape-recorded.

Your Signature _____ Date _____

Your Name (Print) _____

Signature of person obtaining consent

_____ Date _____

Printed name of person obtaining consent

_____ Date _____

The consent form will be kept by the researcher for at least three years beyond the end of the study.

Participant Demographic Record

Name:

Age:

Nationality:

Hometown/State:

Other prior residences:

Race/Ethnicity:

Gender:

College Major:

Extracurricular Activities:

Outdoor Activities:

Requested Pseudonym:

APPENDIX D

Interview Protocol

Consent form!

(Follow up on any particularly interesting, surprising, or pertinent responses.)

Part 1: Background

Where are you from? Describe the place for me… What was it like growing up there?

What kinds of things did you like to do as a child? What were your priorities?

Describe your family life growing up…

What were your main responsibilities at home?

Who did the cooking in your family? What kinds of things did they cook?

Do you like to cook? What kinds of things do you cook?

In what ways did you experience nature as a child? How did these experiences impact you?

Where did you learn about nature? With and from whom?

Did your school focus on nature or environmental issues in any way? If so, how?

Did you participate in any outdoor or environmental education programs? What were your experiences like in these programs?

In what ways did you participate in environmental efforts? Did your family and/or friends participate with you?

Why did you choose UCLA?

How did you end up in the Cluster Program? How did you choose this course?

Have you taken any similar courses in the past?

What is your background in food systems or environmentalism?

Part 2: Ecoliteracy

What has your experience been like in the Cluster Program?

What has surprised you?

Has the course changed any of your behaviors?

Do you consider yourself to be knowledgeable about nature? Why?

What is the role of nature in your life? How do you experience it?

Are environmental issues a priority for you? How do you address them?

What are some of the things you do to mitigate your impact on the environment? Is there

anything you would like to do better?

Do you have an obligation to protect the environment? Why?

Do your friends knowledgeable about nature? Environmental issues? How do they address them?

In your view, what are the most pressing environmental issues in your home or college

community?

Why did you choose to take this particular course on sustainability? What are your initial

impressions? What are you most excited about? Is there anything you are most nervous about?

Do you consider yourself to be knowledgeable about nature? Why?

What did you learn in this course? Did anything in particular surprise you?

What was the most impactful lesson, activity, topic, or idea?

How did this course compare to others you have taken?

Was there anything that you disagreed with? Why?

How would you describe the social experience of the course?

How would you describe the teaching style? Was it effective?

What other activities or organizations are you involved in on campus? Off campus?

Applying Environmental Knowledge

What were your impressions of this course? What were some of the highlights for you? Is there anything you are most nervous about?

How could your school better support environmental efforts?

What is the culture or attitudes on campus surrounding environmental issues? Can you give me an example?

In what ways have your understandings of environmental issues changed since our last interview?

Have any of your behaviors changed? In what way?

What is one thing that you would change about your own behaviors? About the course? About your school? About the world?

Does UCLA make it easy to eat the way that you would like to?

If you were President of UCLA for a day and any policy changes you made would stick, what would you do?

Follow up on field notes:

Do you remember when (x) happened?

Describe what happened when (x)…

How did you feel when (x) happened? And after?

What did you think of (x)…

Is there anything else that you would like to share that you haven't had the chance to say?

Thank you!