“Not for Everyone, but Kind of Amazing”:

Institutional Friction and the Nature of Sustainability Education

by

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Submitted in Partial Fulfillment

of the

Requirements for the Degree

Doctor of Philosophy

Supervised by

Professor David Hursh

Education

Margaret Warner Graduate School of Education and Human Development

University of Rochester

Rochester, NY

2014

Dedication

For Harry and Ellie. May past and future remain in present conversation.

Biographical Sketch

The author was born in Buffalo, New York, United States of America on December 16, 1980 and spent most of his youth living in Chipmunk, New York. He attended Colgate University from 1999 to 2003, and graduated with a Bachelor of Arts degree in Environmental Geology in 2003. He first attended the University of Rochester's Warner Graduate School of Education and Human Development from 2004 to 2005 and graduated with a Master of Science in Teaching and Curriculum in 2005. He began doctoral studies in Teaching, Curriculum and Change at the University of Rochester in 2009, where he was awarded the Warner School's Scandling Scholarship from 2009 to 2013. He pursued his research in environmental sustainability and education under the direction of Dr. David Hursh.

The following select publications were a result of work conducted during doctoral study:

- Henderson, J.A. (*Forthcoming*). Out of sight, out of mind: On global connection, environmental discourses and the emerging field of sustainability education. *Cultural studies of science education*.
- Henderson, J.A., & Hursh, D.W. (2014). Economics and education for human flourishing: Wendell Berry and the *oikonomic* alternative to neoliberalism. *Educational studies*, 50(2), 167-186.
- Henderson, J.A., & Duggan-Haas, D. (2014). Drilling into controversy: The educational complexity of shale gas development. *Journal of environmental studies and sciences*, 4(1), 87-96.
- Luehmann, A., Henderson, J., & Tinelli, L. (2013). Supporting pre-service teachers' development: The case of blogging in the Get Real! science teacher preparation program. In M. Knobel & C. Lankshear (Eds.) *A new literacies reader* (187-212). New York, NY: Peter Lang.
- Hursh, D.W., & Henderson, J.A. (2011). Contesting global neoliberalism and creating alternative futures. *Discourse: Studies in the cultural politics of education*, 32(2), 171-185.

Acknowledgements

There are numerous people without whom this study would have been impossible. First and foremost the participants of the Oikos Academy community who so graciously gave of both their time and lives for the sake of this research. I am appreciative of your friendship and hope that I have accurately represented the complexity of your story here. None of this would have been possible without your generosity and I am deeply humbled by your gift. Similarly, none of this would have been possible without the generous support of Michael and Kathy Scandling and the Scandling Family, along with the taxpayers of the United States of America who believe in funding social and environmental science research via redistributive tax outlays. Thank you for your support.

There are numerous members of the Warner School who hold the place together, and without them none of this would have happened. Thanks to Brenda Grosswirth, Crys Cassano, Claire Urbanowicz, Pam Kaptein, Laura Brophy, Mary Beyer, Chris Penders, Theresa Danylack, Anne Sisk, Patty Peters, Janet Moore, Christine Ghinazzi, Ed Morgan, Preston Faulkner, Kathy McGowen and Dean Rafaella Borasi. Special thanks to Shirley Graham for transcription assistance and to Dave Garcia and Chris Nardi for troubleshooting so many vexing computer issues.

I have known some amazing teachers over the years who have shaped me into the person that I am today. I am forever grateful to the following educators: Kim Besock Elling, Susan Stedman, Kathleen Schaeper, John Kivari, Warren Blumenfeld, Bruce Selleck, Karen Harpp, Tom Balonek, Amy Leventer, Paul Pinet, Nancy Ares, Jeff

Choppin, Kevin Meuwissen, Ed Brockenbrough, Kevin O'Connor, Mary Jane Curry, Andrew Wall, Randy Curren and Katrina Korfmacher.

My field, environmental education, is an eclectic and geographically diverse group of scholars. I am heartened by the graciousness and warmth extended to emerging scholars within our field and see this as a sign of intellectual health. Special thanks to Carol Brandt, David Greenwood, Richard Kahn, Connie Russell, Hamish Ross, Paul Hart, Justin Dillon, Greg Lowan-Trudeau, Arjen Wals, Alan Reid, Sarah Stapleton, Andrew Bieler, Johnny Lupinacci, Bob Coulter, Jonas Greve Lysgaard and David Meek for your intellectual guidance and friendship over the years. I sometimes run in the cultural studies of science education field and thank Don Duggan-Haas, David Long, Carrie Tzou, Phil Bell, Jan Nespor and Kevin Leander for their wisdom and friendship.

Numerous friends have kept me sane in this long, long process, mainly by providing witty sarcasm, craft beer, and other necessary distractions like skiing and hiking adventures. In particular: Josh Page, Chris Montalbano, Justin Goldman, Ryan Radley, Marie and Matt Vanderbrook, Dina Strasser, Brian Bailey, Alex Yudelso, Kevin Connell, Lyle Jeremy Rubin, and Jeremy Wattles. The members of the Get Real! Science research group have been an invaluable and motley group of collaborators of which I am proud to claim membership. Michael Occhino, Rachel Chaffee, Jeremiah Frink, Liz Tinelli and Yen Verhoeven: I am looking forward to supporting you as you finish. I hear it will be good for you! And to my other comrades at the Warner School, know that I love you and cannot wait to see how we impact the world; in particular: Courtney Hanny, Julie

White, Nahoko Kawakyu O'Connor, Patty Waters, Alfred Vitale, Andrew Thomas, Scott Koch, Tomás Boatwright, Oliver Cashman-Brown, Amalia Dache-Gerbino, Abigail McHugh-Grifa and Burke Scarbrough.

Numerous writers and musicians have kept me company through long days of computer interaction. Respect to Bon Iver, Explosions in the Sky, Daft Punk, the Head and the Heart, Warpaint, Alexander Ebert, Bill Evans, Wilco and Andrew Bird for providing tunes to fuel the seemingly endless writing sessions. Thanks to Andrew Sullivan, Wendell Berry, Hannah Arendt, Michel Foucault, Bruno Latour, Seamus McGraw, Pierre Bourdieu, Tim Ingold and too many other writers who have forever altered how I see the world. Know that I stand on your shoulders.

To the members of my dissertation committees: I am forever appreciative of the intellectual gifts and guidance that you have provided over the years. Thanks to Joanne Larson, Marcia McKenzie and Eleana Kim for pushing me to do my best work, and for both challenging and supporting me when I needed it most. Thanks to April Luehmann for giving so much of herself to my education. I am in awe of your graciousness and care. And to my advisor, the amazing Professor David Hursh, who never ceases to surprise me with his passion for learning and change. You should know that I have always appreciated the freedom you have given me to pursue my own path. Thank you so much for that gift. Now, if only I can return the favor by teaching you how to get through airport security in a timely manner. It has been a great trip, David. Thank you.

Finally and most importantly, thanks to my family. I am lucky to have been born

into a family that places a high value on education in all of its various forms. To my siblings, Natalie Macquire and Greg Henderson: thanks for putting up with my shenanigans for all of these years. To my parents, Ann and Alan Henderson: thank you for sacrificing so much so that we could have an amazing childhood. I am still learning from you both and am moved by your example. To the wee child Elizabeth Violet: you force me to slow down and laugh more. Thanks for that. And finally, to my wife, best friend and most informed critic, Tracey: I love sharing this life with you. Thanks for all that you do. None of this would have been possible without your support and encouragement.

Abstract

Human activities on the planet are having an unprecedented effect on the natural and social systems that sustain life. As a result, sustainability has become a popular normative social and ecological goal to address conditions of unsustainability. These terms are definitionally vague and contextualized by diverse cultural actors to mean particular things within different contexts. The dissertation study reported here explored the theory and practice of sustainability education in an institutionalized educational setting, including its varied ecological, educational and infrastructural implications. By using an institutional ethnographic methodology, I explained how one educational institution socially constructed and physically operationalized a particular conception of sustainability education. Using ecosystem complexity theory, ecological communication dynamics and political ecology as theoretical lenses, and phronetic case and abductive gestalt analyses as analytic tools, I detailed how this institution engaged in elite-driven change with social, cultural and material implications in the community. In particular, the emergent ideation of sustainability education manifested as a down-shifting of social and ecological responsibility to the local scale and represents a larger trend in the neoliberalization of environmental education. I also argue that sustainability education represents a privileged eco-chic discourse and discuss the implications of this nascent phenomenon as it relates to green capitalism. Findings speak to the emerging fields of sustainability studies in general, and sustainability education in particular, and inform future sustainability research and practice.

Contributors and Funding Sources

This work was supervised by a dissertation committee consisting of Professors David Hursh (advisor) and Joanne Larson of the Warner School of Education Department of Teaching and Curriculum, Professor Eleana Kim of the University of Rochester Anthropology Department and Professor Marcia McKenzie of the University of Saskatchewan Department of Educational Foundations and School of Environment and Sustainability. All work conducted for the dissertation was completed by the student independently, with the exception of Shirley Graham who assisted with transcription. Graduate study was supported by a Scandling Scholarship from the University of Rochester's Margaret Warner Graduate School of Education and Human Development.

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How paramount the future is to the present when one is surrounded by children.
- Charles Darwin, 1852

Chapter One: Educational Research into the Anthropocene

The United States' National Climate Assessment and Development Advisory Committee, comprised of nearly 300 climate researchers working across a variety of academic fields, recently issued a draft report for Federal government agencies on the projected impact of climate change in the United States with the goal of informing present mitigation and future adaptation (NCADAC, 2013). The report concludes that, absent any significant change in current lifestyle or policy, the United States can expect to experience an average of 10°F higher temperatures in the future above current baseline conditions (p. 38). They infer, based on the current state of climate science research, that under such future conditions a number of phenomena would amplify, including “increased extreme weather events, wildfire, decreased air quality, diseases transmitted by insects, food, and water, and threats to mental health” (p. 8). The committee reports that “climate change presents a major challenge for society” (p. 2). The Earth’s climate is clearly changing, and as the result of collective human activity on the planet (IPCC, 2013).

Meanwhile, some in the anthropological research community are engaged in conversation about our current human condition - what Kim Fortun (2012) refers to as Late Industrialism - the historical period “characterized by degraded infrastructure, exhausted paradigms, and the incessant chatter of new media” (2012, p. 460). Late Industrialism is a condition where environmental disasters are “everywhere, imminent and normal” and emerge from the “tight coupling between natural, political, economic,

social, and discursive systems” (Fortun, 2013, n.p.). For Fortun and others (Heinberg, 2011; McKibben, 2010; Speth, 2008; Tainter & Patzek, 2012), carbon-based Industrialism is entering its twilight phase and as such, the complex interplay between human and other-than-human entities is simultaneously producing both deleterious and productive states as a result of this decay process. We observe this decay process unfolding in environmental and social disasters like uncontrolled petrochemical spills, recurrent and increasingly global market failures, increased cancer rates, and increasingly risky energy extraction and transport methods. Such phenomena occur alongside the increased emergence of sustainable engineering practices, the construction of alternative food systems, subaltern and atypical market formulations, and sociopolitical turmoil around the world, to name a few general examples of the tumult now occurring in Late Industrialism.

How does education relate to such assessments? What is the role of educational research in understanding and addressing these conditions? Moreover, what are the implications for educational theory and practice, and for the very nature of institutionalized schooling itself? These are broad and enduring questions that one dissertation alone cannot grapple with in their entirety. And yet, a journey of a thousand steps must begin somewhere. The work presented here represents my first steps into the fray as an environmental education researcher.

The dissertation research reported in this document explores the theory and practice of sustainability education in an institutionalized educational setting, including

its varied ecological and educational implications. Using institutional ethnographic methodology, I explain how one educational institution socially constructs and physically operationalizes a particular cultural conception of sustainability education. The research unfolded over approximately three years at an elite private school in the Northeastern geographic region of the United States of America that was in the process of overhauling curricular and built infrastructures in the name of sustainability education.

In this introductory chapter I situate this institutional change within larger human and ecological trends over the history of the Earth. I then situate myself as researcher and explain how my own positionality and background shaped the types of questions and approaches deployed in the research. Finally, I outline the structure of the entire dissertation document, including how this research is situated relative to the fields of environmental education and environmental studies; and how social and ecological theories can be combined to study the complex interplay between humanistic and material dimensions of nature.

Situating Humanity

Before delving into study specifics, some scientific background is necessary to understand how the humans have arrived at this present moment. Astronomers currently estimate that the universe is approximately 14.6 billion years old, and that the Earth is approximately 4.54 billion years old. Archaeologists, anthropologists and evolutionary biologists infer that human evolution began approximately one million years ago, with modern humans, *Homo sapiens*, evolving into our recognizable form some 250,000 years

ago. Calculated as a percentage of time, modern humans have existed on Earth for approximately 0.0055 percent of the planet's total existence. Further, geologists note that approximately 95 to 99 percent of all species that once existed on the planet are now extinct (Dodds, 2008). Species extinction occurs when individual organisms and their collectivities cannot adapt to changing ecological dynamics (Darwin, 1859). Against these odds, *Homo sapiens* is presently extant. And like other species on Earth, we survive by modifying the ecological dynamics within which we live, and upon which our existence depends for continued survival (Tainter, 1990). Such ecological alterations have implications for the capacity of our species to exist into the future. In this sense then, the term “sustainability” is fundamentally about the capacity for the species to endure, thus avoiding extinction (Speth, 2008).

A rapidly growing body of scientific evidence suggests that humanity is beginning to push against, and in many cases overstep, the ecological conditions that sustain our species' existence (Barnosky et al., 2012; Dodds, 2008; Rockström et al., 2009; Steffen et al., 2005). Human impact on the planet has become so pronounced that researchers and the public now debate whether or not we have entered a new historical epoch: the *Anthropocene*, where collective human activities are now *the* defining geologic characteristic (Crist, 2013; Crutzen & Steffen, 2003; Steffen, Crutzen, & McNeill, 2007). Anthropogenic global climate change has emerged as the dominant problem facing humanity (IPCC, 2013). It is not the only one, as the United Nations projects global population to reach nine billion people by the year 2050 (Cohen, 2003; Smil, 2008). All

of these people will need resources to survive. It remains unclear whether or not the Earth's ecosystems will be able to provide such succor (Rockström et al., 2009). Mitigating, adapting to, and living through these present and pending social and environmental realities and their consequences requires understanding how humans construct and operationalize a relationship with the natural world (McKibben, 2010; Wals, 2010; Wapner, 2010). This dissertation attempts to begin this process as it relates to educational activity and institutionalized schooling.

The concept of sustainability and subsequent conditions of unsustainability have become prominent conceptual frames for thinking about these complex problems, even though their definitions are rife with tension (Foster, 2008). The interdisciplinary nature of the sustainability studies field reaches across different fields of inquiry, from the sociopolitical (Agyeman, Bullard, & Evans, 2003; Dobson, 2000) and economic (Hawken, Lovins, & Lovins, 2000; Jackson, 2009) to the physical and ecological sciences (Kates et al., 2001; Turner et al., 2003), for example. As a result, the discourses and practices of sustainability often contain conflicting meanings that differentially shape understanding and operationalization of the concept. This dissertation study examines how humans in one community understand and engage with the conceptualization and implications of environmental sustainability, specifically as it pertains to educational institutions and processes.

As one of many bureaucratic organizations in modern society, institutions of education, broadly defined, have a role to play in shaping the aforementioned ecological

issues, and vice versa (Curren, 2009; Moran, 2010; Orr, 1994). What then is the role of education in understanding and addressing the intersection between social and environmental issues as they pertain to the concept of sustainability? Moreover, how might educational institutions address the complexity of such a topic? This research aims to explain the social and material complexity of environmental sustainability issues in educational settings, an exercise that involves understanding how members in a particular school construct and operationalize the natural world according to their locally contextualized conception of sustainability.

Researcher Positionality

I come to this research as a new father. Although I speak in the abstract above about our species broadly, I have a concrete stake in the future survival of my child and our genetic lineage. Beyond the narrow instrumental requirements of Darwinian evolution, I also feel morally compelled to bequeath a livable and secure future to both her and to her generation. I do not take this responsibility lightly, and this moral imperative increasingly colors how I understand and engage these issues. This is not the only experience that shapes my position in the world, and in the following section I explain some of the formative events that have shaped my personal and professional identity, which in turn informs my research.

Like others (Crotty, 1998; Maxwell, 2012; Stake, 1995), I believe that it is impossible to separate one's self from one's research, and that the questions we ask are influenced by our life experiences. While I do not have the space for a complete

autobiography, a few formative experiences shape how I understand the world and this particular dissertation. First, I grew up in the small, rural town of Chipmunk, New York in the Southern Tier region of New York State in the United States of America. My father was a maintenance mechanic and my mother was a “stay-at-home” mom for my older sister, my younger brother and myself. My father worked for a nearby local government in their low-income housing division. We probably would have been considered working class, although those were not words that we used to describe ourselves. As such, material goods were not always plentiful in our household, although we never lacked access to food or health care due to my father’s union membership. In retrospect, the class dimension of my childhood is now quite apparent and influential in explaining some of my current research interests. Because we lacked a television and a computer, my brother and I spent a large amount of time playing outside in a nearby forest. There is a considerable amount of environmental education research suggesting that such experiences are formative in developing a particular type of environmental identity (Chawla, 1999; Tanner, 1980).

My father was, and still is, a gun enthusiast and hunter. I grew up with guns in my household and learned how to respect and handle them from a young age. My father was also a member of the local shooting club. Each year they sponsored a few teenagers to attend an area summer camp, Camp Rushford, that was administered by the New York State Department of Environmental Conservation and funded largely through a mix of private attendance fees and public state tax dollars. In addition to Camp Rushford, the

Department of Conservation runs three additional camps across New York State, and they are tasked with environmental education, broadly defined. I attended these camps first as a funded camper and later as a program volunteer after being invited back by their permanent staff. I eventually started paid employment, first at Camp Rushford during high school and then at Camp Pack Forest in the Adirondack Mountains during college when I was a formal environmental educator and finally one of the camp administrators. These camps had a profound impact on my identity development, as it was in these places where I first became acquainted with the world of environmental education programming.

While the camps were influential, other events also shaped my identity trajectory. My grandfather (my father's father) was a larger-than-life figure in our family. As my only living grandfather through my childhood, I looked to him as a role model. My grandfather spent his working life as a laborer and held a series of manual labor jobs from the Great Depression onward. Like many other working class laborers, the conditions of his employment took a physical toll on his body and speaking with my grandfather involved translating the grunts and burps that he emitted via a hole in his larynx. My grandfather had his voice box removed due to cancer prior to my birth. Although speculation, I have always suspected that his cancer resulted from the years working without a respirator in local glass and cardboard factories. Although never formally educated, my grandfather was extremely well-read and had a voracious appetite for information and knowledge. The bookshelves behind his reading chair contained subjects

ranging from electrical circuitry to the Spanish language. While reading was one form of intellectual work celebrated in my family, embodied physical labor was also considered a valuable form of intelligence. My grandparents built their house on and from land that they cleared themselves, including trees that they cut and processed themselves. Both my father and grandfather excelled at hand-making furniture, often from wood that they planted decades earlier. Thus, an ethic of working class self provision was instilled at a young age and is something that I continue to reflect upon today.

At this point, it might also be helpful to point out the gendered dimension of my development. I have been surrounded by a culture that celebrated the “strong father” ideal (Lakoff, 2002) and I have had to make sense of how it relates to my life now. Although strong women in their own right, my mother and grandmother occupied more “traditional” and passive gender roles in their families. The men were considered the breadwinners and the women were considered the home-makers. I continue to examine how these normative cultural assumptions influence my own identity trajectory, especially now that I am the father of a young girl. Although I do not use a gendered theoretical lens in this dissertation, it does shape how I see environmental education and I expect that it will influence future work.

I also cannot understate the role of public libraries in my development and credit my mother with maintaining their influence in my life. While we lacked many of the technological advances that my peers enjoyed, my mother made sure that we visited our local public library multiple times a week throughout most of my childhood. I note this

because these institutions resulted from explicit political action and socialized funding mechanisms. In terms of return on investment, public libraries are one of the best investments a society can make (Aabø, 2009). While I was not aware of this reality at the time, it was at the library where I was exposed to a wide variety of literature and media. It was also at the library where, during my junior year of high school, I opened a thick paper copy of the Princeton Review and discovered that there were only two colleges in New York State that offered astronomy as a major. Given my interest in the subject and fearing the immense nature of New York City and Columbia University at the time, I applied to the other, Colgate University, and was offered a full scholarship to that elite liberal-arts college.

At Colgate I began studying astronomy only to learn that staying up late looking at dots in the sky was no longer an interest that I cared to pursue. My freshman advisor, himself an astronomer, recommended that I try some geology classes, and I was quickly hooked. While at Colgate I continued to explore the teaching interest that began during previous summers at Camp Rushford, and I decided to also pursue a science teaching certificate. During this process I became friends with one particular faculty member, Warren Blumenfeld (1992, 2006), who completely changed the way I understand the world. It was in Warren's classes where I first began to think about issues of power, privilege and identity and how they interacted with educational systems. In particular, this was where I first began to question and understand the privilege afforded to me as a heterosexual white male, and the difficulty that I was experiencing as a working class

student at an elite educational institution. Were it not for Warren, I am not sure I would have become aware of this dimension of my life. I remain friends with him to this day and we now consider each other colleagues. After four years I left Colgate with a degree in Environmental Geology and certified to teach Regents Earth Science by the State of New York. I taught for a year in rural Central New York State and then moved to Rochester, New York with my future wife so we could both pursue higher education degrees.

After completing a Masters degree in teaching and curriculum at the University of Rochester in 2005, I returned to public education by teaching middle school Regents earth science and general science for four years at Roth Middle School in the nearby Rush-Henrietta Central School District of New York State. These were formative years that involved teaching adolescents about our world via the discipline and discourses of the earth and physical sciences. Each school year saw me teaching five sections of science to almost one hundred students per year. I maintain relationships with some of these students to this day and we converse as many of them transition through institutions of higher education, the workforce and adult life in general. This experience was profoundly influential, as it was here where I experienced institutionalized schooling and everything that comes with that from the perspective of a practitioner. It continues to shape the types of research questions I ask about the nature of schooling and education and how these institutions and processes relate to our relationship with the natural world.

My identity and history are obviously more complicated than the small slice I have explored here. Over the years I have developed a number of identity labels that I use to situate myself in the world: grandson, son, brother, husband, friend, heterosexual, white, Unitarian Universalist, environmentalist, working-class, college-educated, professional-class, abled, feminist, omnivore, environmental educator, science teacher, doctoral candidate, researcher, father, human. While I situate myself via these multifarious and evolving labels, others use them to situate me too, as identity is both the recognition of one's self and recognition by others (Bourdieu, 1991; Gee, 2000). My doctoral research also positions me, and as a result I am becoming known as someone who conducts environmental education research from particular theoretical and methodological stances and in particular contexts. And yet, I also believe there is a limit to such identity-based thinking. As human beings, we rely on the more-than human for our existence. This is a biophysical fact that cuts across individual and cultural identities (Wilson, 1999). It is then within this individual-society-material world nexus that my research resides, for as a researcher and human, I am fundamentally interested in the human-nature relationship as it relates to larger phenomena.

In January 2010 my doctoral advisor, Dr. David Hursh, informed me of a sustainability education project that a private school was beginning to implement. Along with Dr. April Luehmann, we organized an informal meeting with some of their administrators and a visiting educational consultant, Jaimie Cloud of the New York City-based *Cloud Institute for Sustainability Education*. In that meeting, we discussed how the

Warner School of Education might partner with the Oikos Academy¹ as they proceeded with their new sustainability education program. It was decided that, among other actions like placing pre-service teachers at Oikos and working together on summer camps programs, I would come onboard to complete my dissertation work. The Head-of-School at the time agreed with Drs. Hursh and Luehmann that such a partnership would be mutually beneficial, and I was able to gain access to the Oikos community under the auspices of this educational research.

I arrived at the Warner School in the fall of 2009, and at the time was driven by a desire to research environmental education for the aforementioned reasons. At the time sustainability was becoming a buzzword in higher education circles, but the concept was gaining little purchase within K-12 settings (Corcoran & Wals, 2004). The fact that a K-12 school was pursuing educational change around something they were calling sustainability could not have happened at a better time in my research trajectory, and I am grateful for this stroke of serendipity. Following the initial meeting with Oikos leadership, I began to meet informally with some of the school's faculty and administrators to gain an initial sense of what was happening at the school.

As my own doctoral work progressed and I learned advanced research methods, I was able to write a pilot study and shepherd it through the University of Rochester's Research Subjects Review Board process. In January 2011 I began formal, IRB-approved

¹ A pseudonym. The Greek term *oikos* is often translated as household, but it can also refer to its surrounding habitat (Henderson & Hursh, 2014). Etymologically, it is a root word for our modern terms *economy* and *ecology*, and was selected as the institutional pseudonym for this reason.

research at Oikos Academy. The pilot study evolved from a small-scale case study into the full ethnographic dissertation presented in what follows. Over the past three years I have presented initial findings at multiple conferences including the American Educational Research Association (Henderson, 2012a), the North American Association for Environmental Education (Henderson, 2011, 2012b, 2013a) and the American Anthropological Association (Henderson, 2012c, 2013b). This dissertation artifact continues this work in greater depth than these initial reports by developing findings from a more robust analysis of the entire three-year data corpus.

Overview of this Dissertation Study Document

While the field of environmental education has a rich research tradition, the emerging subfield of sustainability education is novel, with little empirical research completed on the subject (Reid & Scott, 2013; Wals et al., 2012). Curricular concepts and pedagogical practices exist in a high state of flux, thus warranting present and future scholarship. To address these gaps in the literature, I report here on an ethnographic study of a formal educational institution attempting to understand and implement sustainability education. The study examines the social, cultural and material production of a sustainability education program in a formal school context and asks one fundamental ethnographic research question: *What is the nature of the infrastructure supporting sustainability education at this particular school?* and two supporting research questions: *1) How does a sustainability education program come into existence?* and *2) How do institutional frictions shape the implementation of sustainability education?*

The second chapter of this document reviews literature in the field of environmental education (EE) that informs and situates this research, including the relatively new subfield of sustainability education (SE). I discuss some of the dominant trends in EE, including their genesis and evolution, and EE's intimate, productive and problematic relationship with science education. I then examine the emergent field of sustainability education and its close relative, education for sustainable development (ESD). EE research does not exist in a vacuum, and larger social, political, scientific and educational frames influence the field as well. Some of these trends are addressed to explore the complexity of sustainability education in our current historical moment.

Chapter 3 discusses the theoretical basis for the proposed study. In this chapter I develop a framework capable of dealing with the complex nature of sustainability education research. I accomplish this by bringing together a triad of theories that allow me to examine relationships between people, institutional discourses and the biophysical realities that come to shape SE at Oikos Academy. I argue that narrow sociocultural theories of human interaction are reductionist and therefore need to be combined with post-positivist theories of material reality and the biophysical world. This involves developing a post-post hybrid research stance (Hart, 2005) by blending ontological realism with a critical social constructivist epistemology, resulting in a critical realist, sociomaterial approach capable of explaining the sociobiophysical dimensions of the sustainability education program.

The fourth chapter advances the proposed methodology, research methods and analytic processes that shaped the study. I discuss the implications of critical realist philosophy for methodological choices, and the reasons that a institutional ethnographic design are useful for attending to both the social and material construction of a sustainability education program. Using scholarship from Bent Flyvbjerg (2001, 2006) and Dorothy Smith (2005), I argue that phronetic institutional ethnography is warranted in this particular study and then justify specific methods, including ethnographic interviewing, participant observation, document analysis and others. Abductive gestalt (Bajc, 2012) and case (Stake, 1995) analyses were utilized to explicate emergent thesis findings. Quality criteria, limitations and other critical design elements are discussed at greater length there as well.

Chapter 5, “Rootedness and the Emergence of Form,” begins with a thick phronetic description of the traditional institutional form at Oikos Academy and then transitions into descriptive analysis that details the rootedness and emergence of a new institutional form structured around sustainability education. This chapter presents textual and visual data to show how the school community comes to develop, design and embody a new physical structure on their campus and answers the first supporting research question: *How does a sustainability education program come into existence?* I leverage data to tell the story of an institution reevaluating its priorities and engaging in a largely elite-driven change dynamic to institutionalize a new educational vision that attempts to transcend a traditional disciplinary college-preparation approach by

physically and educationally institutionalizing novel educational programs that do not fit into traditional structures. The unique assemblage of actors and materials at Oikos Academy produces a highly-localized sustainability education program that results in bringing forth a new sociomaterial structure on their campus in the forms of a building named “The Commons.” Chapter 5 concludes with theoretical interpretation to examine the systemic and intersubjective dynamics that shape the sociobiophysical emergence of sustainability education at Oikos Academy.

The sixth chapter, “Shifting Norms and Institutional Friction,” continues the phronetic approach and utilizes this study’s abductive gestalt and case analytic processes to trace four planes of institutional friction through the data corpus to answer the second supporting research question: *How do institutional frictions shape the implementation of sustainability education?* As Oikos Academy was in the process of a deep cultural change from one institutional form to another during the season of this research, illuminating frictions in this way allowed me to examine the nature of institutional stresses as change occurred *in situ*. The chapter unfolds according to four analytic frictions that emerged via the abductive gestalt analytic process. They include: 1) interpersonal and managerial frictions, 2) curricular and pedagogical frictions, 3) space and time frictions, and finally, 4) political and economic frictions. Each of these frictions are traced across primary and secondary data sources that are then used to illuminate the nature of institutional change and the aforementioned emergence process. A representative case study then ties these frictions together to provide an example of the issues present in sustainability education

at Oikos Academy. Theoretical analysis again concludes the chapter, as I bring Foucauldian and political ecology lenses to bear on the data to examine the discursive and material nature of sustainability education at Oikos Academy.

The seventh and final chapter moves away from the descriptive and analytic findings of its two preceding chapters and climbs toward a higher level of abstraction via theoretical and conceptual interpretation. The study's framing concepts, theories and methodological choices are brought more fully into focus to examine the meaning and implication of the sustainability education program at Oikos Academy in light of the guiding research question: *What is the nature of the infrastructure supporting sustainability education at this particular school?* I use data and findings from preceding chapters to develop this study's primary thesis statement:

At Oikos Academy sustainability education emerges as an ethically righteous educational goal in light of the perception of present and future ecological crises. It was also a business decision promulgated by elites in the name of institutional sustainability. The resulting changes in institutional form had profound ecological and social effects on the nature of the school. Sustainability, as conceptualized at Oikos Academy, was shot through with an emerging eco-chic sensibility and exhibited conflicted neoliberal management dynamics endemic of Late Industrialism's current form of capitalism. Sustainability education can be understood as a form of class distinction for Oikos Academy, best represented by the privatized nature of a building named The Commons.

This dissertation study then concludes with implications for a variety of communities: Oikos Academy, the fields of environmental studies and environmental education, and ultimately, for humanity. Methodological and conceptual limitations are addressed in the final chapter as well, and implications for future research and educational practice are considered.

Chapter Two: Sustainability, Environment, Education

As an emerging academic field, sustainability studies exists in a high state of conceptual flux and through across fluid disciplinary boundaries. While I situate much of the warrant for this dissertation work in the sustainability literature generally, I am specifically interested in a particular subfield of environmental education (EE): sustainability education (SE). SE is a relatively new field of research and is often referenced relative to the even larger fields of *sustainability studies* and *environmental education*. A typology² of these disciplines might then look something like Figure 2.1.

Figure 2.1. Typology of the sustainability education field.

This is my current interpretation of the field. I acknowledge that researchers and practitioners within specific disciplines position their work relative to the larger fields within which they operate and that the boundaries of these fields are fluid relative to

² It is important to note that the analysis advanced here represents my attempt to differentiate and bind together different intellectual traditions within this emergent field. By creating a typology of sorts, I run the risk of essentializing, and potentially silencing, sections of the SE community. This is not my intent. Instead, I simply aim to understand the different discursive strands that weave together to form a larger field of study and practice. By no means is this analysis complete, and by no means are the boundaries between the following disciplines and discourses static.

other fields (Bourdieu, 1991). However, for the purposes of binding the literature into something workable to produce a systematic review (Kennedy, 2007) of the literature related to SE, I therefore choose to focus on the relationship between the discourses of environmental sustainability and their practical applications within educational fields. This chapter is my attempt to tease apart the various discourses and disciplines that shape different conceptions of SE. Because discourses are intimately related to practice (Bourdieu, 1990, 1991; Foucault, 1978) this analysis necessarily links them to the practice of SE within and across different educational contexts.

Sustainability's Discourses

The language of sustainability is increasingly common in popular discourses. Typically, conditions of sustainability are juxtaposed against present conditions with the assumption that current actions in some realm are unsustainable and therefore cannot continue forever. This debate occurs across multiple fields of study from economics and government, where current taxation and spending plans are often critiqued as unsustainable, to global environmental science, where humanity's collective impact on the planet is frequently regarded as unsustainable (Foster, 2008; Speth, 2008). According to the biologist Walter Dodds (2008) for example, environmental science research "indicate[s] that human population exceeded Earth's capacity to support humanity indefinitely in the 1980s. By 1999, we were at 120 percent of the globe's capacity for sustainable support...we are overshooting the ability of Earth to support us sustainably" (p. 33). Environmental indicators (e.g., energy consumption, crop yield,

timber harvest, etc.) are used to quantify the Earth's ability to support humanity into the future with subsequent explication of potentially sustainable conditions to be achieved. Present "unsustainable" conditions cannot persist into the future assuming business as usual.

It is helpful to note that sustainability and its antithesis are vague and slippery terms, and like other nebulous words (e.g., justice, freedom, democracy, nature), the discourses and definitions that shape subsequent interpretations are continually in flux and under negotiation (Wittgenstein, 1953). The language of sustainability is problematic because it is often vague and decontextualized. What counts as sufficiently sustainable? At what scale? By which indicators? According to whom? In what context? Despite this ambiguity, the concept of sustainability has become a prominent conceptual framework for thinking about the complex nature of present and future human existence on the planet. Despite the questions that rise in the face of such a vague and contested concept, "what is clear is that the sustainability discourse engages with challenges that are likely to dominate the 21st century" (Nolet, 2009, p. 436), and for this reason it is important that researchers deal with its complexity.

Despite the unclear nature of the term, the field of *sustainability studies* is emerging across multiple disciplines and within diverse academic contexts (Curren, 2009; Le Grange, 2013). The language of sustainability is becoming more common within educational circles as well, with similarly vague understandings present in its employment (Berryman & Sauv, 2013; Wals & Blaze Corcoran, 2012). This is

potentially problematic for researchers and practitioners attempting to study and implement educational programs, as conflicting meanings may work to differentially shape sustainability education in ways that may actually undermine, and in some cases exacerbate ecologically problematic conditions. However, the present state of conceptual chaos in these emerging fields present numerous opportunities to research the social, cultural and material development of the term as it exists and evolves in the world. The research study presented here engages this opportunity.

Present Crisis and Future Concern

Before delving into the details of sustainability education (SE) discourse and practice, it is important to highlight two discursive trends that often underpin conceptions of unsustainability and that are used to justify the implementation of SE programs and larger systemic reform: *ecological crisis* and *future concern*. Both ideas are dominant within the field of sustainability studies, with educational implications representing a small subset of this larger body of work. In this section I briefly describe their importance as foundational discourses shaping the sustainability literature generally, and education specifically.

Ecological crisis language is often used to justify the need to achieve a sustainable world. Often, scientific evidence is used to show the magnitude of such crisis. This takes many forms in the literature, but is most commonly referenced in the science of climate change, environmental pollution and human overpopulation. It is common to see scientists leveraging ecological foot-printing methodologies (Chambers, Simmons, &

Wackernagel, 2000; Dodds, 2008) to show the perilous condition of humanity on our planet.³ For example, writing about the current state of climate science and government policy, James Hansen, a climatologist with the United States National Aeronautics and Space Administration, warns “Planet Earth, creation, the world in which civilization developed, the world with climate patterns that we know and stable shorelines, is in imminent peril.... We now have clear evidence of the crisis.” (Hansen, 2009, p. ix). The scientific consensus for anthropogenic global warming (IPCC, 2013) is also frequently referenced as both an immediate and existential risk for the continuation of the human species. This evidence is often connected to warnings about human overpopulation, a vein of environmental discourse that has been present for decades.⁴ For example, the United Nations currently projects that the Earth is heading toward a total human population of nine billion by the year 2050 (Cohen, 2003), and because our species relies on the consumption of natural resources for survival, researchers are increasingly concerned with our ability to survive on the planet. At an even more local level, environmental toxicologists point to evidence that our modern technologies are slowly poisoning us and threatening our ability to reproduce the species (Colborn, Dumanoski, & Myers, 1996; Fortun, 2001; Steingraber, 1998). The language of crisis spans all scales, from the global to the individual, with implications for future survival throughout.

³ Including, for example, my own writing to frame the first chapter of this dissertation.

⁴ See Ehrlich, 1968 for a particularly famous and wrong example of this type of thinking.

The aforementioned represent a few examples of works leveraging crisis rhetoric in the service of concern for the future. By establishing the limits of existence, scientists are then able to make claims about the overshoot of environmental limits at different scales, from toxins within the human body system to toxins within the global climate system. The assumption and creation of crisis and the cultural authority afforded to scientific knowledge frequently provide the foundation for claims of unsustainability (Kahn, 2010; Mueller, 2009). The larger logic here, supported with scientific claims, is one of ecological crisis via overshoot on multiple fronts.

Crisis discourse is often used to justify action toward achieving a particular vision of a sustainable future. With crisis as the assumed condition, the move is then made to justify present action to mitigate and adapt to future risk. Perhaps the most famous example of this language is represented in one of the foundational documents in the sustainability literature: the United Nations' Brundtland Report (WCED, 1987). This report provided the oft-cited definition of *sustainable development* as that which "meets the needs of the present without compromising the ability of future generations to meet their own needs" (p. 12). This definition abounds in the sustainability literature, and the Brundtland interpretation is frequently cited to justify changing the current condition of human existence toward the development of one that is more sustainable. This statement takes current human action and points it toward the future, and because the future is inherently unknowable, any totalized vision of development toward sustainability remains highly problematic.

For John Foster (2008), such sustainability language represents a mirage of harmonious balance. Instead, he recommends thinking of sustainability as “not a specifiable target state, but the continuous exploratory pursuit, through open-ended learning of ways to ensure that life goes on” (p. 145). Seeming to sense the problem of crisis discourse pointing toward the need to achieve a utopian vision of the future, Richard Kahn (2010) reframes both and instead sees opportunity:

While the term *crisis* is utilized in a colloquial fashion to connote ideas of uncontrollable mayhem and danger, it should rather be understood as a diagnostic philosophic concept that indicates the need for personal critical deliberation toward the possibility of affecting meaningful change. (p. 4, italics in original)

Or, put another way, the environmental and educational philosopher Randall Curren (2009) argues that the “unsustainable trajectory of human existence will *in one way or another* be reconciled with Earth’s limited capacity to sustain life. Clearly, it is vitally important that we act now to secure the ecological basis of a desirable human future” (p. 1, italics in original). The particulars of such meaningful changes and reconciliation in the SE literature is contested, as the rest of this review shall explore.

Genesis and Tension in Sustainability Education

While the field of environmental education has a longer history and background,⁵ the emergence of the subfield of sustainability education is a relatively recent phenomenon with roots in United Nations development programming. In 1987,

⁵ See Gough, 2013 for a recent and thorough history of the environmental education field.

the United Nations World Commission on Environment and Development released an influential report, *Our Common Future*, commonly referred to as The Brundtland Report, after the committee chair and former Prime Minister of Norway, Gro Harlem Brundtland. The Brundtland Report defined sustainable development and is widely cited across the sustainability studies literature. In 1992 the United Nations adopted *Agenda 21* at the Earth Summit in Rio de Janeiro, Brazil in an attempt to normalize sustainable development programming across the U.N. member states (Robinson, 1993). Chapter 36 of this report first mentions sustainability education and justifies its necessary role in achieving sustainable development:

[Education] is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behavior consistent with sustainable development and for effective public participation in decision-making. To be effective, environment and development education should deal with the dynamics of both the physical/biological and socioeconomic environment and human (which may include spiritual) development, should be integrated in all disciplines, and should employ formal and non-formal methods and effective means of communication. (Robinson, 1993, section 36.3)

However, specific programming around these education programs remained diffuse, so in 2002 the United Nations General Assembly voted to declare 2005-2014 the Decade of Education for Sustainable Development (DESD), and the United Nations Educational, Scientific and Cultural Organization (UNESCO) was charged with

implementing education for sustainable development across the various United Nations member states. We are now approaching the end of the DESD and systemic reviews of the program are beginning to emerge (Jickling & Wals, 2012).

While the United Nations has been particularly effective in attempting to normalize a discourse that combines sustainability and education, it is often done under the auspices of education for sustainable development (ESD), a particular conception of SE. A number of researchers and critics find this problematic, and I reference some of the main objections in later sections. I mention the history of ESD at the United Nations here only because the definitions advanced have been so heavily cited within the SE literature (e.g. Curren, 2009; Feinstein, 2009; Huckle, 2010; Jucker, 2011).

SE generally falls within the field of environmental education, but it is different in a few key ways. First, EE, itself a diffuse field, has its own unique history guided by a few key conceptions. In the United States, early environmental education movements reflected the competing environmental ethics of the time, from Aldo Leopold's conservation approach (1949/1968) to John Muir's (1911) and Henry David Thoreau's (1854) more preservation-oriented approach. New environmental organizations came to accommodate these different ethics, with Muir's philosophy informing the Sierra Club, and Leopold's conservation ethic informing the Wilderness Society and the U.S. Forest Service (Burns, 2009). The 1960s and 1970s saw an increase in environmental concern with the publishing of Rachel Carson's famous work *Silent Spring* (1962) and the celebration of the first Earth Day in the United States amid well publicized environment

disasters such as the burning of the Cuyahoga River in Cleveland, Ohio, and the establishment of the U.S. Environmental Protection Agency.

Environmental education, as a field of formal study and practice, begins during this time as well (Gough, 2013; Stapp et al., 1969). Early work focused on systemic natural resource management, behavior change and developing environmental citizenship in learners (Gough, 2013). Some of these trends continue today and are represented in the conservation management curricula of Project WET (2011) and Project WILD (n.d). Another thread involves nature immersion and sensory education (Cornell, 1979, 1989) and often results in experiential pedagogies that aim to engage learners in the “wildness” of nature, often from an ecological preservationist ethics standpoint.

Regardless of ethical approach, EE’s historical emphasis has frequently involved taking students from their formal educational structures and toward an experience with the larger, messier natural world of “informal” learning environments in the name of teaching about nature as something occurring “out there.” There is a long history of this ethos in EE theory and practice (Heimlich, 2007; Palmer, 1998), and although the field is multifaceted, the notion that learners need to be taken from their learning environment to another, more novel, setting still remains one of the main tenants shaping EE practice. The over-riding logic of this conception of education is that human beings need to be educated about their relationship with the natural world, which is seen as something inherently lacking in modern society and their representative educational institutions

(Carson & Kelsh, 1998; Louv, 2006). Therefore, EE programs often exist as boutique enterprises in isolation from formal educational structures:

Classic examples of this at the school-district level are the “nature retreat” where all sixth graders spend one overnight at an environmental camp, or the “outdoor experience” where all fifth graders are taken for a day to an environmental field station. At the classroom level, teachers and students can be said to “do” environmental education if they plant a garden, write a poem about nature, measure pollution, or research the extinction of species. (Gruenewald, 2004, p. 74)

These programs continue to represent a main venue for teaching and learning about the environment (Gonzalez-Gaudiano, 2006; Heimlich, 2007; Sobel, 2004), and one does not need to look far to see local nature centers, science museums or outdoor education programs that engage in this model of environmental education.⁶

The dominant critique of these programs is that they often fail to address the sociocultural, political and economic aspects of the human/nature relationship and instead focus solely on education *about* nature, often as a supposedly acultural educational activity (Gruenewald, 2004). While many SE educators recognize that education about the natural environment and nature immersion is a necessary aspect of such programs, many also recognize these programs as insufficient and incomplete, as they do not

⁶ On a reflexive note and as stated earlier, my initial experience in EE occurred in one of these settings, and it continues to influence my experiences.

address the human dimensions that also work to shape ecological dynamics (Ferreira, 2009; McKenzie, 2012; Orr, 2004).

However, the move toward these other dimensions is not without its own peril, as many nature educators also resist the temptation to bring potentially “controversial” discourses into their discipline (Henderson & Duggan-Haas, 2014). Perhaps the most obvious place one can witness this tension is within the ranks of the North American Association for Environmental Education (NAAEE). This professional organization represents thousands of members affiliated with environmental education from around the world (despite their geography-specific name) and is the largest professional organization of environmental educators in the world (NAAEE, 2012). Members range from EE practitioners across a range of educational settings, both formal and informal, to a small community of researchers like myself dedicated to studying environmental education. Education specifically related to sustainability is only marginally present in this organization, although the discourse is beginning to increase over time and the field is beginning to shift toward one that is more inclusive of sustainability discourses in addition to education primarily *about* nature (Eatmon, personal communication, October, 2012). While sustainability concepts are making inroads in this community, tension continues to exist as the field struggles to negotiate the discourses associated with the sociopolitical aspects of environmental education (Stevenson, 2007).

Education for Sustainable Development

Education for sustainable development (ESD) represents one of the main, if not *the* main, discourse communities currently shaping the sociopolitical and economic dimensions of sustainability education (Berryman & Sauve, 2013; Curren, 2009; Kahn, 2008). Buoyed by the aforementioned power of the United Nations in the framing and implementation of ESD discourse, its influence has been pronounced across diverse educational fields. This is not without problems, however, as ESD is also critiqued for some of the assumptions that it makes about the nature of capital market development and particular contextual conditions of sustainability (Jickling, 1992).

Sustainable development is often framed as the careful balancing of economic, social and environmental spheres within specific contexts (Herremans & Reid, 2002). This conception of sustainability is especially dominant in higher education ESD programs and within the business community (Jickling & Wals, 2008; Manteaw, 2008). Implicit in this understanding of sustainability is a development logic whereby economic growth can continue in perpetuity and in balance with ecosystem dynamics (Kahn, 2008). One witnesses this when businesses adopt the language of sustainability to justify market practices, or when politicians use similar language to justify budget policy choices. This language reinforces a business logic in educational policy and practice, which is increasingly influencing educational institutions around the world (Hursh, 2007; Hursh & Henderson, 2011; Manteaw, 2008). Resistance to these moves have been strong and are growing, with many critics (Jickling & Wals, 2008; Jucker, 2004; Shiva, 2006) quick to

point out that economic development cannot be sustained forever on a finite planet, especially in the face of continued population growth, and that ultimately the current logics and practices of capitalism itself are unsustainable (Daly, 1977, 1996; Heinberg, 2011; McKibben, 2007; Speth, 2008).

The major objection to the ESD discourse within the larger EE field usually focuses on the fact that sustainable development is frequently cited as a solution to the “developing” world’s problems absent a robust critique of the consumption practices in the developed world (Jickling, 1992; Jucker, 2002). Proponents of ESD, themselves often rooted in the United Nations international development programming efforts, frequently cite the need to continue developing countries in the global South (Ratner, 2004). In this sense, it is the global South that needs to develop in a sustainable fashion, while those in the global North can continue business as usual. “The idea [of this development model] is in effect totalitarian: it assumes that the Western lifestyle is the only valid one and that all others ways of living have to be destroyed” (Jucker, 2002, p. 11). While this is a gross oversimplification of ESD theory within the global North and many practitioners might disagree with this assessment, it is important to point out that the overall current standard of living in the global North is problematic just in terms of resource consumption alone (Dodds, 2008; Speth & Haas, 2006). Questioning and changing the dominant global economic paradigm would then be a necessary exercise for SE in both the global North and the global South, and many point to capitalist economic structures as one of the root causes of unsustainable ecological conditions (Agyeman, 2013; McKibben, 2007; Speth,

2008). SE researchers and practitioners are often unwilling to challenge the power of market discourse in shaping learning contexts, and it remains a challenge in the field.

This is not to say that there are not real environmental issues worth solving in the “developing” world either.⁷ However, frequently absent from the discourse of ESD proponents is an assessment of what counts as the “needs of the present,” to reference The Brundtland Report’s definition again. Pointing to the hypocrisy of continuing to develop and sustain an economic system built on a conception of infinite growth on a finite planet, Richard Kahn (2008) questions whether ESD will be “nothing other than a seductive pedagogical ‘greenwash’ developed by and for big business-as-usual in the name of combating social and ecological disasters” (p. 7). This critique of ESD is common within the field of EE.

However, others are optimistic that ESD discourse contains the potential to reinvigorate traditional environmental education programs (Gough & Scott, 2008). Writing about the potential of the United Nations Decade of Education for Sustainable Development project, Edgar Gonzalez-Gaudiano writes “I am profoundly convinced that the controversy between environmental education and ESD will be beneficial if we, as environmental educators, are capable of seizing the opportunity to renew the discussion of how to give our activities pedagogic meaning” (Gonzalez-Gaudiano, 2005, pp. 248-249). This is a visible and potentially generative tension in the field, and one that is

⁷ See Legros, Havet, Bruce, & Bonjour, 2009 for an example of how basic cook stove technologies can help address simple environmental health problems.

unlikely to be settled anytime soon given the dominance of capitalist ideologies in both educational and environmental circles.

Even more recent work in EE has examined the influence of neoliberal ideologies and neoliberalization processes on the theory and practice of EE (e.g. Henderson & Hursh, 2014; Manteaw, 2008; McKenzie, 2012). Writing from the fields of critical geography and anthropology, David Harvey (2005) broadly defines neoliberalism as:

A theory of political economic practices which proposes that human well-being can best be advanced by the maximization of entrepreneurial freedoms within an institutional framework characterized by private property rights, individual liberty, free markets and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices. (p. 2)

Neoliberal education policies have had significant effects on global educational systems and institutional practices, including increased standardizes testing, narrowing of the curriculum and decreased public funding of education (Giroux, 2008; Hursh, 2007; Lipman; 2011). Neoliberal ideologies tend to render environmental concerns within the realm of economics, thereby defining nature as an instrumental resource to be efficiently managed via capitalist market processes (Gruenewald & Manteaw, 2007; Henderson & Hursh, 2014). In other words, “Nature can be ignored except for its contribution to economic growth and the planet’s resources treated as if they are infinite” (Henderson & Hursh, 2014, n.p.). Research that examines how neoliberalism interacts with and within

EE and SE contexts remains in its infancy, and this dissertation attempts to address this lacuna in the field.⁸

Environmental Education and Social Justice

David Orr, in the introduction to the 10th anniversary edition of his seminal work on environmental education, *Earth in Mind: On Education, Environment, and the Human Prospect* (2004), argued that “the problem of education...can be attributed in large part to the fact that too often schools, colleges, and universities have been uncritically accepting of, and sometimes beholden to, larger economic and political forces” (p. xii, italics in original). Sensing Orr’s warning and the aforementioned discourses of narrowly defined EE, the problems associated with developmental logic, and the disciplinary nature of knowledge practices, the field of SE has been moving toward a greater discourse around engaging the larger field of environmental education in sociocultural and ecological complexity as it relates to justice concerns (Curren, 2009; McKenzie, Hart, Bai, & Jickling, 2009; Wals, 2007).

A growing body of researchers, sensing the need to engage local communities in practices that are sustainable within the context of their culture and within their unique ecosystem, have broadened their definition of SE to include the discourses of sociocultural and ecological complexity and justice. One of the main critiques of EE is that is a culturally homogenous community of researchers and practitioners, mainly from

⁸ See also the forthcoming (anticipated 2015 publication) special issue of *Environmental Education Research* on the neoliberalization of environmental and sustainability education edited by David Hursh, David Greenwood and myself.

historically dominant and privileged social groups (Furman & Gruenewald, 2004; Marouli, 2002). Writing from the field of environmental justice, Julian Agyeman (2002) emphasizes that “we need to (re)frame environmental education along lines which recognize cultural diversity and all its implications...as *the* project for environmental educators” (p. 10, italics in original). While much of this research focuses on marginalized or oppressed groups and individuals, less focuses on environmentalism as a privileged discourse. As the research in this dissertation results from such a “studying up” activity (Nader, 1972), one of the goals of this dissertation is to examine how environmental sustainability education is constructed in such a setting.

Sensing the importance of anthropological research showing that nature cannot be separated from cultural privilege, and that sustainability problems are often socially constructed complex natural resource dilemmas, a growing community is forming around the conception of education for “just sustainability”, or “ecojustice” (Agyeman, 2008, 2013; Kahn, 2010; Martusewicz, Edmundson, & Lupinacci, 2011; Monani, 2010). Central to this discourse is the notion that social justice cannot be disconnected from how human beings understand and appropriate nature, for “wherever in the world environmental despoliation and degradation is happening, it is almost always linked to questions of social justice, equity, rights and people’s quality of life in the widest sense” (Agyeman, 2008, p. 752). This is why it is also problematic for sustainability to be framed within the discourse of any particular disciplinary structure, for “a truly sustainable society is one where wider questions of social needs and welfare, and

economic opportunity, are integrally connected to environmental concerns” (Agyeman, Bullard, & Evans, 2003, p. 2). These tensions remain at play in this emerging field, and the complexity among contextually based, culturally sensitive educational practices and ecosystem dynamics represents a burgeoning research discourse in the SE literature.

Environmental education and elite class privilege. In the newly released *International Handbook of Research on Environmental Education* Randolph Haluzi-DeLay (2013) writes that “Solutions to both environmental and justice problems require addressing social and political-economic factors, as well as ecological knowledge” but that “very little of this writing [on environmental justice education] is grounded in *research*” (italics in original, p. 397). This dissertation study attempts to take this challenge seriously by focusing research attention to the class dynamics at play in a sustainability education program. In this subsection I review some of the ways that class privilege plays out in school contexts and implications for this particular study.

As this study takes place in an elite educational context, it is worth briefly reviewing the role of class privilege in education broadly, and in environmental education specifically. Sociologists and educationalists have argued for decades that institutionalized schooling works to reify and reproduce class inequality in societies (Bernstein, 2001; Bowles & Gintis, 1976; Kozol, 2005; Mills, 1956; Willis, 1977). Nowhere is this more evident than in the schism between public and private schooling in the United States where, by law, private schools are allowed to exist outside dictates that otherwise apply to public school institutions. Such legal, material, geographic, economic,

political and social disparities lead to “savage inequalities” in educational experiences throughout the nation (Kozol, 1991, n.p.).

At a basic level, educational (dis)advantage is present in the material and economic differences between elite and non-elite school settings. Wealthier schools tend to have more access to diverse educational resources and experiences, lower student to teacher ratios, more aesthetically pleasing buildings and grounds, and greater access to preparation for post-secondary education (Gaztambide-Fernández, 2009; Karabel, 2005; Kozol, 1991, 2005; Scarborough, 2012). But privilege extends beyond mere economic capital and material advantage and is also present in the differential access to social and cultural capital present in elite educational institutions.

In his introduction to *Language and Symbolic Power* John Thompson (in Bourdieu, 1991) situates Pierre Bourdieu’s conception of *habitus* as a “set of *dispositions* which incline agents to act and react in certain ways” which are “inculcated, structured, durable, generative, and transposable” (italics in original, p. 12). Institutions constitute sociomaterial fields that contextualize different forms of cultural capital (what one knows) and social capital (who one knows).⁹ In elite institutions, the habituation of specific dispositional capital is itself a form of positional advantage both within the institution itself and into the future as the student leaves armed with a specific set of sensibilities for participation in future elite settings (Gaztambide-Fernández, 2009; Kahn,

⁹ These are crude definitions meant to introduce the general nature of the concepts as they relate to elite schooling. The reader should refer to Bourdieu (1977, 1986, 1991) and Olneck (2000) for more detailed explanations of the forms and dimensions of capital for a more thorough explanation, for it is beyond the scope of this literature review and research.

2010, 2011). Elite institutions, then, “continue to find a niche within the education system to distinguish their graduates from other students in a competitive market for access to elite universities and as part of a long-term process of elite social identifications and elite practices” (Scarborough, 2012, p. 27). One way this occurs is through the transmission of certain cultural sensibilities as represented by institutional norms and practices.

While education has an elite dimension, so too does environmentalism (Prudham, 2009). Environmental hazards disproportionately impact racially and economically marginalized communities (Agyeman, Bullard, & Evans, 2003; Bullard, 1990; Peet & Watts, 1996; Steingraber, 1998). Other than the environmental justice and Indigenous justice movements, mainline environmentalism remains an economically privileged and white cultural phenomenon (Agyeman, 2003). As such, environmental education research reflects this history and has “missed opportunities to connect with more people and potential allies among a broader reach of civil society organizations and other educators” (Haluza-DeLay, 2012. p. 365). Further, environmentally-conscious forms of consumption are becoming a novel type of elite positioning in the emerging green economy (Barendregt & Jaffe, 2014; Dauvergne & Lister, 2013; Peters, 2012; Prudham, 2009). Such consumption increasingly occurs under the auspices of sustainability (Parr, 2009). The research presented in this dissertation takes seriously the implications of elite positioning via environmental discourses and attempts to examine how they work to influence educational and ecological dynamics.

Current Institutional Practice in Sustainability Education

It is increasingly common to see environmental sustainability pedagogies tacked onto existing school structures, mainly via previously existing knowledge disciplines. The tendency for educators and curriculum theorists to force SE concepts into disciplinary structures represents a challenge in the development of more complex models. By limiting learning opportunities to specific lines of disciplinary inquiry, students and faculty unwittingly reinforce anti-systemic thinking that is frequently cited as anathema to a rich understanding of sustainability concepts (Berry, 2005; Martina, Hursh, & Markowitz, 2009; Miller et al., 2008; Moore, 2005). This disciplinary simplification is problematic given the complexity involved in understanding, and living within, multifaceted socio-ecological systems (Bowers, 1993; Henderson & Duggan-Haas, 2014; Orr, 2004).

Steven Sterling (2004) laments disciplinary SE processes as a superficial curricular response of institutional *accommodation*, where educational institutions merely tack sustainability onto a previously existing system, thereby requiring no fundamental change to the structure of their educational practices. This represents a response “based on the values and modus operandi of instrumental rationality. There is minimal effect on the institution, and the values and behavior of teachers and students” (p. 59). In 2008, for example, the National Wildlife Federation released *Environment 2008: A National Report Card on Sustainability in Higher Education* (McIntosh, Gaalswyk, Keniry, & Eagan, 2008). It reported the conclusions of the largest nationwide survey conducted thus far on

sustainability in institutions of higher education, with a sample size of 1,068 college campuses, representing 27% of all colleges and universities in the United States. They list two key findings as a result of this survey:

(1) The report finds that campus leaders - presidents, administrators and physical plant managers - value sustainability. They speak to it, hire staff to support it, and the campuses they lead are steadily becoming “greener.” (2) But at the same time, the educational programs they offer to students do not appear to be keeping pace. Our 2001 to 2008 comparison of the curricular and academic dimensions of sustainability shows no significant gains in those seven years despite the growing depth of the global warming challenge and what it means to future professions and their related disciplines. (McIntosh, Gaalswyk, Keniry, & Eagan, 2008, p. 2)

While physical changes have made campuses “greener” overall and administrators claim to value the concept, the curricular dimensions of SE remain flat. These organizational practices have the effect of leaving the underlying pedagogical structures in place, evidencing Sterling’s institutional *accommodation* classification. This appears to be a common educational practice at the institutional level.

Although much of the movement around sustainability education has occurred in institutions of higher education (Blaze Corcoran & Wals, 2004), large-scale, multi-sited and systemic analyses of what it actually looks like in terms of policy and practice are lacking (Vaughter, Wright, McKenzie, & Lidstone, 2013). This is partially due to the uneven nature of implementing sustainability concepts across institutional types, but also

because the SE educational paradigm is emergent and evolving rapidly. In a recent attempt to navigate the landscape of sustainability in post-secondary educational settings Vaughter et al. (2013) found a similar pattern as the aforementioned National Wildlife Federation research. While significant physical plant changes had occurred in the name of sustainability, “there has been an emphasis on integration of sustainability into science and engineering, with little attention paid to curricula in the humanities and social sciences” (Vaughter et al., 2013, p. 2265). According to their review of the literature, institutions are accommodating sustainability, but not transforming their institutions at a fundamental level.

The disciplinary nature of K-12 institutions in the United States and elsewhere replicate a similar pattern of merely adding environmental issues to pre-existing disciplines, if they are represented at all in the curriculum. In my own state of New York, for example, high school subjects are broken up into various learning subjects, each with their subsequent disciplinary knowledge norms and practices. This results in accommodation practices that attempt to fit SE concepts into pre-existing institutional and pedagogical structures. This process most frequently occurs in the sciences (Camino, Barbiero, & Marchetti, 2009; Littledyke, 2008), but is also common in technology and engineering fields as well (Carew & Mitchell, 2006, 2008; Leal Filho, Manolas, & Pace, 2009; Reid et al., 2010). While SE has been integrated into other subjects, there is a recurring tendency to teach about sustainability within the confines of the traditional STEM disciplines, as they are seen as the “natural” place to talk about such issues

(Gruenewald, 2004; Mueller, 2009; Vaughter et al., 2013). This is one of the reasons that Advanced Placement environmental *science* courses are commonly institutionalized in secondary schools, and why new national science standards are being drafted in the United States around environmental science literacy at the state and federal policy levels (NGSS, 2013).

At the federal policy level in the United States, one now witnesses the funding of environmental education programs, especially climate literacy-specific programs, under the purview of such science-based institutions as the *National Science Foundation*, the *National Oceanic and Atmospheric Administration* and the *National Aeronautics and Space Administration* (Feinstein, 2009; Niepold, Herring, & McConville, 2007).

Although many have written about SE as a necessarily interdisciplinary, or even transdisciplinary, endeavor, the dominance of the scientific disciplines continues to heavily influence the practice of SE education.

As a consequent of the dominance of disciplinary thinking, a persistent recurring discourse in the SE literature is the unique nature of sustainability problems and the inability of individual disciplines to teach about them in a systems-oriented manner inclusive of the complexity inherent in these issues (Berry, 2005; Eagan, Cook, & Joeres, 2002; Eisen, Hall, Lee, & Zupko, 2009; Martina et al., 2009; Moore, 2005). Many SE researchers and practitioners take issue with the limited nature of disciplinary approaches and their subsequent practices, and thus point to the need to engage learners in more complicated learning experiences (Sharpe & Breunig, 2009). Such thinking results from

the inherently complex nature of sustainability problems, which span many different fields of study, from the sociopolitical (Agyeman, Bullard, & Evans, 2003; Dobson, 2000) and economic (Hawken, Lovins, & Lovins, 2000; Jackson, 2009), to the natural sciences (Kates et al., 2001; Turner et al., 2003) and even the spiritual realm (Abram, 1997, 2010; Carroll, 2004). Such concerns are highly interdisciplinary, if not transdisciplinary.

As a result of the complexity of the problems, the discourses and practices of sustainability often contain conflicting accounts of adequacy as different meanings work to shape an understanding of the concept. Short of the radical restructuring of school structures, sustainability will continue to vex traditional educational systems, for “a pedagogy that does not set [disciplinary] boundaries, that does not normalize, and pathologize, is almost inconceivable” (Gore, 2001, p. 239). Many point to interdisciplinarity as a necessary condition of SE programs (Martina, Hursh, & Markowitz, 2009; Orr, 2004; Sterling, 2004), and others (Stephens, Hernandez, Roman, Graham & Scholz, 2008) suggest that the issues are so large and complex that transdisciplinarity might be a more appropriate pedagogical approach. This would involve radically rethinking many of the current practices and physical structures that shape educational systems. This work remains in its infancy, and falls under the purview of the research developed in this dissertation.

Steven Sterling, in conceptualizing various types of sustainability education programs (2004), posits the need for a deeper level of SE as it relates to educational

institutions: *transformation*, or “‘learning as change’ which engages the whole person and the whole learning institution, whereby the meaning of sustainable living is continually explored and negotiated” (p. 60). This is obviously difficult to achieve as it involves a radical redesign of both the physical and intellectual paradigms that currently shape most educational institutions. As such, sustainability education remains relatively noninstitutionalized at the K-12 level in the United States. When it is present, it is typically in independent and private schools that are not subject to federal and state curricular mandates (Feinstein & Carlton, 2012). Oikos Academy is presently struggling with such a change, and the research reported here attempts to understand how such a process unfolds in a formal educational institution, and with what effects.

Situating the Study in the Literature

Researchers in EE are beginning to understand their place as one field among many working to shape the larger field of sustainability studies. SE owes much to the history of traditional EE and to the discipline of science education in particular, but it is becoming clear that a narrow disciplinary educational approach is inadequate for dealing with the complex social, cultural and economic aspects of environmental problems in the face of an uncertain future.

It is obvious that the SE field remains in a state of flux as different discourses continue to shape pedagogical and research practices. This is to be expected as researchers and practitioners work to understand this new and changing field as it evolves. SE researchers can challenge traditional EE approaches by beginning to move

toward a richer and more complex sociocultural understanding of how humans construct and operationalize conditions of environmental sustainability.

While the field continues to emerge and evolve, one thought remains consistent: humans cannot be separated from the environmental reality that shapes their existence on Earth. Schools, as one institution among many in society, may play a role in addressing this relationship. The United States National Research Council (Entwisle & Stern, 2005) suggests the need for research examining how human institutions influence resource use. This is necessary work as “institutions create contexts and rules that shape the human activities that drive climate change and that shape the realistic possibilities for mitigation and adaptation” (Moran, 2010, p. 146). The research reported in this document attempts to explain the complexity of these sustainability issues as they emerge in one particular educational institution by understanding how agents in an educational setting socially-construct and physically operationalize the natural, material world.

Chapter Three: Weaving Together Social, Cultural and Material Natures

Researching and theorizing EE and SE are complicated and complex endeavors given the dynamic relationships between sociocultural and material dimensions. Social theory alone is inadequate for the task given its intense focus on the social dimensions of reality. Such research can become reductionist when focusing too heavily on the social and discursive dynamics of educational contexts at the expense of the non-human world (Hart, 2012; Hornborg, 2013). Conversely, natural science theories can also trend toward reduction by neglecting the interplay of social actors, cultural signs and symbols that are also at work in and on the material world. As the environmental anthropologist Alf Hornborg states in his research on the sociocultural dimensions of energy, such reductions are unfortunate:

Those researchers who seem to be the most concerned about the future of the biosphere (the natural scientists) generally have the bluntest analytical tools for understanding the causes of anthropogenic environmental degradation, while those who possess such tools (social scientists, including anthropologists) generally tend to be less concerned with the biosphere as an objective, biophysical reality. (2013, p. 53-54)

This split exists for a number of interesting reasons, from the historical development of academic disciplines to the epistemologic and ontologic assumptions that particular researchers make about the nature of reality and research's ability to attend to said reality. Threading the needle between these two approaches is a necessary, if difficult, theoretical

step if SE research is to address both the sociocultural and biophysical dimensions of human existence on the planet. In this chapter I develop a theoretical framework rooted in critical realist philosophy and therefore capable of engaging the inherent sociocultural and biophysical complexity involved in sustainability research. I begin by reviewing some of the theoretical approaches previously used in EE research to illuminate lacunas in the field, which are then addressed in the philosophical and theoretical frameworks that I bring to bear in this particular study.

Common Theoretical Approaches in EE and Their Limitations

Navigating the research terrain between humans, culture, education and nature is riddled with complexities that continue to shape the EE field. Writing about different approaches to socioecological research in sustainability education Steven Sterling (2010) lamented the problem of taking narrow *instrumental* or *intrinsic* approaches to SE research (p. 525). He suggested that researchers and educators should not perceive education as *solely* an end for environmental action (instrumental), nor should they see learning as solely focused on the development the learner absent the material impact of environmental decisions (intrinsic). Instead, a hybrid model is needed that accounts for “capacity building, self-renewal and self-organization in the individual and community as a necessary basis for ‘systems health’ and sustainability. Thus, ‘learning and education’ and ‘sustainability’ appear far more closely related than is commonly supposed” (Sterling, 2010, p. 525). Sterling’s conception of SE blends two traditions that have shaped the field, the natural/instrumental and the social-individual/intrinsic. In this

section, I briefly review some of these theoretical paradigms that have shaped, and continue to shape, EE and SE research. Via this brief genealogy, we shall see why Sterling's warning against narrowly conceptualized research matters, and why some approaches work better than others in this regard in attending to the complexity inherent in SE.

Like other fields of educational research, competing theoretical traditions inform different conceptualizations of research. The choice of theoretical traditions in such research is based upon particular epistemological and ontological traditions, whether the researchers themselves formally acknowledge them or not (Crotty, 1998; Lincoln & Guba, 2000). While my colleagues have made important advances in EE research, traditional approaches are sometimes inadequate, mainly due to the nature of their epistemological and ontological assumptions. As explained earlier, the field of SE is a relatively new development that blends together a few distinct traditions, mainly through incorporating EE with the more established field of science education. Recently, discourses of social and ecological justice, sustainability and sustainable development, and ecosystem complexity have gained a discursive foothold in shaping SE research and practice. Each of these traditions reflect particular sets of theoretical assumptions that shape research and practice.

Behavioral, Cognitive and Phenomenological Approaches

One dominant trend in EE research is the use of behavioral and cognitive psychological approaches toward education (Chawla & Cushing, 2007; Connell, 1997;

Heimlich & Ardoin, 2008; Hungerford & Volk, 1990; Kollmuss & Agyeman, 2002; Wells & Lekies, 2006). These research studies are based on a psychological theory of education that assumes knowledge is rooted within the cognitive schema of individual learners (Bandura, 1993; Piaget, 2002). Individual conceptual and behavioral change evidences successful teaching and learning.

An individualized approach in EE research and practice can become problematic because it often leads to a sense of “environmentalism as individualism” (Connell, 1997) that is problematic when many, if not most, environmental problems are collective action problems requiring collective solutions (Curren, 2009; Speth, 2008). Sharon Connell sharpens an even finer point in her critique of this approach when she states that “Individual action is not likely to lead to the scale of social change necessary to preserve the environment...it is only through community action that we can hope to solve the political struggles inherent in environmental problems” (Connell, 1997, p. 128). While the individual educational experience is certainly worth studying, a limited psychological approach cannot be the *only* epistemological research decision, as it is limited for the above reasons.

Luckily, many researchers within the SE field are quick to recognize the limitations of a narrow psychological approach to teaching and learning and often blend this tradition with more sociocultural theoretical lenses to understand environmentally sustainable behavior as it pertains to education.¹⁰ Unfortunately, narrow behavioralist

¹⁰ See Heimlich & Ardoin, 2008 for a nuanced treatment of behavior change in EE research.

approaches remain popular in educational research generally, and their power to influence educational policy remains a serious impediment to the implementation of alternative approaches (Berliner, 2002; Hursh, 2007).

Ecophenomenological approaches to researching EE are another somewhat popular vein of EE and SE research (Payne, 2013). Such approaches (e.g., Bai, 2009; Fawcett, 2009; Payne & Wattchow, 2009) tend to focus on human experiences with the other-than-human world and typically draw from the philosophical work of David Abram (1996), Martin Heidegger (1962) and Maurice Merleau-Ponty (1962, 1968). Such philosophies and approaches foreground human experience within space, time, senses and through corporeality, materiality and animality, thereby affording theoretical attention to “what we are of, our natures, and who we might recover, or reclaim from the bewildering often contradictory barrage of sociocultural constructions and representations” (Payne, 2013, p. 433). Ecophenomenological approaches to EE provide useful windows into how particular natural phenomena are experienced by humans, especially across cultural norms, as they may illuminate crucial differences in human experiences. However, they remain explicitly human-focused in their approach.

Ecophenomenological methods tend to preference human experience and while this is useful in some research designs, it may be problematic in others, as a small but growing area of research has tracked human misperception of many natural phenomena.¹¹ Like all

¹¹ Refer to Boudet et al. (2013), Lu et al. (2007) and McCright & Dunlap (2011) for more on how cultural and ideological biases shape the human experience of natural phenomena.

approaches to SE and EE research then, ecophenomenology should be understood as potentially useful for some types of inquiry and limited for others.

Sociocultural and Critical Approaches

Mirroring the development of theory in other areas of educational research, the field of EE is also influenced by sociocultural and historical theories of education. These are often based upon Vygotskian epistemological assumptions (Vygotsky, 1978; Wertsch 1991) that position learning and knowledge as socially constructed, historically shaped and situationally specific. In the larger field of educational studies, this research commonly references the theoretical and empirical work of cultural-historical activity theory (Cole & Engeström, 1993), distributed social cognition (Moll, 1993) and situated social practice (Lave & Wenger, 1991; Wenger, 1998), among others.

The import of sociocultural and historical theories within EE has been somewhat sporadic, however, and these sociocultural theories tend to provide insufficient weight to the material dimensions of education, which remain under-theorized in these approaches (Fenwick, Edwards & Sawchuck, 2011). For example, none of these theories have a richly developed conception of nature and are often limited to merely reducing the concept to social construction (Gough, 2008; O'Donoghue, 2008). More common approaches in EE research instead take a socioecological approach that focuses on the interplay between social, cultural and ontological realities (Kyburz-Gruber, 2013). This dissertation study is sympathetic to such an approach and it is developed in further detail later in this chapter.

The turn away from the psychological and toward the sociocultural in educational research in general, and EE research specifically, has been productive despite a lack of attention to materiality. Social approaches have engendered a number of additional theoretical traditions in the field and have driven the research discourse away from Sterling's warning of narrow behaviorist instrumentality. Like in the larger field of educational studies, a number of EE researchers have used critical theory to research everything from the sociocultural dimensions of animal liberation (Kahn, 2008) and ecojustice (Martusewicz, Edmundson & Lupinacci, 2011) to critical pedagogies of place (Gruenewald, 2003). In each case, the connective thread holding them together is the notion that dominant social ideologies need to be critiqued and disrupted to challenge the forces currently shaping environmental and educational practice.

These critical approaches, while useful for exposing the ways that environmental and sustainability related research is raced (Agyeman, 2002; Bullard, 1993), classed (McLaren & Houston, 2004), gendered (Gaard, 1997) and colonized (Agyeman, 2003; Greenwood & McKenzie, 2009), are also sometimes criticized for too narrowly focusing their analysis on the human dimensions of environmental education (Bell & Russell, 2000; Bowers, 2005). While critical works may be capable of disrupting dominant social traditions, and are thereby useful for expanding the field against anti-essentialist tendencies, the differential focus on human actors serves to limit a more thorough analysis of the complex ways that humans and nature interact. This type of thinking can continue an Enlightenment ethos, whereby "Humans are assumed to be free agents,

separate from and pitted against the rest of nature, our fulfillment predicated on overcoming material constraints” (Bell & Russell, 2000, p. 193). In an effort to contest human essentialisms, critical EE approaches sometime ignore the additional dimension of nature in the process.¹²

The Necessity of Critical Realism

Philosophical differences, and subsequent research decisions, often keep different academic communities from interacting.¹³ These divides are especially problematic when dealing with issues of nature and human culture, for understanding the complex relationship between these dimensions requires being able to speak across intellectual disciplines and traditions (Miller, et al., 2008; Orr, 2004). Writing from within the field of environmental education, John Huckle (2004, 2012) suggests overcoming these tensions by orienting research designs within the philosophy of critical realism (Archer & Bhaskar, 1998; Danermark, 2002) to bridge gaps between the natural science, the social sciences and the humanities. He suggests this move is necessary for advancing EE research, for a critical realist (CR) lens “offers a unified approach to the natural and social sciences...[whereby] the biological world is emergent from the physical world and the social world emergent from the physical and biological worlds” (Huckle, 2004, p. 38).

¹² I realize that I am painting with a rather broad brush here. I should note that some critical theorists have recently expanded their analyses to include the non-human (with Kahn & Humes, 2009 and McKenzie, Hart, Bai & Jickling, 2009 as examples of this effort). Further, the field’s recent engagement with poststructural theory may hold promise to dislodge humans from the center of such research and enrich conceptions of what it means to be educated as this relates to nature and sustainability.

¹³ Fractures in Stanford University’s anthropology department represent an illustrative example of the inability to speak across this difference. Refer to Shea, 1998 for more on this particular event and its institutional and educative implications.

In what follows, I explain why CR philosophy is necessary for grounding SE research and how the larger philosophical arguments it advances inform particular conceptual and theoretical choices that undergird my own research design.

Ontological and Epistemological Implications

Critical realist philosophy acknowledges the existence of reality outside human consciousness, while also accepting that human understanding of said reality is socially constructed and culturally mediated. The qualitative researcher Robert Stake (1995) refers to this as the “rationalist-constructivist” research stance, where “[in] an outside world, reality #1 exists, corresponding suitably to our notion of it, reality #2” (p. 101). Or, another way, “The existence of a world without a mind is conceivable. Meaning without a mind is not,” and “[the world] becomes a world of meaning only when meaning-making beings make sense of it” (Crotty, 1998, p. 10-11). By acknowledging that reality exists outside human social construction while also accepting that the meaning of that reality is mediated and constructed through human social interactions, CR renders moot the tired debates between positivist and constructivist philosophers.¹⁴

Critical realist philosophy focuses attention on the ontological dimensions of human existence by claiming the truism of the natural sciences: that a material reality exists independent of human cognition, construction and experience. While this is not a problematic assertion in many academic traditions, it is controversial among some strong

¹⁴ The now infamous “Science Wars” between natural scientists and social scientists in the 1990s represents a particularly nasty example of this historical tension (Callon, 1999; Gross & Levitt, 1994; Sokal & Bricmont, 1999). Critical realists identify this fight as unnecessary (Maxwell, 2012) and largely the result of researchers speaking past each other based on insufficient philosophical assumptions about ontology and epistemology.

constructivists who claim that nature is socially constructed (Carolan, 2005a; Maxwell, 2012). Rather, in CR philosophy, society and culture emerge from the material world, but not vice versa (Jones, 2002). That is, material reality and sociocultural realities are not mutually constitutive, for “although the biophysical can exist without the social, the converse is categorically impossible” (Carolan, 2005b, p. 394).

Critical realists therefore argue against reductionist attempts to explain the world (Archer & Bhaskar, 1998; Danermark, 2002; Price, 2009). This applies equally to positivist-oriented scientific reductionism, of which there is a robust history of critique within the social sciences (Holland & Eisenhart, 1988; Harding & Hintikka, 1983), but also to the reductionist problems of claiming that phenomena are *solely* socially constructed (the aforementioned strong constructionism). By resisting such reductions, critical realists bridge realist ontology with constructivist epistemologies while maintaining fidelity to reality:

While our knowledge of the world is inherently a construction from a particular perspective, there is nonetheless a real world, which can be understood in both mental and physical terms, about which our constructions can be more or less adequate. (Maxwell, 2012, p. 20)

This is an important move in EE research, for it focuses attention on both the material world and human conception of said world while avoiding the nihilism that sometimes plagues post-modern conceptions of truth (Huckle, 2004). Such nihilism results when researchers confuse “*knowledge* of what is (an epistemological statement) for what *is* (an

ontological statement)” (Carolan, 2005b, p. 395, *italics original*). This philosophical move collapses epistemology and ontology, producing what critical realists refer to as an “epistemic fallacy” (Scott, 2000, p. 3).¹⁵ Nevertheless, CR acknowledges that all knowledge is provisional, and is “always subject to revision in the light of new evidence or theories” (Maxwell, 2012, p. 86). This assumption is the genesis of the “critical” in critical realism, as such an approach to knowledge requires constant critique and reexamination toward reality.

Basing SE research on a CR philosophical foundation acknowledges this potential design mistake and addresses it via research that attends to *both* the social and material realities involved in the construction of SE research and practice. This philosophy is therefore an appealing foundation for situating SE research, for it works against reductionism and argues for a more complex understanding of socioecological conditions and nature. This is particularly important given the severity of the aforementioned crises facing our species:

Hence, it [CR] offers a more realistic foundation for assessing environmental degradation than positivism or realism but unlike strict constructionism, enables a choice to be made between competing conceptualizations of the problem and provided grounds for remedial action. (Jones, 2002, p. 249)

¹⁵ For example, in the United States a cottage industry has developed around spreading untruths about the claims that climate scientists make regarding global warming. It is simply not accurate to claim that global warming is not happening at the biophysical level. Such denial statements, while real social constructions themselves, do not accord with ontological reality.

In the specific case of SE research, explanatory theories cannot focus solely on the human-human relationships without also accounting for the material reality that influences these relationships, and vice versa. Conversely, strict objectivist-materialist understandings of the world cannot discount or discredit the role of culture in the production and analysis of their knowledge claims.

CR is especially appropriate for understanding the types of questions that arise in relation to environmental studies, and this philosophy is widely used in related fields, from geography (Pratt, 1995; Proctor, 1998) and social ecology (Carolan, 2005a, Høyer & Naess, 2008) to transdisciplinary science (Dickens, 2003), communication studies (Mingers, 2004) and institutional studies (Al-Amoudi & Willmott, 2011). While currently limited to a few conceptual pieces in EE (Huckle, 2004; Plant, 2001; Price, 2009), I believe that CR's importance to the field cannot be understated, for the absence of ontological awareness limits the import of research in addressing real ecological conditions. Ignoring ontological reality in environmental education research risks backgrounding the natural, material dimension of the endeavor. This is a growing concern in the field (Hart, personal communication, October 2012). In writing about the need to redress this oversight in the literature, Heila Lotz-Sisitka, quoting Benton (2001, p. 142), laments that:

Failing to take account of nature in environmental research (even of the educational variety) assumes an impossible radical ontological constructivism, that denies the independent reality of nature, which leads to the impossible

situation and empirical absurdity of conducting environmental research as if nature did not exist, and assumes that “if we make a catastrophic mess of ‘nature’ we can discursively construct another.” (2009, p. 172)

Increasingly, a number of educational researchers are beginning to address this disconnect in research designs, although the numbers are minor at this point given the continued dominance of narrow positivist and constructivist research approaches (Fenwick, Edwards & Sawchuck, 2011; Maxwell, 2012). My own professional sense is that environmental research scientists, whether social or biophysical or any combination thereof, are beginning to acknowledge the complexity involved in studying the relationship between material nature and human sociocultural dynamics. For this reason, I believe that theories rooted in CR philosophy can inform SE research and practice, including this particular research study. In the next section I speak about the relationship between ontological material reality and the sociocultural processes that emerge from this reality as they relate to a working concept of nature in EE research.

Nature and Culture in Critical Realism

Theorizing SE discourse and practice is a slippery research endeavor. As noted in Chapter Two, SE remains a nebulous field due to vague conceptions of what we are even talking about when we refer to the environmental sustainability. What exactly is “the environment” anyway? The term itself is relative to an organism in a particular context (Ingold, 2000, p. 20). As a crude example, a bacterium in my gut flourishes or dies in the environment of my lower intestine. Similarly, a human being flourishes or dies in

whatever context they depend on for survival. The emphasis here is on the relationship between organism and surroundings. For reasons that I advance below, I suggest that focusing on “the environment” may actually stifle EE research and that the concept of material (biophysical) nature may be more useful for theorizing research approaches. Therefore, at this point I want to shift away from the concept of the environment and toward a discussion of nature, which the linguist and literary critic Raymond Williams referred to as “perhaps the most complex word in the language” (1976, p. 219). As I show, this shift, while subtle, allows for theoretical analysis of the world along ontological lines (Fenwick & Edwards & Sawchuck , 2011; Maxwell, 2012). A much more sophisticated concept of “the environment” reemerges via this treatment, and in a way that I argue is an appropriate framework for engaging in SE research.

Writing from the field of environmental sociology and rooted in CR philosophy, Michael Carolan (2005b) developed a useful typology (Figure 3.1) for conceptualizing nature. Seeking to avoid aforementioned reductionist dichotomies, he developed a stratified account of different natures at play in environmental research endeavors:

Figure 3.1. The interpenetrating sociocultural and biophysical realms that constitute a causally dynamic ecological whole. Note linguistic identification of these different natures: "nature," nature and Nature. Also note the existence of causal arrows between nature and Nature, as these realms bidirectionally act on one another. (Carolan, 2005b, p. 401)

Carolan's theoretical model allows for both the biophysical scientific study of Nature while also allowing for the analysis of human constructions of "nature." The latter respects the history of social science research that rightly troubled overly simplistic and historically repressive conceptions of what is considered "natural" human behavior (e.g., Foucault, 1978; Haraway, 1991, Latour, 1993; Little, 1999; Shiva, 1993). The former respects the findings of the natural sciences that explain a generalizable biophysical reality (e.g., Darwin, 1859; Einstein, Podolsky & Rosen, 1935; Newton, 1678/1972). It is within this biophysical reality that human existence is rooted, and emerges from, to produce the world within which we live. Human understanding of this biophysical Nature

continues to evolve and is subject to political negotiation throughout history (Kuhn, 1962). It is Carolan's middle nature category, the sociobiophysical, that proves to be the most slippery in terms of theorizing, but I believe is also the most useful for the purposes of SE research.

As an environmental sociologist, Carolan is interested in how humans (themselves part of Nature) constitute society based on biophysical realities. He provides the example of energy in this regard and asks, "As we move from a coal- and petroleum-based economy to one based on other 'alternative' energy sources - such as, say, wind and solar power - what role will the availability of these resources play in how societies are organized" (2005b, p. 405)? Altering either aspect of this nature-society dynamic changes the entire dynamic in Carolan's middle conception of nature. This is then the obvious connection for EE research. Many EE curricula (e.g., Cloud, 2005) cite the need for the alternative fuel development to deal with the dual crises of climate change and peak oil. Discursively altering an educational learning experience, from the level of the individual learner to the educational institution, and then to the level of society, has material ramifications and changes nature, both socially and biophysically. A research design that attempts to explain that dynamic "highlights the interwoven character of the discursive, material, social, and cultural dimensions of the human-environment relation" (Escobar, 1999, p. 2). Conceptually, such research designs achieve fidelity with Carolan's middle conception of nature. It is within this framework, the examination of sociobiophysical

phenomena, that I situate this dissertation research and the subsequent theoretical frames brought to bear in the design and analysis.

Because education occurs within larger sociobiophysical fields, more complex theories of education must account for the interplay between these domains. As I evidenced earlier in this chapter, current approaches in SE research either completely omit this complexity or weakly theorize “the natural” as it relates to sociocultural and sociohistorical educational research approaches. More robust theoretical frameworks are needed to make SE research more useful in this regard if we are to understand how human culture impacts ecosystem dynamics in both the immediate and long-term.

The Study’s Theoretical Framework

The concept of nature remains woefully under-theorized in EE research and practice (Brody, 2005; Luke, 2001). At best, the field expends great energy trying to develop rich theoretical understanding of ecosystems and the environment. At worst, this same effort produces a confusing rhetoric resulting from ontological and epistemological silences on the part of the researcher (Bell & Russell, 2000). A more nuanced conception of nature is needed to deal with the complex relationship between humans, non-humans and knowledge that is central to the field (Luke, 2001). To assist with this task, I supplement the aforementioned critical realist philosophy by turning to the fields of political ecology, science studies, environmental anthropology and environmental sociology, which have more developed conceptualizations of nature and culture. By

bringing these ideas to the field of education broadly, I hope to expand the realm of the possible in SE research specifically.

At this point it is useful to revisit the research questions and subquestions guiding the study: *What is the nature of the infrastructure supporting sustainability education at this particular school?* A critical realist understanding of nature undergirds the theoretical decisions that I use to address this research question. I assume that the biophysical realm of nature exists regardless of sociobiophysical and discursive realms. The research question guiding the proposed study examines the sociobiophysical dimension of sustainability education in order to understand both the social and material (biophysical) dimensions of the research case. In this section, I develop a theoretical framework capable of explicating the social and material dimensions of such an educational program. I begin by rooting the theoretical framework in socioecological complexity theories to understand relationships between human and non-humans within larger patterns. I then move to cultural and political ecology to ask questions about symbolic power relations. Such an approach relies on ecological discourse practices, and theoretical work in this area rounds out the framework.

Socioecological Complexity

At the risk of stating the obvious, humans rely on the biophysical (Carolan's Nature) for existence. Most organisms cannot survive without access to basic material provisions: water, air, food, shelter. Materials and organisms do not exist in isolation from one another. Plants cannot exist without minerals in the soil. Minerals in soil result from

geologic weathering processes. Plants have evolved to maximize these material conditions over time, thus continuing species existence or becoming extinct when not able to adapt to changing conditions (Darwin, 1859). Shelter results when organisms alter materials into forms that provide individual and collective security. More complex forms emerge from relationships with other forms, and when humans stimulate these forms, they move from the biophysical and into the sociobiophysical realm. This is because humans are, by Nature, social (Rogoff, 2003). These two concepts, *rootedness* and *emergence*, are key concepts in complexity and ecosystem theories that are useful for understanding how particular forms of existence come into being within an ecological dynamic (Capra, 1997; Fenwick, Edwards, & Sawchuck, 2011). For this reason, these theories and concepts are germane to the proposed study.

Organisms exist within webs of relationships encompassing both other organisms and the nonliving world. These relationships form what the physicist Fritjof Capra refers to as *living systems* (1997, 2005). Human beings exist within, and stimulate, these systemic relationships which then interrelate:

First, every living organism, from the smallest bacterium to all the varieties of plants and animals, including humans, is a living system. Second, the parts of living systems are themselves living systems. A leaf is a living system. A muscle is a living system. Every cell in our bodies is a living system. Third, communities of organisms, including both ecosystems and human social systems such as

families, schools, and other human communities, are living systems. (Capra, 2005, p. 19).

For the purpose of this study, I am interested in understanding how people within a particular school system change relative to a conceptualization of sustainability education, with particular social and material effects. Complex socioecological systems theory allows me to understand how humans are situated within particular systems within the school (e.g., curricular system, social systems, school food system, student/faculty governance systems). Likewise, Oikos Academy does not exist in isolation and is shaped by relationships with larger systems (e.g., global energy system, market economics, larger educational systems, weather systems, linguistic systems, the global climate system). By examining action in different levels of systemic nesting (Capra, 2005), I can understand how humans locate themselves, and are located, within particular systems of influence.

Fritjof Capra provides a useful example of systemic nesting when he recognized that one effort to change school lunches “required moving from working with individual schools to working at the district level and then to the larger educational and economic systems in which districts are nested” (2005, p. 25). Similarly, Oikos Academy is already changing their internal systemic dynamics around a conception of sustainability. This change emerged within the Oikos system and is now producing pedagogical and material effects (Henderson, 2012a, 2012c). By examining Oikos as a rooted and emergent sociobiophysical phenomenon, I can trace out the particular social and material mechanisms stimulating systemic change with particular effects.

Rootedness, emergence and scale. Ecological relationships work at a number of levels, from the individual to the collective, from the local to the global, with relationships working as the connective tissue. Critical realism also contains two useful theoretical concepts germane to this research: *rootedness* and *emergence* (Bhaskar, 1978). More complex phenomena, like the aforementioned shelter construction, are rooted in and emerge from relations between more basic phenomena. Interactions at lower levels can produce effects toward higher levels of complexity and vice versa:

We also have to recognize that, in general, different system levels represent levels of differing complexity. At each level the observed phenomena exhibit properties that do not exist at lower levels. The systemic properties of a particular level are called “emergent” properties, since they emerge at that particular level.
(Capra, 1997, p. 37)

Using these concepts for the purposes of this research means examining the complexity of Oikos Academy by attempting to understand how the ideas of particular groups of educators (a lower level of complexity) might then come to inform the operation of the entire school system (a higher level of complexity). In turn, altering the operation of an entire school system might affect higher levels of educational and ecological complexity. By moving in and out of levels of theoretical complexity, I tease apart how different levels of complexity are influencing one another.

Socioecological Communication Processes

Like many other species, humans are social organisms (Rogoff, 2003). We communicate via language, signs, symbols and a myriad of other linguistic and semiotic practices. According to the critical realist understanding of language (Patomäki & Wight, 2002), these communicative systems are rooted in the biophysical and emerge via sociolinguistic and sociomaterial practices. That is, human communication itself is an emergent, complex sociobiophysical phenomenon. Again, this is a non-reductionist understanding of language that rejects overtly positivist conceptions of communication like those posited by Noam Chomsky (1976). The EE researcher Leigh Price (2009) uses Andrew Sayer's work in critical realism and language (1999) to provide a useful example of the relationships involved in the signification of reality:

Figure 3.2. The signification triangle. In Sayer (1999), by Price (2009, p. 114).¹⁶

¹⁶ This work is based upon the foundational semiotic theories of Charles Sanders Peirce (1902) who first articulated the irreducible triadic relationship among sign, object and interpretant. This work has been expanded into biology (Kull, 1998) and ecology (Barrera-Bassols & Toledo, 2005), with little presence in EE research, save Snowberry & Blenkinsop (2010). Given my explicit focus on the sociomaterial and discursive dimensions of human existence, I expect future work to build off these foundations. They are weakly developed in this dissertation and remain a challenge in ethnographic research. This is addressed in the limitations sections of the final chapter.

Leigh Price developed Figure 3.2 only a few years before the infamous oil spill in the Gulf of Mexico. Nevertheless, her example is prophetic and profound for understanding how ontological reality and epistemological constructivism interrelate in socioecological communication processes. The construction of the knowledge about the oil spill, for example, resulted from the collective contribution of the media and press system working in concert with scientists, industry and government actors across diverse contexts. At first, information about the spill was conflicting and incomplete. Over time, more information complicated the emerging complex phenomenon that would eventually become known as the Deepwater Horizon oil spill. Our *knowledge* of the oil spill as a signifier resulted from the communicative exercises engaged in by actors within the collective linguistic and semiotic system. The signified meanings that we, as humans, associated with that information result from interpretive actions. Nevertheless, the oil spill itself existed independent of human interpretation and meaning. To reiterate Joseph Maxwell's summary of the relationship between construction and reality:

While our knowledge of the world is inherently a construction from a particular perspective, there is nonetheless a real world, which can be understood in both mental and physical terms, about which our constructions can be more or less adequate. (2012, p. 20)

It is simply does not accord with reality to say that an oil spill did not occur in the Gulf of Mexico in 2011. Whatever that oil spill *means* is open to cultural interpretation. "Here we

see that although the signified is not the same as the signifier, there is a limit to unrestrained interpretation, imposed by the referent itself” (Price, 2009, p. 115).

Therefore, signifiers are never empty. While they may be subject to interpretation, they *more or less* accurately represent a referential reality.

Similarly, the theory of climate change results from the collective contribution of thousands of scientists working across many different cultural contexts (Edwards, 2010). This current scientific consensus points to the anthropogenic alteration of natural climate processes as the primary cause of the problem. This socially produced scientific theory of reality is understood differentially across various social contexts as unique cultures interact with the knowledge and contextualize meanings accordingly. Regardless, human-induced climate change now exists at the level of biophysical Nature, independent of interpretive meaning. In the case of climate change, the cumulative social result of the scientific knowledge allows us to understand something that is happening at a global scale. And yet, we live local lives and leverage discourses in these contextualized spaces to develop our own subjective understandings of these issues (Harding, 2004). How a particular culture understands and interacts with the knowledge of climate change, or unsustainable resource use, will be related to the communicative practices present within that unique culture.

Symbolic and material practices. Critical realism “regards nature as socially constructed or produced in two senses: it is materially shaped by social practices and it is existentially produced as cultural meanings, discourses and representations” (Huckle,

2004, p. 39). Human cultural actions and symbols socially construct knowledge about nature in contextualized settings. This constructed cultural knowledge then shapes the material dynamics of nature, within biophysical limits. Because critical realism partially understands nature as a social construct, it is appropriate to leverage sociocultural theories to explain how nature is materially altered and socially constructed in the context of a school, which is a particular type of educational setting.

This research study then respects symbolic interactionism (Blumer, 1969) to explain the complex social relations and meanings among the participants that come to inhabit and shape Oikos Academy. “[An institution] functions because people at different points do something, and what they do is a result of how they define the situation in which they are called to act” (Blumer, 2004, p. 219). Symbolic interactionism allows the research to explore an *emic* representation of the meanings that are constructed in social and cultural settings. In this sense, “people act, not on the basis of predetermined responses to predefined objects, but rather as interpreters, definers, signalers, and symbol and signal readers” (Bogdan & Biklen, 2007, p. 27).

Similarly, the preeminent cultural anthropologist Clifford Geertz (1973) suggested focusing research attention to understanding the “webs of significance” in research contexts (p. 89). He defined these as “system[s] of inherited conceptions expressed in symbolic forms by means of which men [sic] communicate, perpetuate, and develop their

knowledge about and attitudes toward life" (1973, p. 89).¹⁷ Oikos Academy therefore represents an example of sustainability education in a particular web of cultural significance. By explicating the symbolic cultural practices at work in the setting, I can begin to understand how an institution constructs sustainability education with various material and symbolic effects.

How we understand environmental issues and nature, and act accordingly, affects the material dimension of our existence. This is a cultural process with ecological implications. How we think, represent, converse and ultimately act on these constructed understandings may affect our ultimate ability to survive as a species. Writing from the field of ethnoecology, Narciso Barrera-Bassols and Victor Manuel Toledo (2005) focused their research of the Yucatec Maya culture to include “not just on specific linguistic terms, cognitive structures, symbols, perceptual images or useful species and techniques, but on all the above factors, as forming part of the concrete process through which humans produce and reproduce their material conditions” (p. 12). Such sociomaterial approaches are novel in educational research, as this dimension of the educational experience is often taken-for-granted, if not ignored in research designs altogether (Fenwick & Edwards, 2011; Fenwick & Landri, 2012). There are clear implication for educational research however:

¹⁷ I note that there are issues with Geertz’s definition, namely that symbolic forms are not merely “inherited” only. This is a rather static definition of culture. Instead, I acknowledge that culture is produced and performed in contextual settings. Nevertheless, Geertz provides a *general* definition that is useful for examining significance patterns.

Sociomaterial studies try to reveal the minute dynamics and connections that are continuously enacting the taken-for-granted in educational events: the clothing, timetables, passwords, pencils, windows, stories, plans, buzzers, bubblegum, desks, electricity and lights - not as separate objects, but as continually changing patterns of materiality. (Fenwick, Edwards & Sawchuk, 2011, p. vii).

Similarly, examining Oikos Academy a changing symbolic material cultural context would allow for findings that speak to their sustainability education practice in its totality. Such an approach warrants a variety of methodological approaches, which will be explained in greater detail in Chapter Four.

Cultural and Political Ecology

While concepts from ecological complexity theories are capable of explaining how new forms emerge within and between systemic levels, and concepts from communication theories relate to ecological dynamics, neither set of theories addresses the political and cultural dimensions of ecological action. For this, the final piece of the theoretical framework, I turn to concepts from two distinct yet similar fields: cultural and political ecology. In particular, I am interested in understanding how humans relate to one another and to the natural world, of which they are a part, and how cultural traditions and political and economic power dynamics shape these interactions. After briefly describing these two dimensions, I finish the theoretical framework by delving into the specifics of intersubjectivity and environmentality to understand how human subjectivity is constructed in environmental education contexts.

Cultural ecologists are interested in examining how human cultural dynamics influence nature (Moran, 2010). This includes examining the aforementioned symbolic and material practices that shape a sociobiophysical context. Where cultural ecologists examine the ways nature becomes influenced by cultural patterns and vice versa, political ecologists, especially those of with a critical persuasion, focus on the political and economic forces that impact interactions with the natural world (Biersack & Greenberg, 2006; Forsyth, 2003). Aletta Biersack (2006), for example, channels Karl Marx and Fredrich Engels' (2000) use of the term "second nature" to refer to the material world (i.e., "first" nature) that has been subjected to human activity. Such a nature is "*humanly* produced (through conceptualizations as well as activity) and that therefore partakes, but without being entirely, of the human" (Biersack, 2006, p. 14, italics in original). Michael Carolan and other aforementioned critical realists conceptualize nature in this fashion to delineate the sociobiophysical from the merely biophysical, thereby avoiding reductive accounts of nature and culture interaction. Bringing the human political dimension into ecological dynamics then allows for examination of how sociocultural power dynamics shape the material dimensions of the world, and vice versa. Such work often involves examining the impact of capitalist systems on material dynamics, and the field of political ecology has traditionally drawn from Marxist and neo-Marxist critical economic thought to advance such research (Escobar, 1999; Harvey, 1996; Peet & Watts, 1993; Smith, 1984).

In Chapter Two I described how EE was beginning to explore concepts of environmental justice to add the social dimension to the field. Julian Agyeman developed the concept of *just sustainability*, which is germane to understanding how power differentials shape natural dynamics: “wherever in the world environmental despoliation and degradation is happening, it is almost always linked to questions of social justice, equity, rights and people’s quality of life in the widest sense” (2008, p. 752). By directing environmental discourse toward justice, Agyeman suggests that SE needs to address the cultural and political dimension of environmental issues. “We need to (re)frame environmental education along lines which recognize cultural diversity and all its implications...as *the* project for environmental educators” (2002, p. 10, italics in original). This is an important development in the field, for the cultural and political relationship with “first” nature produces differential ecological effects that are often intimately related to unequal cultural appropriation of material (Harvey, 1996, 2005). These theoretical insights have particular methodological implications and this will be explained in more detail in Chapter Four.

Intersubjectivity. Earlier I criticized an over-reliance on individualistic approaches to EE research for following the epistemological assumptions of psychological research, where the individual learner is thought to be autonomous, self-regulating and rational. Positioning individual human beings in such a way often hides the larger social, political, economic and other relational mechanisms that shape individual identity formation over time (Foucault, 1980). A more complex means of

understanding individual subjective experiences is needed to conduct research with individuals and these larger mechanisms. Within the SE field, Marcia McKenzie's scholarship on intersubjectivity (2008, in press) is particularly useful in this regard. Rather than situating individuals as autonomous actors, she situates an individual's subjectivity within the:

[S]ocial and cultural norms that have developed historically and that are practiced and passed on in everyday life, as well as the spatial contexts in which people's lives take place. These contexts include particular physical locations, such as educational venues and institutional forms, while more broadly they also entail lives increasingly mediated by technologies and other layerings, such as the global mobility of bodies and subjectivities, desires and cultures, ideas and possible conflicts. (in press, p. 4)

Contexts then exist as the negotiations of human subjectivity and materials through time and across space. By foregrounding the intersubjective in SE research, I can understand the particular subjectivities that participants leverage as they work the hyphen between nature and culture relative to SE. Observing this provides a window into larger discourses and logics that individuals used to collectively shape the sustainability education program at Oikos Academy.

Environmentality. A similar concept advanced in environmental anthropology builds off the Foucauldian concept of governmentality (Dean, 1999; Foucault, Burchell, Gordon, & Miller, 1991; Jessop, 2006; Li, 2007) to examine the practices and discourses

that humans use to shape and understand the environment. Toward the end of his life, Michel Foucault began developing the concept of governmentality to explain the specific mentalities and techniques that people use to govern themselves, and through which they are governed. The “art of governmentality” (Foucault et al., 1991) refers to how governing institutions (governments, schools, clubs, etc.) construct disciplinary rationalities (mentalities) to develop the “conduct of conduct” within their organizations.¹⁸ Environmental anthropologists, mainly using the work of Arun Agrawal (2005a, 2005b), Eric Darrier (1999) and Timothy Luke (1996, 1999, 2001) have expanded this concept of governmentality to include environmental rationalities, or *environmentalities*. This body of research examines how environmental subjects and knowledges develop via specific environmental discourses.¹⁹ The research proceeds by examining the various “enviroming mentalities” and their effects on both the constitution of selves and their impact on the material world that surrounds the self: the environment. Discourses are not totalizing in the hegemonic sense, and environmentalities frequently come into conflict in the real world.

¹⁸ For example, in order to rectify a situation of environmental unsustainability, governments often develop a specific logics and rationalities around a progressive “will to improve” (Li, 2007). This then becomes the dominant logic, and solutions for improvement are often framed by governing agencies in a similar fashion by rendering potential solutions to the technical realm. One can see this at work in conversations around adapting to climate change, where technical solutions are proffered instead of dealing with the root cause: consumption and its throughput effects (Hamilton, 2013).

¹⁹ I rely upon the definition of discourse advanced by Michel Foucault (1972), who defines it as “the group of statements that belong to a single system of formation” (1972, p. 121). For Foucault, discourse is laden with normative biopolitical power, which in turn guides behavior as people discipline themselves relative to the norm (Foucault, 1980).

Michel Foucault wrote little about the environment or the nuanced critical realist conceptions of nature described earlier (Darrier, 1999, pp. 5-6). However, he wrote extensively about the discursive construction of “human nature” and the “human sciences” (e.g., Foucault, 1977, 1978). A growing field of scholars is addressing the environmental gap in Foucauldian thinking by applying his work in these other areas to environmental issues.²⁰ While somewhat limited due to his focus on social processes, incorporating this theoretical approach would be useful for understanding how larger discourses come to shape conceptualization and operationalization of sustainability in an educational setting, for example. A Foucauldian analysis of sustainability education processes and discourses illuminates the dominant trends that shape specific educational practices.

Foucauldian approaches are rather limited within EE research, prompting Jo-Anne Ferreira (2000) to quip that less time should be devoted to merely conceptualizing EE curricula and that researchers should instead “take seriously the *means* by which we come to conduct our lives as this will offer us opportunities for conducting them differently” (p. 34, italics in original). In other words, less important are the particular truths promulgated by any particular program. Instead, the researcher should focus on the actual effects of these various environmental or natural truths on the lived experiences of

²⁰ For example, the dominance of overly-positivist scientific and economic thinking still dominates public policy action around environmental issues (Castree, 2010), and a number of scholars have used a Foucauldian lens to understand how these mentalities are produced and sustained at local and global scales, from the neoliberalization of molecules in scientific research (McAfee, 2003) to the neoliberalization of natural knowledge across states and economies (Birch, Levidow & Papaioannou, 2010; Ferguson & Gupta, 2002) and even within climate governance schemes (Dowling, 2010, Himley, 2008, Oels, 2005).

people and nature.²¹ As an example of this kind of empirical work, Timothy Luke (1995) examined how the Worldwatch Institute framed their institutional work using a discourse of technoscientific control, thereby bringing a managerial capitalist logic to the entire world system in order to govern global natural resources. For Worldwatch, nature (including humans) was situated as an instrumental resource to be brought under global surveillance via a number of scientific technologies (e.g. bio-accounting systems, resource management techniques, pregnancy policies, carbon credit markets). The environmental discourse at play in Worldwatch was globally focused (literally world watching), technoscientific, managerial and capitalist. Such discursive rendering is now referred to as the *neoliberal environmentality* (Fletcher 2010). This discourse then shaped its educational programming and how people within the institution understood and examined environmental dynamics. Worldwatch's truth discourse produced pedagogical effects within the organization, both at the level of the institution and of the individual practitioners. Given this study's focus, this theoretical approach was leveraged to interpret data from Oikos Academy.

²¹ I note here that I perceive a Foucauldian poststructural lens as compatible, although only partially, with a critical realist philosophical stance, and specifically in reference to Carolan's prior conception of the discursive construction of "nature." Despite Foucault's rejection of structural determinism, his relentless focus on power, discipline and the development of selves/subjectivities always occurs in reference to some larger structural force (governments, markets, institutions). Critical realists, especially of the Marxist persuasion, are quick to point out how problematic this is for actually changing these institutions, for "Foucault, with his emphasis on contingency, difference and discontinuity is able to provide a critique of these relations, but cannot develop this in an ontological direction" (Joseph, 2004, p. 164). Nevertheless, a Foucauldian lens is useful for excavating the various sociocultural, political and economic forces at play in the development of discursive environmental subjectivities. It is useful, but ultimately limited, in its theoretical application.

Implications for Study

This research then rests upon a three-legged stool of theory with the ultimate goal of understanding sustainability education at Oikos Academy. Each leg of the stool provides a unique strand of theoretical insight, and together they work to shape the theoretical lens guiding this academic project. Ecological complexity theory allows me to situate the Oikos system within larger systems by articulating the relationships between both individuals and materials at different scalar levels over time. Ecological communication and symbolic practice theories allow me to examine how linguistic and semiotic processes shape sociobiophysical conditions at Oikos Academy. And finally, aspects of cultural and political ecology theories (intersubjectivity and environmentality specifically) necessitate focus on differential cultural and political dynamics at work in socioecological contexts. Using critical realist philosophy, I position each of these strands as advancing the prior. That is, political ecology is rooted in and emerges from communicative practice, which is rooted in and emerges from ecological system dynamics.

This work is potentially transformative, as disciplinary fields are currently in flux as academia attempts to research and understand the complexity involved in sustainability issues (Miller, et al., 2008). Theoretically informed methodologies must attend to the complexity of systems in order to understand how humans, and the ecosystems upon which we rely for existence, organize and persevere in the face of increasing environmental shock (Holling, 2001; Moran, 2011). Such work begins the

development of “an ecological theory that incorporates natural and cultural dimensions within a single, broad paradigmatic framework” (Little, 1999, p. 257). While no single study can tackle the totality of these issues in all of their complexity, I believe that the combination of the aforementioned theories is capable of addressing issues as large as environmental unsustainability and global climate change as they play out in specific contexts. In the next chapter I use this framework in concert with the research question and literature review to guide particular methodological choices in the study of the sustainability education program at Oikos Academy.

Chapter Four: Researching Institutions as Environmental Artifacts

This chapter advances the methodology of this dissertation study. I begin by re-articulating the guiding research question to justify an appropriate research design. After reviewing a critique of popular social science research approaches, I argue that an ethnographic design best aligns with the epistemological and ontological assumptions in this particular study. I then introduce the study context, participants, data collection and analysis methods. Finally, I consider ethical considerations and quality criteria, and conclude by articulating the study's methodological limitations and implications for both my own future research and for the emerging field of sustainability education.

Before delving into this particular study, I first want to address connections between ontology, epistemology, methodology and theory. In the Chapter 3, I established a theoretical framework rooted in critical realist philosophy (Archer & Bhaskar, 1998; Danermark, 2002; Huckle, 2004) to reconcile human sociocultural meaning-making activities (epistemological constructivism) with the existence of material reality (ontological realism). Therefore, the research design advanced in this chapter reflects the assumptions developed in Chapter 3 to maintain consistency throughout the research design (Krathwohl, 1998). Methodological decisions are informed by philosophical and conceptual assumptions, and each methodology in turn warrants specific methods (Bogdan & Biklen, 2007). "Research methods are not merely different ways of achieving the same end. They carry with them different ways of asking questions and often different commitments to educational and social ideologies" (Schulman, 1988, p. 11-12). A critical

realist environmental social science stance necessitates a unique combination of methodologies and methods to develop an explanation of both how the natural world works and how humans interact, via cultural practices, with this world.

Oikos Academy was and is undergoing systemic change in the name of sustainability education. This dissertation research examines the social, political and material implications of these changes over time. In the following sections I advance a methodological framework that attends to ecological dynamics while also examining the social and cultural dimensions working to shape education at Oikos Academy.

Research Questions and Methodology

The study attempted to examine the cultural and material processes of a school in transition as the participants construct and embody sustainability education. Such an endeavor involves understanding how participants construct and operationalize the natural world according to contextualized conceptions, as the appropriation of natural materials occurs within such sociocultural contexts (Dodds, 2008; Moran, 2010). Educational institutions are one context where this occurs (Orr, 2004), and this research attempted to analyze emerging educational possibilities that may work to change the relationship between humans and material nature as it relates to formal schooling.

The following overarching ethnographic research question guided the dissertation study: *What is the nature of the infrastructure supporting sustainability education at this particular school?* Two subordinate questions were also addressed to inform the main question: *1) How does a sustainability education program come into existence?* and *2)*

How do institutional frictions shape the implementation of sustainability education?

While the overarching question addresses the overall nature of sustainability education phenomenon at Oikos Academy, the supporting questions address the processes by which a sustainability education comes into existence and its impact (socially, culturally, materially, ecologically) on the institution itself as it evolves.

Ethnography

A qualitative ethnographic methodology was appropriate given the need to understand how humans were constructing particular notions of sustainability and education in their local contexts. Currently, little is known about how sustainability education is contextualized in educational environments (Holdsworth, Thomas, & Hegarty, 2013; Reid & Scott, 2013; Wals, 2012). The sociocultural and sociomaterial dimension of this process warranted a qualitative methodology (Marshall & Rossman, 2010). An ethnographic methodology (Bogdan & Biklen, 2007; Creswell, 2009; Duranti, 1997) was therefore used to inform data collection methods and analysis in this research design.

Such a methodological approach is predicated upon a symbolic interactionist and interpretivist approach to culture (Blumer, 1969; Geertz, 1973) that focuses on *emic* cultural constructions and interaction within research settings, where “people act, not on the basis of predetermined responses to predefined objects, but rather as interpreters, definers, signalers, and symbol and signal readers” (Bogdan & Biklen, 2006, p. 27). Culture then, is “a set of symbolic and material forms, affected but not determined by

history and structure, actively appropriated or ‘produced’ in groups to bring order and satisfaction to experiences” (Eisenhart, 2001, p. 213). Culture is produced via social action, including communication processes and technologies, hence the continued use of the term “sociocultural” throughout this document.

Ethnography “describe[s] the lives of people other than ourselves, with an accuracy and sensitivity honed by detailed observation and prolonged first-hand experience” (Ingold, 2007, p. 69). Related to the anthropological tradition, ethnographic methodologies and methods aim to describe particular lived cultural and material realities, rather than *all* of “human being and knowing in the one world we all inhabit” (Ingold, 2007, p. 69). Ethnography is concerned not with sweeping generalizations, but instead with the particularity of specific cases (Hammersley, 2006). For the sake of this research design and subsequent claims, Oikos Academy is then an example of an educational institution involved in the process of implementing a sustainability education program. This research reports on an ethnographic approach to understanding SE in this particular situation. There is a dearth of ethnographic work done in environmental education in particular (Kopnina, 2013), and this dissertation attempts to address this gap in the field.

Critical Ethnography in Late Industrialism

The political ecology theoretical lens warrants a critical ethnographic approach, which affords “ask[ing] questions about the historical forces shaping societal patterns as well as the fundamental issues and dilemmas of policy, power, and dominance in

institutions” (Marshall & Rossman, 2010, p. 26). This ethnographic approach is particularly useful for studying power dynamics within groups and institutions (Carspecken, 1996), and is therefore appropriate for examining educational processes at Oikos Academy. Sharpening the purpose of ethnography in relation to the previously aforementioned conditions of environmental pollution and Late Industrialism, Kim Fortun (2001) writes:

Ethnography, like political activism, must aspire to address the ‘whole problem.’ Local realities must be understood within global systems. Interpretations must be situated within political-economic trends. Discourses of law and science must be understood as translatable -- into legal proof or therapeutic programs, into means of distributing equality, or into mechanisms of exclusion. (p. 350)

Such an approach is warranted given the nature of this work, for environmental sustainability issues are ultimately issues of power (Agyeman, 2013; Orr, 1994). A critical ethnographic approach suggests foregrounding such issues in analysis and design.

Institutional Research

Designing research to address ecological complexity involves intentionally researching the dynamic between humans, ecosystems and component pieces, and how culture works to influence these dynamics (Lundholm & Plummer, 2010; Moran, 2010; Ostrom, 2009). In the United States, the National Research Council (Entwisle & Stern, 2005) emphasized the need for research that explores how human institutions affect

resource use.²² This SE research design then involves attempting to understand the complexity of these issues in an educational institution, including how humans socially-construct and physically operationalize particular conceptions of sustainability, with specific ecological implications.

I contend that institutional ethnography is an effective methodology for achieving the level of richness and complexity required for studying SE in this particular case, for it can:

- 1) Produce for people what might be called “maps” of the ruling relations and specifically the institutional complexes in which they participate in whatever fashion...[and]
- 2) Build knowledge and methods of discovering the institutions and, more generally, the ruling relations of contemporary Western society. (Smith, 2005, p. 51)

By focusing ethnographic attention at the level of Oikos Academy as an institution, I was able to develop findings that are both practically useful to the members of the Oikos community and useful for the larger field of environmental and sustainability education research, for such work illuminated the “complexes embedded in the ruling relations that are organized around a distinctive function” (Smith, 2005, p. 225). For the purposes of

²² According to Moran (2010), this research agenda (at least as it applies to dealing with the particular issue of global climate change) involves “documenting the institutions shaping these [climate change] activities from local to global levels, understanding the conditions under which the institutions can effectively advance mitigation and adaptation goals, and improving understanding of the conditions for institutional innovation and change” (p. 146).

this research, that function is the ideation and maintenance of a formal school attempting to construct a sustainability education program.²³

Phronesis and Particularity

Building off some of the limitations of both the social and natural sciences alluded to in Chapter 3, Bent Flyvbjerg (2001) resurrects the oft-forgotten Aristotelian concept of *phronesis* to reorient social science research away from attempts at broad explanatory theory and toward increased contextual utility. He argues that social science research frequently fails because it attempts to make generalizable claims using the same logic of the natural sciences (2001, p. 3). This is problematic because culture is too infused with local complexity and values, and therefore claims of generalizability fail to predict social situations at larger scales of explanation. He recommends refocusing empirical research toward what it does best: concrete, context-dependent research. This research attempts to take this critique of social science research seriously, and a phronetic institutional approach therefore complements the study's ethnography framing and informs subsequent methodological and analytical choices.

Although no translation exists in the English language, *phronesis* roughly translates to “practical wisdom [and] good judgement” (Curren, 2010, p. 544) and is a concept germane to SE research design. Adopting this analytic concept means that rather than attempting to develop a grand unifying theory of SE here, it instead makes more

²³ Note that when I refer to “program,” I mean it as set of related events and activities with a longer-term goal. At Oikos, it is bigger than any one social/curricular event, classroom or person. It refers to the larger whole toward which the institution is heading.

sense to focus on particular cases to uncover the complex relationships that shape these unique contexts. Therefore, an explicit focus on the judgments and decisions by actors within particular SE cases would challenge the otherwise dominant field of educational studies to reconsider the assumptions around what education is and how it should occur, with pragmatic and action-oriented results intentionally produced via the research process (Marshall & Rossman, 2011, p. 267). Further, bringing a social scientific perspective to the otherwise natural science-heavy field of ecology could challenge that field's assumptions to reconsider the sociocultural implications of their research at the lived, practical level. Detailed SE research studies, such as the one presented here, might then represent “black swan” cases capable of challenging the assumptions of dominant paradigms (Flyvbjerg, 2006; Popper, 1959).²⁴

To facilitate such research endeavors, Bent Flyvbjerg recommends that researchers focus on the following questions when thinking about research questions and design: “(1) Where are we going with this specific management problematic? (2) Who gains, and who loses, by which mechanisms of power? (3) Is this development desirable? (4) What, if anything, should we do about it?” (Flyvbjerg, 2013, p. 153). Answering these questions is particularly important in SE research, which attempts to understand material conditions of sustainability and their entanglement with the sociocultural dimension of

²⁴ That is, while most people assume that swans are generally white, some swans are black. Bringing black swan cases into existence works to disrupt the common assumption. Bringing SE research into existence might similarly disrupt commonly-held conceptions of environmental education specifically, and education generally.

human existence and education. Descriptive findings in chapters 5 and 6 of this document reflect this intentional design decision.

Context, Methods and Process

In the above I have described this study's methodology. It is important to differentiate between methodology and methods in research design, with the former existing as the systemic deployment of the latter. My philosophical stance and research questions warrant the aforementioned methodologies, with subsequent methods working as the specific information collection tools. In this section I justify and detail the particular methods that contributed to the study's overall qualitative ethnographic approach at Oikos Academy.

Research Setting

Oikos Academy is a private, K-12 educational institution in the northeastern geographic region of the United States. This site was chosen for two reasons: 1) Oikos is one of a handful of schools in the United States presently implementing a "green" building and sustainability into their operations and, 2) I was personally invited to research this change by members of the community. The study was feasible due to the school's proximity and my relative ease of access into the institutional culture.

Oikos is an elite, self-identified progressive private school that has existed in the Northeastern region of the United States for almost 100 years. Depending on the school year, the school enrolls approximately 525 students in nursery through 12th grade and draws students from most of the surrounding municipalities. Internal school documents

report that about 36% of students receive some form of financial aid to attend, with aid totaling almost two million dollars annually. Oikos also self-reports that their student body is 25% ethnically diverse, that they maintain a 7:1 student to faculty ratio, that 100% of their graduates continue to college and that they offer 17 Advanced Placement courses (School Website, Historical Documents). They are known in the community for their unique educational programming, from a nationally known hospice program to an organic “Micro-farm” that produces a percentage of the school’s food. Additionally, they have received recent local press coverage for the construction of a “green” building and the implementation of the sustainability curriculum that is reported in this dissertation study.

As detailed in Chapter 1, I conducted approximately two years of pilot study research at Oikos Academy under the purview of an IRB-approved study. I focused attention on a planning process as the school prepared to build and occupy a “living” building on their campus. Oikos community members recently occupied their new building during the winter of 2013-2014. The school community continues to meet regarding how to occupy the new building. In this study, I report on how this process evolved and unfolded, both materially and socioculturally, as teachers, students, administrators, and other Oikos community members met to plan the use of the new space. Focusing on this group and their processes has exposed larger institutional frictions and discourses that the broader community is struggling with as they attempt to address the issue of sustainability. Findings articulate the complexity of SE in this unique

context and are used to inform both the Oikos community and the larger field of environmental education.

Negotiating access. As mentioned above and in Chapter 1, I continue to maintain a research relationship and presence at Oikos Academy. This relationship began in January of 2010 and resulted from negotiations between my Warner School mentors, Drs. April Luehmann and David Hursh, who agreed with Oikos' head administrator at the time that such a relationship would be mutually beneficial. Following this initial meeting I began to meet informally with some of the school's faculty and administrators to gain a sense of what was happening at the school. IRB permissions were secured and research began in earnest.

Initially, all of the people I interacted with at the school were either already onboard the institutional transformation committees, or were supporting it from positions of institutional power. Additionally, the head of the school at the time personally asked me to tell the story of the school transformation. I was able to gain access through that gate-keeping mechanism, and this initially afforded me a position of "outsider studying insiders" (Herr & Anderson, 2005, p. 31). I began negotiating access through two teachers who I knew from previous academic work at the University of Rochester. Both teachers were involved to varying degrees with the sustainability initiative at Oikos, and I was able to gain access to other participants via initial meetings with these teachers. Through these contacts I was able to gain an initial sense of what was happening and who the major players were at the school. Over the past three years I have been able to

negotiate access to various formal and ad-hoc planning communities (among other random events) as they have unfolded and evolved at Oikos. As such, I have moved from a position of peripheral participation and closer to an evolving centrality of practice (Busman, 2013; Lave & Wenger, 1991).

Entering Oikos. Early fieldwork involved participating in ongoing Oikos sustainability committee planning meetings. As previously mentioned, I was granted access to such committees first via the Head-of-School and then through key participants in the sustainability education program itself. Access to participants snowballed from there, as early participants recommended others who might be interested in participating in the research.

Early experiences in the field involved field-noting and recording specific meetings about pre-existing and forthcoming sustainability initiatives, although such meetings were often not presented under the purview of sustainability at first. Rather, early meetings focused on specific aspects of the school that members of the Oikos institution were attempting to examine and change. As much of my early time at Oikos was chaotic and unclear until I figured out what was occurring, early attempts at data collection were somewhat unfocused. I attended only the meetings that I had access to at Oikos. Access evolved over time as I began to meet more and more people with different roles in the organization, and I was able to increase access to other Oikos venues and participants over time.

Similarly, early fieldwork involved hewing closely to my IRB-approved semi-structured and phenomenological interview protocols (Appendix A) when interviewing participants about the sustainability initiatives underway at the school. It was only after building relationships with some participants that was I able to venture into more unscripted and ethnographic forms of interviewing. These more-ethnographic interviews typically occurred later in the fieldwork experience and focused on specific topics that arose in earlier forms of data collection and analytic memoing. Additional methods we deployed and are described in greater detail below.

Participants

Initial study participants were purposefully sampled to consist of the members of the planning teams that were meeting to discuss the sustainability implementation plan. I relied on snowball sampling (Biernacki & Waldorf, 1981) to identify other key players that were identified by the planning team members. All participants were advised of informed consent, and if less than eighteen years old, assent, and it remains my responsibility to maintain the privacy and confidentiality of the research participants.²⁵ The ethical aspects of the selection process are explained in further detail later in this chapter, and in the corresponding RSRB documentation. Table 4.1 lists the names of general identity groups at Oikos, with the demographics of each group listed after each heading.

²⁵ Approved RSRB assent and consent forms are attached to this document as appendices C, D and E. Additionally, no participants required the completion of assent forms. While minors were present in some field settings, any information from and about them is absent in this dissertation as per IRB requirements.

Table 4.1
Dissertation Study Participant Demographics

Title	Total #	Total Male/Female	# Non-white	# <18 years old
Administration	8	6 M / 2 F	2	0
Teachers	8	6 M / 2 F	1	0
Students	1	1 M / 0 F	0	0
Facilities/ Support Staff	5	1 M / 4 F	1	0
Other Community Members	6	6 M / 0 F	0	0
TOTAL	28	20 M / 6 F	4	0

While the above details the human participants in the proposed study, I note that non-human entities also participate in shaping Oikos Academy. Methods for accessing these participants are detailed below.

Additionally, it is important to point out that information from only one student is represented in this dissertation study. This reality exists for a few key reasons that illuminate findings in the forthcoming chapters. First, my study design held fieldwork experiences close to the committees planning the sustainability transition. These committees were primarily composed of adults and therefore few students were consistently present across the information corpus. While they are unaccounted for in this document, their presence is noted in the larger information corpus, mainly in the form of jottings, fieldnotes and images. Second, the research design focused on the sociomaterial production of a sustainability education program. Students were relatively absent from much of the ideation process until late in its process. When students are present, they

primarily exist once the ideation has already occurred. The social dynamics of this inclusion/exclusion process are discussed further in Chapter 6.²⁶ Finally, and as I describe in the analysis section below and in Chapter 6, data representing one student was included for case analysis, as their participation in a particular educational event is crucial for understanding larger institutional dynamics.

Data Sources

A qualitative ethnographic methodology involved deploying a number of subsequent research methods to support the design. Semi-structured phenomenological interviews (Rubin & Rubin, 2005; Seidman, 2006) were utilized early in the design to obtain initial individual conceptions of sustainability and education.²⁷ Additionally, these interviews were used to stimulate longer, unstructured ethnographic interviews (Spradley, 1979) to understand how individual actors conceptualize and create meaning in the school. Participant observation (Jorgensen, 1989) and subsequent fieldnotes (Emerson, Fretz & Shaw, 1995; Nespor, 2006) were utilized to capture group dynamics and activities. I also collected historical documents and textual artifacts to examine how participants developed concepts over time (Hodder, 2000). Photographs (Pink, 2001; Rose, 2011) were used to capture physical and semiotic artifacts and events as they occurred. All of these methods were appropriate for capturing information in an

²⁶ In other words, the lack of students present in the information corpus is itself a finding that speaks to the nature of the change process at Oikos. Future research on learning in the sustainability program should focus on the student experience, as they are the key participants. I have made this recommendation to members of the institution and they are aware of this social dynamic as they plan for the future. Nevertheless, the relative absence of students from this dissertation remains a reality that readers should keep in mind as they read and interpret findings.

²⁷ Approved RSRB protocols are attached as appendices A and B.

ethnographic sense and to provide a measure of data triangulation that improves the credibility of reported findings.

Data Management Strategy

Field jottings were gathered in a set of coordinated composition-style notebooks. Interviews and planning meetings were recorded with a digital audio recorder. Selected files were transcribed by both myself and the Warner School's transcriptionist, Shirley Graham, when possible. I performed a final review and edit of all transcripts to ensure fidelity to the original recordings. Photographs were taken with the digital camera on my iPhone.

Fieldnotes from participant observation were stored on a computer drive, along with interview recordings, transcripts, images, and digital versions of documents, each in their own folders and sorted by file date. I implemented the following file naming structure to establish a data audit trail: *20130226 - JH Interview*. The date of the file is marked by year and date, along with the relevant participant identifiers and descriptive information. A digital manifest of all data sources was kept in a locked metal file, along with all hard copies of data to maintain confidentiality. All digital data was securely held on a digital drive in a locked location. A complete list of all collected information is listed in Table 4.2.

Table 4.2
Total Information Sources Collected

Information Source	Number	Brief Description
Jottings & Field Notes	59	Of various events, from interviews and meetings, spanning more “formal” data collection events to more informal school interactions.
Participant Interviews (Phenomenological)	14	Semi-structured interviews.
Participant Interviews (Ethnographic)	10	Second-round, more open-ended interviews with particular members of Oikos whose interactions seemed more central to the SE transition.
Focus Group	1	A preliminary focus group with cafeteria staff.
Recorded Meetings	30	Meetings of various school planning committees.
Historical Documents & Textual Artifacts	37	School newsletters, planning documents, building maps.
Photographs	285	Photographs of building materials, institutional spaces, semiotic artifacts, signs, symbols, etc.
Analytic Memos	10	Researcher produced at various stages of analysis.
Miscellaneous Artifacts	58	Digitized copies and images of the school’s public website; copies of public press releases and newspaper articles about the school

The Study’s Analytic Process

As I advanced earlier, the connection between nature and culture cannot be disentangled within SE research and therefore must be analyzed with the complexity of this relationship in mind (Moran, 2010). For this reason, it was appropriate to select an analytic lens that facilitates such synthesis. The data analysis presented in this section is therefore theoretically informed and aligns with the framework articulated in Chapter 3.

To review, ecological complexity theory allowed me to situate Oikos Academy within larger system dynamics by articulating the relationships between both individuals and materials at different levels over time. Ecological communication theories allowed me to examine how linguistic and semiotic processes shaped conditions at Oikos and vice versa. Finally, concepts from cultural and political ecology demanded focusing on the differential power dynamics at work in Oikos as a socioecological context. Each of these theoretical strands then wove together to inform the analytic approach.

Nexus Pilot Analysis

The pilot phase of this research study utilized a nexus analytic framework (Scollon & Scollon, 2003, 2004) to facilitate analysis at the intersection of historical practices, discourses, and objects in the Oikos context. A nexus lens enabled me to “discover the social actions and social actors which are crucial in the production of a social issue and bringing about social change” (Scollon & Scollon, 2004, p. 153). The “nexus of practice” was defined as “the point at which historical trajectories of people, places, discourses, ideas, and objects come together to enable some action” (Scollon & Scollon, 2004, p. 159). While this was helpful in the initial analysis (Henderson, 2012a, 2012b, 2013a, 2013b), it was no longer useful for the purposes of this dissertation research. This is primarily due to the difficult temporal demands placed upon the researcher by the nexus analytic requirements. Specifically, the tracing of discourses over time proved to be too difficult to manage due to the nature of access to the planning

events at Oikos. That is, the inconsistent timing of the meeting processes made it difficult to maintain enough data consistency over time to complete a thorough nexus analysis.

While nexus analysis was somewhat useful in the initial stages of analysis, I rejected the lens for this dissertation due to feasibility reasons. Nevertheless, I am compelled to mention this lens here because it shaped early analytic memos and findings, and as an early stage of pilot analysis invariably influenced the findings in this dissertation, including the emergence of the lens deployed in this particular analysis.

Unit of Analysis

The research question and theoretical frameworks guiding this study focused analytic attention at the institutional level. *Institutional discourse and practice* was then the unit of analysis for developing claims for this particular dissertation. I rely upon Michel Foucault's (1972) use of discourse, and Dorothy Smith's (2005) appropriation of his work for institutional ethnography to define the unit of analysis as "the translocal actions coordinating the practices of definite individuals talking, writing, reading, watching, and so forth, in particular places at particular times. People *participate* in discourse, and their participation reproduces it" (p. 224, italics in original). Such discursive participation occurs within institutional contexts and results in institutional practices that are "integral to the production of the institution" (Smith, 2005, p. 225). The unit of analysis was also warranted by the explicit aforementioned focus on phronetic and institutional ethnography to "explore the social relations organizing institutions as people participate in them and from their perspective" (Smith, 2005, p. 225). Given the

sociobiophysical nature of the examination at hand, I extended Smith's institutional ethnography to include the material dimension as well, as it constructs institutions too.

As an institution, Oikos Academy contains particular material and social relationships in flux over time. Abiotic components, unlike human participants, lack the ability to communicate within these settings in ways that are intelligible for explicitly text-based qualitative analysis (Thrift, 2007). According to critical realist philosophy, this does not mean that they do not exist (Maxwell, 2012). As I detailed in the aforementioned methods section, a number of biophysical materials (food, energy, water, waste) flow through and also construct Oikos Academy. I attend to these materials in the analysis by focusing on how human beings appropriate, interact, construct and represent them via institutional processes.²⁸

Abductive Reasoning and the Emergent Analytic Process

This dissertation study produced analytic claims via abductive reasoning, as opposed to the more common inductive or deductive approaches in the social and natural sciences (Bajc, 2012; Thomas, 2010). Such an approach relies on the philosophical work of Charles Saunders Peirce who argued that abduction produces more innovative claims about the nature of reality than inductive or deductive approaches to reasoning (1878/1992). The abductive approach is preferable because it more accurately accounts for the creation of knowledge about, and of, the world:

²⁸ Ethnology and Anthropology are currently experiencing an “ontological turn” in an attempt to account for material reality, among other reasons (AAA, 2013; Latour, 2013; Descola, 2013, Paleček & Risjord, 2013). This is fertile ground for future scholarship and this dissertation attempts to advance such work via its modes of inquiry. It should be read as *an* attempt that is by no means complete, as this intellectual project is much larger than the single dissertation study presented here.

Deductive inference is judged on the basis of its own premises; inductive inference yields ever more general statements. In fact, Peirce realized that we do not think much about the world we experience along either of these lines of reasoning because much of our knowing is based on emotion, on being sensitive to, rather than analytical about, the world around us. (Bajc, 2013, p. 81)

In other words, abductive reasoning does not result or partake in grand social theorizing, and instead produces a particular lived account of reality rooted in both the standpoint of the researcher and the research participants themselves, as it is in this etic/emic negotiation that reality emerges into new forms as research findings.

This study's abductive data analysis process then began by "observ[ing] something surprising about a social activity or phenomenon that attracts our attention" (Bajc, 2012, p. 82). Such a gestalt begins a process of intuitive discovery in the ethnographic information corpus. Rather than coding every available bit of information into "data" and allowing findings to emerge in this grounded fashion, the developing gestalt instead informs analysis as the researcher moves back and forth between the etic and emic dimensions. That is, research findings do not somehow emerge from the "grounded" information, nor do they emerge from the researcher's "God-eye view." Rather, findings are a conversation between the researcher and the gathered information, which only becomes data once particular questions are asked of them. This research therefore took an abductive gestalt approach to ethnographic data analysis and theoretical interpretation, the specifics of which are discussed in further detail below.

Gestalt analysis is then not interested in “isolating pieces of data and coding them into quantifiable instances” (Adler & Adler, 2009, p. 228). Instead, and against a more common grounded theory approach to research design and data analysis, an abductive approach attends to researcher intuition interacting with ethnographic data and the accounts of participants in the field. The findings presented in the following chapters represent the result of such an approach to data analysis.

Abductive Gestalts and Data Analysis

In their work on ethnographic abductive gestalt analysis, Adler and Adler (2009) described the analytic process as “mov[ing] back and forth between our observations, interactions, and thoughts about the empirical world and the concepts we were developing... This process of creative foment between the empirical world and conceptualization is called abduction.” (p. 228). Findings then represent the placed, subjective and participant ethnographer as the primary research tool engaged in an ontological investigation of a field of study (i.e., me, studying sustainability education at Oikos Academy). Such an ethnographic experience is not exchangeable to more discrete units; rather, it represents, in this case, one researcher’s attempt to discern a larger whole. This is both a limit and strength in the analytic method because it acknowledges the inevitable partiality of any research endeavor and the fact that the lived reality of ethnography is never complete, including any findings that result from such a pursuit.

As I have already mentioned, data analysis emerged over the three years that this ethnographic research unfolded. It materialized in the numerous analytic memos written

at random points away from the field. More systematic forms of analysis occurred prior to early research presentation for various academic conferences, such as prior iterations of initial findings that leveraged nexus analysis. Often, a more mundane level of analysis happened as I sat in my car in the Oikos parking lot trying to “make sense” after a participant observation event or an interview session. These musings were recorded in the form of fieldnotes, later expanded into memos, that attempted both the description of events at times and sometimes climbed to higher levels of theoretical and analytic abstraction. Other times they involved me attempting to muse about something that stuck during my time in the field. A number of these examples are articulated in the following findings chapters.

As ethnography attempts to understand a sense of a larger ontological whole, what seemed like quick glimmers of knowledge came to develop into glaring gestalts in the data over time:

By noticing such surprising things, we derive strong intimations about reality without being fully conscious of it. These intimations, however, are not simply pure guessing: they are based on tacit knowledge, clues, or strong intuition about what the data are communicating. (Bajc, 2012, p. 82)

For me, in this dissertation study, the primary intimation that emerged via ethnographic participation over time was around a concept that I refer to as *institutional friction*. Over time this concept broke apart into four distinct planes of analysis that I used to engage the information corpus. The axes of institutional friction are developed in Chapter 6.

Finally, it is important to note that data analysis and its presentation is rooted in Aristotelian phronesis. Analysis is therefore not primarily theoretically driven in this dissertation. Instead, and especially in my intimation and description of the institutional frictions, analysis unfolds via detailed accounting of the practices of both myself and the participants at Oikos Academy as they bring sustainability education forth into the world. Such an approach to data analysis relies upon “judgment[s] made on the basis of experience and without recourse to the external guide that theory putatively provides. It is in practice that phronesis is developed and in practice that it comes into play” (Thomas, 2010, p. 4). Given the emergent status of sustainability education research, it is my assessment that such an approach is warranted and enough given this study’s more-descriptive research questions. Future work in SE could involve more abstract theorizing via inductive or deductive approaches as the field evolves, but that is not the project at hand here.

Mapping Axes of Institutional Friction

Initial fieldwork experiences at Oikos consisted of first attempting to map the basic who, what, where, and when details of the context with the phronetic lens in mind. As this process unfolded, early analytic memos detailed particular events that highlighted the institutional friction mentioned earlier, although this was not a concept that I had developed at the time. Over time and after specific events (detailed in findings Chapters 5 and 6) it became obvious that particular institutional frictions existed at Oikos and these could be delineated along particular conceptual planes for analysis: 1) interpersonal and

managerial, 2) curricular and pedagogical, 3) space and time, and finally, 4) political and economic friction. By identifying (literally marking on paper transcripts, images and artifacts) and then navigating these axes of friction by holding close to the data, I was able to ask particular questions of the larger corpus of information, thereby turning some of it into formal data for this study and its findings.²⁹ Of the data used in this analysis, some sources were deemed primary and others secondary for the production of findings.

Primary and Secondary Data Sources

Fieldnotes, images and officially produced Oikos documents and artifacts constituted primary information sources. I chose these as primary sources because I was interested in institutional discourses and practices produced at the institutional level. While individual study participants were certainly important, their interpretations and perceptions were secondary to the institutional discourse and practice given this study's unit of analysis. Accordingly, individual and group interviews and meetings supplemented the analysis as secondary information sources (Table 4.3).

²⁹ Via etic conversations with the emic data, these are the four planes upon which descriptive analysis occurred for this particular dissertation study. Different analyses at another time and under different conditions would produce different forms of analysis, and that may occur in future work on this ethnographic information corpus. This dissertation represents an artifact of a much larger project.

Table 4.3
*Primary and Secondary Data Sources*³⁰

Primary Data Source	Total Analyzed	Secondary Data Source	Total Analyzed
Jottings & Field Notes	59 & 19	Participant Interviews (Phenomenological)	8
Analytic Memos	10	Participant Interviews (Ethnographic)	10
Historical Documents & Artifacts	27	Recorded Meetings	6
Photographs	285		

Particular pieces of information and artifacts became data once I engaged them with the axes of friction above, and other pieces of information feel away as irrelevant for this particular analysis. Continuing this inclusion/exclusion process over the years helped me isolate pertinent data sources for further analysis, for “It is important to spend the best analytic time on the best data. Full coverage is impossible, equal attention to all data is not a civil right” (Stake, 1995, p. 84). I mention this only because there are parts of the information corpus that remain unanalyzed outside of this particular analysis.

The description and interpretation in following chapters then represents an intuitive abductive analysis at this particular temporal moment. And, in the tradition of

³⁰ Note that all collected photographs were analyzed. This decision was made given the material dimensions of the research. Sarah Pink (2001, 2004) argues that ethnographers should treat visual representations as both the material culture and practice *of* social scientists as well as a practice and material culture that is researched *by* social scientists. Therefore, and as the following findings chapters evidence, visual representations of Oikos Academy emerged as a major source of data in this study.

realist qualitative research, it should be read as an exercise in connecting seemingly disparate pieces of data together into a narrative structure, both in terms of analysis and then in subsequent presentation too (Maxwell, 2012). Different analyses of the same data set at a later time would produce different analytic connections because the primary ethnographic research instrument, me, would be a different future person who would intuit the world differently given new life experiences.

Case Analysis

The emerging field of SE is also ripe for case-study approaches (Corcoran, Walker & Wals, 2004; Dillon & Reid, 2004; Stevenson, 2004). However, the field is also riddled with low-quality research that lacks sufficient rigor that can border on “weak, superficial inquiry” (Kyburz-Graber, 2004, p. 63). A particular focus on *instrumental case study* (Stake, 1995) addresses some of these issues by methodically examining how larger discourses and practices come of shape a particular embodiment of environmental sustainability in a unique educational experience. In this dissertation I focus attention on one unique case of sustainability education to illuminate the frictions present in the change process at Oikos Academy.

Binding the case. Robert Stake’s *instrumental case study* (1995) approach supplements the methodology for this research project, as the change happening at Oikos Academy represents a contextualized understanding of a larger concept that I want to know in depth: sustainability education at Oikos Academy. As much is presently unknown about sustainability education, Stake's advice on this type of case study design

is prescient: “The real business of case study is particularization, not generalization. We take a particular case and come to know it well, not primarily as to how it is different from others but what it is, what it does” (1995, p. 8). For the purposes of the dissertation study the case, Θ , is defined as an instance of sustainability education pedagogy and is bounded within the institutional discourse and material practices of Oikos Academy. The penultimate section of chapter 6 reports on a case of animal slaughter as an educational experience at Oikos and its implications for larger institutional discourses and practices in sustainability education.

Ethical Considerations

Researcher Role

As previously articulated, my role at Oikos changed as I moved from peripheral participation and toward increasing centrality in the community of practice. While I participated in diverse ways, I continued to maintain the identity label of “researcher” in this space. This was purposeful, as I wanted to delineate my responsibilities somewhat to the research participants. The navigation of my role and identity within the Oikos culture will be explored in greater detail in the following descriptive findings chapter to ensure the trustworthiness of the dissertation findings.

Reciprocity

Catherine Marshall and Gretchen Rossman (2010) remind us that our participants are taking time from their busy day to spend with us, and that gift should not be under-appreciated. As the research process unfolded, I evolved to roughly position myself in the

stance of reciprocal collaboration (Herr & Anderson, 2005, p. 31). This positioning facilitated collective action between researcher and participants. When asked to provide a service within an activity or with participants toward some end, I volunteered my expertise if I felt that such advice would be useful or appreciated. This included offering to help participants with occasional personal research endeavors, assisting some teachers with lesson plan ideas, and speaking to school community members about how their SE program might relate to larger educational discourses and practices, for example. Each of these actions was carefully negotiated and reasons for each will be articulated in greater detail in the findings chapters to illuminate my own reflexivity.

Handling Sensitive Topics

Issues of class privilege emerged in this study, as this was a private school. I navigated this terrain and was sensitive to these issues while still being faithful to the investigation. As I recalled in the reflexivity section of the introduction of this document, my own history of navigating class and educational institutions is complicated. While my own experience with class dynamics at Colgate University was educative in its own way, I again had to navigate this terrain again as a researcher at an elite, private school. As this was a context that I would not have had access to as a child, such research then involved “studying up” to examine power and privilege among those who benefit from inequality in society (Anderson-Levy, 2010; Nader, 1972; Priyadharshini, 2003).

Member-checking and reflexivity have helped me navigate these issues, as did maintaining confidentiality and privacy in performing and reporting research in this

process. I suspect that I will continue to navigate this terrain as I disseminate findings over the coming years. While my allegiance is ultimately to the truth, I also owe it to my research participants to present their story in all of its complexity. This is an ethical imperative, and one that I take very seriously.

Finally, some sensitive topics arose during interviews and I have done my best over the course of this document to represent them in general terms where appropriate. Other stories remain untold, and will probably forever remain that way.

Maintenance of Self

I participated in various ways at Oikos Academy over the past three years. Over this time, I learned that I needed to set limits to my capabilities as a human being. It is not physically possible to be in multiple places at the same time, and I learned to select those research opportunities and events that I thought might prove most useful and productive for data collection. This was a constant negotiation that occurred in conversation with other priorities in my life, such as other academic work, maintaining my marriage, family and community responsibilities, and personal exercise. While I love the research endeavor, I also love a holistic, balanced, mindful existence. And I also love sleep, which makes everything else function and is itself productive research work.

Exit Strategy

The data collection dimension of this research study draws to a close with the publication of this dissertation artifact. However, I anticipate that additional studies will emerge given different types of analysis in the future. Like the findings presented here, I

do not intend to keep this produced knowledge from the Oikos study participants and I hope to continue to include interested participants in sharing their experiences with larger audiences. As this topic is new and relevant given the nature of the change needed to address the aforementioned social and ecological problems, I expect such dissemination opportunities to continue to present themselves (and they already have). One of my responsibilities is to continue to facilitate this process as I balance my own research interests with those of the study participants.

Quality Criteria

As this is a qualitative ethnographic research design, certain criteria are necessary to ensure quality and trustworthiness in the research findings: credibility, transferability, dependability and confirmability (Anfara, Brown, & Mangione, 2002). Each of these ideas are detailed as they apply to this particular study.

Credibility

This study's credibility depends on the quality of data, subsequent analysis and whether or not the findings are sufficiently warranted in the dissertation report (Anfara, Brown, & Mangione, 2002). A number of design considerations fulfill this requirement. First, an abductive analytic approach stays close to the data corpus itself, which in turn informs findings. Data sources that involve diverse participants and contexts within the Oikos case were triangulated via multiple methods of information collection. Rather than relying on a single data source, I include two types of interviews and participant observation among other, more document- and photography-based information sources.

Finally, I have member-checked emergent findings with participants at various times - including both during and after the production of this document - to lend credibility both to the findings themselves, but also to the participants at Oikos Academy. In an action oriented research stance, the findings can be used to inform participant practice. Member-checking during the research process produced conversation, and additional data, about the credibility of the research findings themselves. Finally, the dissertation committee itself is comprised of experts from diverse fields of both educational and environmental research. Their guidance adds a level of rigor to the design and findings.

Transferability

Ethnographic design does not aim to produce generalizable research results (Stake, 1995). Rather, by coming to understand a particular context and research approach at a high level of detail via thick description (Geertz, 1973) and analysis, other researchers and practitioners may come to understand their own practice, thereby causing ruptures in what is known and possible (Fortun, 2012). Additionally, sociobiophysical SE research remains a novel and emergent field. The theoretical and methodological choices articulated here may prove transferable to other cases of study, with the eventual building of SE theories and research approaches accordingly as the field evolves and matures.

Dependability and Confirmability

Dependability and confirmability depend on the amount of transparency in the research process and analysis. These qualities were accomplished in three distinct ways. First, all methodological protocols and analytic processes are described or attached as

appendices to this final dissertation report. Additionally, a thorough audit trail was established by describing all study participants, the Oikos context and subsequent information sources that inform the analysis and findings. Finally, I situate myself in the research process to illuminate the reflexive dimension. Some of these considerations are already present in this design and report. They are expanded in findings chapters.

Methodological Limitations

Perhaps the biggest limitation to this study is that I am a singular and fallible human being. I write this not to be flippant, but instead to point out that many of the decisions that I have made regarding this research study reflect my own limited perspective into a narrow dimension of a large, complex and changing world. Of course the research findings represent more than just my own solo pursuit of understanding, as they also represent the stances of the research participants, as well as the institutional identity of a particular school and the norms of a larger society. Nevertheless, our views are inherently partial, and it is only by engaging with the “mess” of research that we may come to produce a particular understanding of reality at Oikos (Law, 2004). I acknowledge that concepts like “sustainability,” “nature” and “education” and the like are irreducibly complex, and I remain humbled in my ability to speak to such grand ideas.

At a more practical level, one limitation in this particular study is that my time at Oikos was necessarily constrained. While I certainly spent considerable amounts of time *in situ*, I cannot physically occupy all of the spaces and places where their SE change occurred. My research is also but one among many competing interests in my life, and it

is therefore limited. I combated some of this through the aforementioned quality criteria, but it nevertheless increases the partiality of the research findings. Again, this is a humbling experience, and one that I continue to take seriously, especially when it comes to sharing findings with both the members of Oikos Academy and wider audiences.

Methodological Implications

This dissertation contains a number of implications at various levels of significance. First and honestly, it advances my career as an academic. According to the norms of academic practice, completing and then defending this dissertation signifies a certain level of academic standing and social distinction (Bourdieu, 1984). Similarly, this research study will inform future academic work. I am fundamentally interested in how human sociocultural practices interact with natural, material dynamics. This dissertation study represents one example of this longer-term endeavor. I suspect that performing this academic practice will help me understand other aspects of the world that will carry into future academic practice.

The research reported here also contains implications and significance for the members of Oikos Academy. As the field of sustainability education is currently growing, this research might inform others attempting to undertake similar projects. School leaders might be interested in how other schools are designing and implementing novel buildings and learning spaces. Curriculum specialists and school designers might be interested to read about what a potential sustainability curriculum looks like, in both imagination and implementation. The school itself is already active in community outreach and this

project has the potential to increase this capacity through their sustainability education initiative and additional social attention to their institution. Also, the members of Oikos just seem genuinely interested in understanding what is going on at their school, and the member-checking of findings continues to bear this out. Hopefully my research can articulate this story for them in a thorough and thoughtful way so they can inform their future practice.

The research presented here also contains implications and significance to the field of environmental education and the nascent field of sustainability education. I believe that this study will help inform the development of a more complex understanding of sustainability and its relationship to educational practice. As I mentioned in Chapter 2, the lack of SE research currently presents a lacuna in the field. This study attempts to address this gap.

Finally, and perhaps most idealistically, I hope that this research advances an understanding of the role of institutional education relative to the larger concept of sustainability. By studying education at the cultural intersection of sociopolitical and ecological issues, I aim to challenge educational thought to begin addressing issues of unjust resource use and environmental unsustainability, as “a truly sustainable society is one where wider questions of social needs and welfare, and economic opportunity, are integrally connected to environmental concerns” (Agyeman, Bullard, & Evans, 2003, p. 2). Engaging in this work might then allow my research to speak to larger social and

ecological injustices in the world, thereby changing what Marcia McKenzie (2009) referred to as the “research imagination.”

While it is important to undertake research endeavors for intrinsic academic reasons, it is also important to engage in tangible action in the world. This is especially true given the reality of the challenges that humans now face on an increasingly stressed planet. The academic project described in this dissertation is a deliberate attempt to align my research with *Pasteur’s quadrant*, where the best research blends use-value with advancing human understanding of the world toward practical action:

Research is inspired by:

		Considerations of use?	
		No	Yes
Quest for fundamental understanding?	Yes	Pure basic research (Bohr)	Use-inspired basic research (Pasteur)
	No		Pure applied research (Edison)

Figure 4.1. Research quadrants (in Stokes, 1997, p. 73).

I believe that an attempt must be made in SE research to balance use-value with pure academic inquiry, with methodologies capable of achieving both. The dissertation project described then examined how humans and the biophysical world work together in a educational context to construct and operationalize an sustainability education program toward this end.

Chapter Five: Fertile Ground, Roots and the Emergence of Form

In this chapter I begin by describing some general characteristics of Oikos Academy in order to give the reader a broad sense of the institution. I then pivot to examine the rootedness and emergence of Oikos Academy's new building, first called "The Barn" and later changed to "The Commons," as it materially and symbolically represents the apex of institutional transition toward particular conceptions of sustainability and education. Highlighting the emergence of this building illuminates some of the key people, discourses, practices and processes that shaped the evolution of Oikos Academy as an elite private education institution and therefore answers one of this study's secondary research questions: *How does a sustainability education program come into existence?* The goal of this chapter is to produce a description of the emergence of a particular institution form, represented by the physical manifestation of a new building on the Oikos campus dedicated to the explicit goal of sustainability education.

Analysis and interpretation then unfolds along three chapters overall, beginning here. In this chapter I detail, via phronesis, thick description and through the presentation of data, a particular institutional dynamic and its evolution. The chapter concludes with theoretical interpretation via the framework articulated in Chapter 3, with theoretical analysis using complexity concepts, socioecological communicative practices and intersubjectivity to explain how an SE program emerges into the world in the sociobiophysical sense. Where this chapter presents the basic "who" and "what" of SE at Oikos, the following chapter, Chapter 6, digs deeper into the political dimension of

phronesis and abductive analysis via the aforementioned axes of institutional friction to answer the other secondary research question: *How do institutional frictions shape the implementation of sustainability education?* A case study follows the explication of institutional frictions to examine sustainability pedagogy and institutional churn at Oikos. That chapter concludes with theoretical interpretation as well, as I use the symbolic/material practice and environmentality lenses to examine the discursive institutional nature of sustainability education at Oikos Academy.

Finally, in Chapter 7, I use institutional change and systems concepts from political ecology to answer the guiding research question: *What is the nature of the infrastructure supporting sustainability education at this particular school?* Presenting findings in this fashion is an intentional narrative choice on my part, as I want to first explain via the presentation of data what *is* at Oikos before moving into what it theoretically *means*. Chapters 5 and 6 move from description and analysis to interpretation both within and across the chapters. That is, Chapter 6 builds findings upon Chapter 5's foundation, and final claims made in Chapter 7 are warranted by work done in the previous two chapters. Chapter 7 concludes the dissertation by explaining what these research findings mean for various audiences.

About Oikos Academy

Oikos is a self-identified progressive private school that has existed in the Northeastern geographic region of the United States for almost 100 years (Historical Documents, Press Release 10/19/2012). Depending on the school year (which follows

common temporal practice in the United States and runs from late summer to early summer the following calendar year), the school enrolls approximately 525 students in nursery through 12th grades across three internal school units (Lower, Middle and Upper schools). Oikos draws students from most of the nearby communities, and they offer a day program (rather than a residential, overnight boarding model that is also common in United States private schooling).

Recent (2013) school documents report that about one third of students receive some form of financial aid to attend, with aid totaling almost two million dollars annually (Figure 5.1, Annual Financial Report, School Website³¹). Financial assistance is provided to families based on private donations and by administrative committee decisions (Board Member Interview, 6/6/2012; Financial Administrator Interview, 6/5/2013). Oikos also self-reports that their student body self-identifies as 30% ethnically diverse, that they maintain a 7:1 student to faculty ratio, that 100% of their graduates continue to higher education of some type, and that they offer 17 Advanced Placement courses (Figure 5.1, School Website).

³¹ School website address omitted to maintain anonymity.

School and Community
is a college preparatory, independent day school committed to academic excellence. is coeducational and nonsectarian. We strive to foster a desire for intellectual achievement, a creative imagination, and a sense of the intrinsic excitement of learning. We place a high value on class discussion, collaborative learning, and community service. offers a balanced course of study that emphasizes independence of thought, critical examination of issues, careful formulation of opinions, and effective communication.

Campus and Setting
25 acres, suburban, near

School Population
537 students in Nursery – Grade 12
33% hold financial scholarships; 30% identify themselves as racially or ethnically diverse.

Upper School
186 students; average section size is 12 students

Faculty
The 35 full- and part-time Upper School teachers average more than 12 years teaching experience; 10 hold Ph.D.s

Faculty/Student Ratio
7:1

Schedule
12-week trimesters

Memberships & Associations
National Association of Independent Schools

Graduation Requirements
Students are required to take at least six classes each trimester in Upper School. Many of our students begin taking high school level courses in Grade 8. Minimum requirements include:

4 years of English	4 years of physical education
3 1/3 years of history	including one team sport each year in Grades 9 and 10
3 years of laboratory sciences	Summer reading
3 years of French, Spanish or Latin	Community service
3 years of mathematics	20 hour guideline each year
7 trimesters of the arts	Senior Internship: 60 hours

Performance of Class
We do not rank students. We do provide a comparison of a student's grade distribution and G.P.A. with that of the class as a whole. This comparison appears on each student's transcript. These figures are cumulative, not weighted, and include all high school credits earned

Class of 2014	Class of 2014
Grade Distribution	SAT Scores (mean)
A 21.39%	CR 628
A- 12.97	M 621
B+ 8.60	WR 619
B 8.24	
B- 6.08	
C+ 3.50	
C 3.44	
C- 1.35	
D+ 0.55	
D 0.43	
D- 0.18	
F 0.12	
* Other 33.15	

Cum. GPA 3.30
* Other grades include: HP, P, WP, WF, I, MED

Advanced Placement Results
In May 2013, 69 students took 134 Advanced Placement examinations. We encourage all of our students to take challenging course loads, which usually include appropriate AP courses.

Subject	# Tested	% 3 or better
Biology	7	86
Calculus AB	9	100
Calculus BC	5	100
Chemistry	15	100
Chinese Language and Culture	1	100
English Literature and Composition	13	100
European History	17	94
Physics B	13	100
Physics C	4	100
Spanish	2	100
Statistics	12	100
Studio Art: 2D Design Portfolio	7	100
Studio Art: Drawing Portfolio	7	100
U.S. Government and Politics	15	67
U.S. History	7	71

Figure 5.1. Oikos Academy institutional description. Excerpted from 2013/2014 school profile letter to colleges and universities admissions offices.³² (11/15/2013)

Oikos is known in the local community for offering unique educational programs, from a well known hospice program to an organic “micro-farm” that produces a small percentage of the school’s food (Local Newspaper Articles, 11/26/2012, 10/23/2013).

Additionally, they have received local press coverage for the construction of their new,

³² Redacted to maintain anonymity.

“green” building and the implementation of the sustainability curriculum examined in this dissertation study (Local Business Journal Articles, 10/23/2013, 11/15/2013, 1/7/2014). These novel programs exist in addition to a more-traditional and disciplinary-focused, college-preparatory liberal arts curriculum (Figure 5.2).

ENGLISH Grade 9 Intro to Literary Genres Grade 10 World Literature Grade 11 American Literature Grade 12 Special Topics in Literature ENGLISH ELECTIVES: AP English Literature/Comp; Writing Fiction; Writing Poetry; Writing Plays; Writing Workshop; International English FOREIGN LANGUAGE French I, II, III, IV, V, AP French Language Spanish I, II, III, IV, V, AP Spanish Language Latin I, II, III, IV, AP Latin LANGUAGE ELECTIVE: Intro. to Classical Greek HISTORY & SOCIAL SCIENCES Grade 9 A Focus on World Systems Grade 10 The Advent of the Modern World Grade 11 Modern History / AP U.S. History Grade 12 Elective(s) HISTORY & SOCIAL SCIENCES ELECTIVES: AP European History; AP U.S. History; AP U.S. Government & Politics; American Popular Culture; United States Political Process; Philosophy & Ethics; Food and Society; Cold War to Terrorism; The Middle East; Dissent in U.S. History; Gender Studies; Think, Design, Build; Farm & Community; Psychology; AP Microeconomics	HOSPICE A Journey with the Dying MATHEMATICS Grade 9 Algebra 1 / Geometry / Algebra 2 Grade 10 Algebra 2 / Functions, Statistics and Trigonometry Grade 11 Functions, Statistics and Trigonometry / Precalculus Grade 12 Precalculus / AP Calculus MATH ELECTIVES: Precalculus; AP Calculus AB; AP Calculus BC; Introduction to Computer Science; AP Computer Science A; AP Statistics (alternate years) SCIENCE Grade 9 Biology / Biology Honors Grade 10 Chemistry / AP Chemistry / Chemistry Honors Grade 11 Physics / AP Physics Grade 12 AP Physics; AP Biology; AP Chemistry; Environmental Science; AP Physics C – Mechanics	ART / MUSIC / DRAMA Art 9; Music Ensemble 9 ART ELECTIVES: Drawing; Ceramic Sculpture; Ceramic Wheel-working; Painting; Jewelry/Metals; Glass; Computer Graphics; Digital Photography; Yearbook; Portfolio Preparation; AP Studio Art (Drawing and Photography); AP Art History; Film Making MUSIC ELECTIVES: Choir; Jazz Band; Beginning Guitar; Strings Ensemble; Introduction to Opera; Theremin; Jazz History; Music Theory; Lessons; Women's Choir DRAMA ELECTIVES: Improvisation; Acting; Directing; Shakespeare; Fall Production; Spring Musical NON-DEPARTMENTAL REQUIREMENTS Community Service Health 10 Physical Education Rights & Responsibilities (9) Senior Internship Summer Reading Team Sport in Grades 9 and 10
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Figure 5.2. Oikos Academy course listing. Excerpted from 2013/2014 school profile letter to colleges and universities admissions office. Note the unique nature of some of their elective courses, especially: Food & Society; Think, Design, Build; Farm & Community; A Journey with the Dying, Rights & Responsibilities. These courses will become important in explaining the sustainability curriculum both in this chapter and in Chapter 6. (11/15/2013)

Multiple sources report that 100% of Oikos graduates attend post-secondary educational institutions, from local two-year state-run public community colleges to elite, private Ivy League institutions (Figure 5.3, School Website).

COLLEGE MATRICULATION 2009-13			
Over the last 5 years 100% of our graduates have gone on to college.			
TWO OR MORE GRADUATES	University of Pittsburgh	Eastman School of Music of the	Sarah Lawrence College
Alfred University	University of Richmond	University of Rochester	St. Olaf College
Allegheny College	University of Rochester	Eugene Lang College The New School	The George Washington University
Barnard College	University of Vermont	for Liberal Arts	Trinity College Dublin
Buffalo, University of	Vassar College	Franklin and Marshall College	Tufts University
Bucknell University	Yale University	Genesee Community College	University of British Columbia
Case Western Reserve University		George Brown College	University of California at
Columbia College	ONE GRADUATE	Georgetown University	Los Angeles
Connecticut College	American University	Guilford College	University of California at
Cornell University	Arizona Culinary Institute	Hampshire College	Santa Barbara
Drew University	Bard College	Houghton College	University of California Berkeley
Fordham University	Bennington College	Hunter College of the CUNY	University of Cincinnati
Gettysburg College	Bentley University	Juniata College	University of Colorado at
Hobart and William Smith Colleges	Binghamton University	Kent State University	Colorado Springs
Ithaca College	Boston Conservatory	Loyola University Maryland	University of Dayton
Marist College	Boston University	Lycorning College	University of Delaware
Monroe Community College	Brigham Young University	Manhattanville College	University of Miami
Nazareth College	Brown University	North Carolina State University	University of Michigan
New York University	Carleton College	Nova Southeastern University	University of New England
Niagara University	Carnegie Mellon University	Occidental College	University of Pennsylvania
Rochester Institute of Technology	Cazenovia College	Pace University, New York City	University of Rhode Island
School of the Art Institute of Chicago	Champlain College	Parsons The New School for Design	University of Southern California
Skidmore College	Clark University	Pomona College	University of Virginia
St. John Fisher College	Colgate University	Quinnipiac University	Vanderbilt University
St. Lawrence University	Dartmouth College	Rhode Island School of Design	Villanova University
SUNY College at Geneseo	Denison University	Rice University	Wellesley College
The College of Wooster	Drexel University	Saint Anselm College	Wesleyan University
Union College	Duke University	San Diego State University	Williams College
	Duquesne University	Santa Clara University	

Figure 5.3. List of colleges attended by Oikos Academy graduates, 2009-2013. Excerpted from 2013/2014 school profile letter to colleges and universities admissions departments. (11/15/2013)

Such post-Oikos, higher educational attainment goals are evident within the institution itself, as the first hallway one walks down when entering Oikos Academy is adorned with marketing posters from some of these elite higher education institutions, including the one I attended: Colgate University (Figure 5.4).

Figure 5.4. Photograph of bulletin board outside guidance counseling offices at Oikos Academy. (12/5/2012)

During an interview with a local business newspaper, the current Head of School

summarized their institutional approach to educational attainment post-graduation:

One hundred percent of kids go to college, and our goal is to match a kid with a right school. We have students who are accepted into Ivy League schools every year, but it's not a scorecard we are trying to put point on. (Head of School, as quoted in Local Business Journal Article, 10/18/2013)

College preparation, including for elite higher education institutions, is clearly a goal of this educational institution. It is not their only goal.

In addition to attaining post-secondary education of some kind, Oikos expects its graduates to exhibit a particular set of intellectual virtues and habits (Figure 5.5).

THE CHARACTERISTICS OF A OIKOS GRADUATE

A lifelong learner who:

- is inquisitive, passionate, and tenacious
- is creative, original, and a risk-taker
- is a critical thinker and problem-solver
- is a clear and forceful writer and speaker
- is appreciative of and experienced in the arts
- is self-aware and self-directed
- is successful in a rigorous college-prep environment

A civic person who:

- is a pluralist (globally aware, tolerant, appreciative of difference)
- is able to dissent respectfully; an active participant in the democratic process
- is both collaborative and independent
- is a respectful steward of community and environment
- is aware of what it means to take care of another human being (a compassionate and empathic person)

An individual who:

- savors and appreciates life
- is healthy (physically, socially, and emotionally)
- values fairness and honesty, who is ethical and courageous
- is forward-thinking and adaptable
- takes personal responsibility

Figure 5.5. Characteristics of an Oikos Academy graduate. Excerpted from literature for prospective families. (11/15/2013)

While Oikos articulates an official desire to send their graduates onward to institutions of higher education, this is not their only goal given the desired characteristics exhibited in

Figure 5.5. As one administrator described these expectations during an interview:

What is it that we hope for when the kid crosses the stage to get their diploma?

This [question] generated this document called *Characteristics of an Oikos Graduate*. The characteristics break out into three major subsets. One is concerning the characteristics of the lifelong learner. The second is concerning the characteristics of the civic person and then the third is about the characteristics of

the unique individual. That second one, the center section of a civic individual, we didn't use the word sustainability and I think if we had done it two years later we would have, but at that time I think the wording is a respectful steward of community and environment.

Then the other kind of sub-bullets in there are someone who knows something about an engagement in the democratic process who understands what it means to dissent respectfully, who knows what it means to take care of another person. So some of the notions of what we think of sustainability now, civic engagement, mutual care, mutual respect, a pluralistic outlook, all of that were articulated in that exercise, which has ended up being a really super useful document to us (Administrator Interview, 2/13/2012).

Educational goals at Oikos are thus primarily focused toward attaining a set of coursework credentials in order to attend an institution of higher education. While this is an instrumental educational goal, the institution also places an official value on developing an intrinsic set of individualized characteristics amongst their graduates. These traits (as listed in Figure 5.5) are not discipline-specific and transcend any one particular class or experience at Oikos. They are also aligned with historically progressive visions of education (e.g., Dewey, 1938, 1963) that emphasize experiential learning rooted in the daily lives of the learners themselves. Oikos self-identifies as participating in this educational tradition (Figure 5.6, Administrator Interview, 2/13/12).

A Note to Colleges Regarding

We do not counsel our students to collect APs. Rooted in the progressive tradition, [redacted] offers an innovative and demanding program in the core academic disciplines, the arts, and in experiential learning. We offer APs as part of that program, but it must be understood—as it is understood in our community—that all of our coursework is equally challenging. We ask that you recognize and honor our approach as you entertain our students' applications for admission.

Figure 5.6. Additional institutional description to colleges. Excerpted from 2013/2014 school profile letter to colleges and universities admissions offices. (11/15/2013)

The Oikos mission statement (Figure 5.7) reflects the Deweyian influence in another way, as it directs the focus on the development of the individualistic learning experiences within both an established institutional disciplinary curriculum and within a larger learning community.

Figure 5.7. Formal Oikos mission statement. Presented to prospective families in admissions literature. (11/15/2013)

While Oikos identified as progressive in Figure 5.5, their mission statement positions their institutional values within a communitarian tradition via a focus on the development of the individual relative to and within the larger community. This is neither liberal (focusing exclusively on individual development) nor conservative (focusing exclusively on maintaining traditions), and instead offers an alternative approach that emphasizes

individual responsibility to the community and the importance of the institution and larger community in facilitating such interactions (Henderson & Hursh, 2014).

Communitarian values can become contradictory in their implementation (Sandel, 1998) and this cultural dynamic plays out at Oikos in institutional frictions and shifting educational goals. This dynamic is explained further in Chapter 6.

Financial and Organizational Structure

As a private school, Oikos Academy relies on tuition payments and private donations (mainly from alumni benefactors) as a revenue stream to finance faculty and staff salaries, educational programming and infrastructure operations (School Financial Officer and Administrator Interviews, 11/4/2011, 11/9/2011, 6/5/2013).³³ Tuition estimates for the 2013-2014 academic year are listed in Figure 5.8, and multiple school documents (e.g., Figure 5.1) state that approximately 30-35% of students receive some form of financial assistance totaling approximately two million dollars of financial aid within a total tuition revenue stream of approximately eight million dollars (Board Member Interview, 6/6/2012; Financial Administrator Interview, 6/5/2013).

³³ Operating revenue and outlay information was not directly collected as a result of this study. Specific financial figures and flows are mentioned, but only secondarily through their representation by members of the Oikos community via other information sources.

	TUITION
GRADE IN SEPTEMBER 2013	TUITION 2013-14
NURSERY (3 DAY)	\$13,720
NURSERY (5 DAY)	\$17,000
KINDERGARTEN	\$18,500
1	\$19,900
2	\$20,800
3	\$20,800
4	\$20,800
5	\$20,900
6	\$21,220
7	\$21,700
8	\$21,800
9	\$21,990
10	\$22,500
11	\$22,500
12	\$22,750

Figure 5.8. 2013-2014 Oikos Academy tuition costs (in United States Dollars). Image from Oikos Academy enrollment documents. (11/15/2013)

And as a private institution, Oikos Academy exists largely outside the purview of local, state and federal educational policy jurisdiction. Or, as one board member put it to me in an interview, Oikos is “by definition unencumbered by the traditional structures of public education” (Board Member Interview, 6/6/2012). As a private school, they are registered with their state-level department of education, a minimal requirement for private schools in the State:

Since 1897, the State compulsory attendance law has required all children between the ages of six and sixteen to be provided with a program of instruction, either at a public school or elsewhere. While the compulsory attendance law protects a child's right to be educated, the State has long recognized the right of parents to choose an alternative to the public school. Churches, temples, mosques, and other groups of people are guaranteed the right to provide educational programs in accordance with their religious beliefs and educational philosophies. Over the years, nonpublic schools have been an integral part of the total

educational system of the State. (State Education Dept. Website, 1/6/2014)

They do, however, exist within the parameters of civil society jurisdiction and interact with local, state and national governing agencies as necessary in other areas (e.g., building code enforcement, pupil transportation, environmental impact compliance, workplace safety, etc.). The institution is also a member of the National (United States) Association of Independent Schools (NAIS) and is reviewed for accreditation by the state-level branch of NAIS (School Website, Internal Documents).

Rather than the public school model of a democratically-elected or increasingly, a mayor-appointed, school board, their governance structure consists of an appointed board of trustees tasked with institutional continuity. As of 2014, the Oikos board consisted of 27 members and includes a number of prominent local business executives, academics, physicians, emeritus trustees, alumni and current parents (School Website, Fieldnotes 3/4/13). The Head of School is hired by, and serves at the discretion of, the board of trustees. The Head of School and a chief financial officer are directly accountable to them, with the three unit heads (Lower, Middle and Upper Schools) subsequently accountable. Teachers report within each sub-unit and are disciplinarily focused in their instruction at the higher grades and interdisciplinary at the lower grades (e.g., Middle School Science and Upper School History versus Lower School Third Grade). Additionally, a few specialty teachers and staff members at Oikos transcend academic units. These include, for example, one sustainability educator, one mindfulness and empathy educator/program director, one summer school program director, a technology

integration specialist, and health and art faculty. Some staff members cross unit divisions and others are unit-specific (e.g. Secretary to the Upper School Head vs. Head of Maintenance or Head of Cafeteria). Finally, as a private educational institution Oikos staffs a Communications and Public Relations department, along with Development and Admissions departments. These offices handle press releases, marketing and interactions among the institution, alumni and prospective students. In total, Oikos employs nine administrators, 74 full and part time faculty and 42 staff members (kitchen, maintenance, administrative assistants) (Administrator Interview, 1/8/2014).

Existing Ecological and Institutional Footprint

Oikos Academy is located in a temperate climate in the Northeastern region of the United States. Such a climate is characterized by cold (but not extreme) temperatures and shorter daylight hours in the winter months and higher temperatures (but not extreme) and longer daylight hours during the summer months. Spring and fall seasons moderate between these maximum and minimum. Due to axial tilt of the planet, the sun approaches a higher zenith point in the summer than in winter.³⁴

The main, 32-acre Oikos campus (Figure 5.10) is presently located on Native American land, now under the governmental purview of the United States, a particular Northeastern state and a local community government.³⁵ The institution has existed in its current suburban location since 1926. Prior to that it was located in a nearby, mid-sized

³⁴ This fact is mentioned here because the construction of Oikos' new building relates to this natural reality.

³⁵ Jurisdictional and tribal names withheld to maintain anonymity.

city where it originated in 1917 as a small school based on the Montessori educational model³⁶ (Historical Documents, School Website). In 1926, a decision was made to expand to one of the city's inner-ring suburbs, and the school community moved into a wood barn structure adjacent an apple orchard and a creek (Figure 5.9).

The Barn Building, 1926

Figure 5.9. Image of early Oikos school building. Image from building committee handout. (1/24/2012)

While the orchard no longer exists, the creek continues to cut a path on its way to a nearby lake, eventually ending up in the Atlantic Ocean.

³⁶ The Maria Montessori educational philosophy remains one of the enduring models guiding alternative educational practice in the United States. Oikos no longer identifies as a Montessori school, but it remains part of their historical story. See Montessori (1964) and Montessori (1995) for more on the philosophy and practice.

The main suburban school building (Figure 5.10) was originally constructed in 1968 has experienced multiple additions over the years to accommodate program growth and institutional expansion, resulting in its most recent footprint (Historical Documents, School Website).

Figure 5.10. Aerial image of Oikos Academy. Location of new building marked by green dashed line for reference. Note Oikos Micro-farm at top left of image. Image captured and modified from Google Maps Online on 12/23/2013.

Cultivated grasses, shrubs and trees surround the main school building, as well as adjacent playgrounds, parking lots and tennis courts. A riparian zone borders the school and directs water through the school property and the surrounding neighborhood on its way to a nearby lake. The school sources its food from a number of local suppliers and Oikos community members claim that a small percentage of their vegetables come from a

“micro-farm” on the property (Food Committee Meeting Documents, 7/25/2011, Kitchen Staff Interviews, 11/15/2011).³⁷

Figure 5.11. The Oikos Micro-farm. (5/23/2011)

The Micro-farm also contains a composting operation and is irrigated via a rainwater collection system that captures runoff from the school’s athletic field house and stores it in a tank near the Micro-farm. Students and teachers installed this system during one weekend in 2011 (Fieldnotes, 5/23/2011).

The school’s main electrical service enters the structure via underground cables near the location of their new building and is maintained by a regional utility company that is in turn owned by a larger European multi-national energy company (Fieldnotes,

³⁷ Note that it is not referred to as a “garden” by Oikos members. Participants highlight it’s productive nature and refer to it as a “micro-farm” instead. Accurate percentages of food yield were not able to be captured due to research design limitations.

3/9/2012). Natural gas and water service enters the school from street-side infrastructure in the front of the school and is maintained by the aforementioned multinational energy company and the local municipality respectively. The new building taps into the water system near the red marker in Figure 5.10. The new building is not connected to natural gas infrastructure, thus decreasing the reliance on carbon-based energy for heating that particular building. Freshwater for the school originates from a pair of regional lakes that are held by state law in the common trust for drinking water supply (State Website). Wastewater is removed from the school via a regional (county-level) sanitary sewer system by underground conduit for eventual treatment and outflow into a different, and much larger, nearby lake.

The Existing Architectural Footprint

The architectural layout of the main building (hereby referred to as the “older building”) reflects the post-World War II Modernist style of school architecture characterized by “decentralized, campus-like plans” that reflect attention to specialty areas of study while still being flexible in its intended educational use (Gyure, 2011, p. 163). In the Oikos form, lower school classrooms in the older building (Figures 5.12 & 5.13) are organized by grades (e.g. nursery, primary, 2nd, 3rd, etc.) that reflect the spatial sorting of students by age parameters. Middle and upper school classrooms are primarily organized by disciplinary subject area (e.g. science, mathematics, english, music, etc.).

Figure 5.12. Oikos Academy ground floor. Faculty and staff names redacted to maintain anonymity. (10/28/2013)

In addition to classrooms, a number of different activity centers are interspersed throughout the complex. The ground floor (Figure 5.12) contains the “Centrum” which serves as a common meeting area for lower school community members, the kitchen and adjoining dining hall, a computer lab, maintenance offices and physical plant monitoring equipment, the nurse’s office, a small gymnasium and part of the main library. In addition to classrooms, the first floor (Figure 5.13) contains a central outdoor courtyard, a theatre, a working art studio addition, a flexible entrance gallery space that visitors experience when they first enter the school’s main entrance, a glass natatorium housing an olympic-size pool and an athletic field house. Division head administrators’ offices are located

within or nearby their referent areas (i.e. middle school head is near the middle school classrooms). Main office administrators and staff members are located on the first floor near the gallery. Oikos Academy has a small second floor as well that contains a handful of disciplinary middle school classrooms and roof access for the school's green roof test panels and a small apiary.³⁸

Figure 5.13. Oikos Academy first floor. Faculty and staff names redacted to maintain anonymity. Location of new sustainability education building, “The Commons,” highlighted with green dashed line for emphasis. (10/28/2013)

³⁸ Oikos has a second floor of classrooms and offices near their courtyard and above the library. They are Middle School-specific and are omitted here due to redundancy. The Ground and First floors of Oikos comprise the main floors of the school.

Early Sustainability Planning

One of my first field experiences at Oikos involved attending a planned meeting with the Head of School at the time and the school's only sustainability educator.³⁹ The purpose of the meeting was to brainstorm the potential educational spaces of an imagined new building that they were in the process of planning, as well as to discuss ongoing sustainability efforts within the existing school infrastructure (Fieldnotes, 3/29/2010). Figures 5.14, 5.15 and 5.16 were written on a whiteboard in the Head of School's office where the meeting occurred and represented how the school was attempting to satisfy sustainability education parameters as imagined by Jaimie Cloud (2005), a sustainability education curriculum developer who runs The Cloud Institute in New York City and who had previously visited the school to brainstorm what sustainability education could look like at Oikos Academy.

Figure 5.14. Sustainability definition on whiteboard in Head of School's office. Note that the word "world" is cut off at image lower right. (3/29/2010)

³⁹ During my three years at Oikos I experienced the transition of their Head of School position (HoS) from the initial HoS who invited me to conduct this research, to an interim HoS after he decided to take another position elsewhere, to the current HoS hired during the interim time period. The social dynamics of this leadership change are significant and detailed further here and in Chapter 6.

- Cultural Preservation and Transformation
 - [redacted] BARN + [redacted] BARN → BARN 2011
- Education for Sustainability
- Responsible local/global Citizenship
 - Center for experiential Service Learning (loft)
 - ↳ Hospice local/International
 - ↳ Capstone program?
- The Dynamics of Systems and change
 - Integrated building Systems (SMART Grid)
 - The Living Building Challenge (LBC)
 - MS social curriculum - meet the LBC + negotiate resource management.
- Sustainable economics
 - [redacted] as an economic system
 - ↳ The school's sustainability challenge
 - ↳ Complete facility HVAC overhaul
 - organic garden
 - Co-op business
 - social entrepreneurship

Figure 5.15. Key initial aspects of Oikos sustainability program, as written on the Head of School's whiteboard. Formal names redacted. (3/29/2010)

- Healthy Commons
 - Our School - Flag Hall II - [redacted] Creek
- Natural laws and Ecological Principles
 - MS Science Center
- Inventing and Affecting the future
 - Project-based Center [redacted] Basement
 - [redacted] core commitment to the creative process
- Multiple perspectives
 - Statement of Rights and Responsibilities
- A sense of Place
 - 250,000 year history at [redacted]

Figure 5.16. More key aspects of Oikos sustainability program, as written on the Head of School's whiteboard. Formal names redacted. (3/29/2010)

While I never met Jaimie Cloud personally during my fieldwork at Oikos (apparently we missed one another by mere days in my first meeting), I have met her since at professional conferences and even spoke to her early in my fieldwork about her perception of research priorities in the emerging field of sustainability education (Personal Conversation, 4/26/2010). Her organization is one of a handful of incorporated organizations in the United States that have developed formal sustainability education curriculum. I was aware of her work prior to Oikos fieldwork and expect that I will engage her work again in the future, as our field is relatively small. We have served on academic panels and are both active in the field. While her influence at Oikos pre-dated my time in the field and this research, it was clear that members of the community had wrestled with her curricular suggestions, as one of the early pieces of information I collected was an institutional white-paper spelling out in detail how Oikos would attend to each of the sustainability concepts above. While I will not dwell on each of these in detail here, I note this experience because it is clear that her work provided early intellectual guidance for the new building. Over time some of these concepts receded in importance, the details of which are presented in Chapter 6.

Engaging Community and Embracing Serendipity

During later fieldwork I learned that Oikos was embarking down the sustainability education path for a number of interesting reasons. First, an institutional review conducted in 2005 and 2006 resulted in the production of the aforementioned

Characteristics of an Oikos Academy Graduate document (Figure 5.5). As one administrator recalled:

The last time we did kind of a major soup to nuts strategic planning effort⁴⁰ was in that 2005-06 period. And what schools usually do is they revisit their mission statements and founding documents and that kind of thing to make sure that they're still cool with them, and we decided to do something different, which was to have this exercise in which we asked ourselves, "What is it that we hope for when the kid crosses the stage to get their diploma?" and what was generated by that was this document called *Characteristics of an Oikos Graduate*. (Administrator Interview, 2/13/2012)

Part of this process involved self-identifying perceived institutional strengths and weaknesses, along with the articulation of the educational goals as embodied by future graduates. After this strategic planning process the school hired a Head of School who was sympathetic to environmental issues, had an advanced degree from an elite university in engineering and could articulate complex notions of sustainability beyond just its technological and scientific rendering (Historical Documents; Fieldnotes, 3/14/2011; Administrator Interview, 2/16/2012). As another administrator recounted:

Admin: After that [strategic planning process] the Head of School was appointed and he brought with him a sophisticated understanding of sustainability that mapped on very well to that work that we had already done. He, I think, brought to us a broader notion of sustainability. So where, I think, if somebody had said 'sustainability' when we wrote the characteristics we would have been talking pretty strictly about environmental sustainability and we might not have included some of the things that we would include today, like mindfulness and empathy education and civic engagement and all the other stuff. He brought with him that broader sense. Or, he either brought it with him, or he got there quickly after he arrived here. I think maybe in his second year maybe, I'm not sure when, we invited a person named Jaimie Cloud who runs the ...

⁴⁰ I was unable to uncover the exact composition of this committee, as their existence pre-dated fieldwork.

Me: I know Jaimie.

Admin: Yeah, sustainability education program. And she brought to us, like she spent several days here, and just sort of workshopped with members of the administration.

Me: Yeah I came on right at the tail-end of that, so I got to see that ...

Admin: And we also, you know, somewhere in there, I think before the Jaime Cloud time, we appointed the sustainability teacher to a job. We didn't actually know what this job was going to be at the beginning, but we knew it had to do with some broad understanding of sustainability and all the stuff that I've been mentioning like civic engagement and all of that stuff. So the *Characteristics*, the Head of School's arrival, the sustainability teacher, Jaime Cloud and more recently... I'm not making, I won't even attempt the chronology cause I'm not good at it... somewhere along there a lead gift from the parent of now two alums and one current student to build a green addition to the school.

Me: Right, the barn.

Admin: So he gave us a million dollars. And we were, "What are we going to do with it, we do we mean by a 'green' building exactly?" We were just talking about a room that's covered with solar panels or what are we talking about, that would just stick off the back of the building or what. Then the idea of acquiring an old New England barn kind of fell into our laps and that was kind of a moment of inspiration and a galvanizing moment where we could see what we wanted, you know. (Administrator Interview, 2/13/2012)

This origin story is also reflected in official school communications documents that are used to showcase the emergence of the new building (School Alumni Magazines 2011, 2012, 2013) and in interviews with both the original Head of School above (Administrator Interview, 2/16/2012) and the sustainability teacher (Interview, 3/1/2012).

Receptive Identities

In addition to the strategic planning, gifts, personnel hires, and subsequent envisioning evidenced above, the cultural conditions at Oikos presented fertile ground for

the growth and emergence of a new institutional form around sustainability education. A number of faculty and staff members reported affinity for different notions of sustainability when asked during interview sessions. The school's sole sustainability teacher had attended college in an agricultural part of the state and had an independent study experience in agricultural education that changed his life:

So my senior year they have this great program where you can get an internship out in the community and I was seeking an internship with something in the environmental educational world that wasn't obviously in a school and whatnot and I came across this place called Rush Creek Farm⁴¹ which was a small kind of homesteady style farm that was run by these three women that were nuns, part of the Holy Order⁴² and were former high school teachers at a Holy Order school and now ran this farm and it was a place where kids came during the school year for kind of classic field trip type stuff. "Where does your food come from, how do you take care of cows, colonial days for 4th graders," all this stuff and then summer camp style programs in the summer. And those women changed my freakin' life, as does everybody in some ways along the way, but these women in significant ways. And I actually ended up living and working on that farm for the next 8 years and it was a hugely influential moment, not only for my stance on education and sustainability, but as you know well this whole food focus and whatnot was really birthed at that farm, because indeed I had no farming experience or no passion around food at that point, came there because of an interest in education and ended up falling in love with the farming side of things as well as the education we were doing there. (Sustainability Teacher Interview, 3/1/2012)

The head of the school's hospice program had a profound life experience⁴³ conducting aid work in the aftermath of the Vietnam War that shaped how he saw education, life and

⁴¹ A pseudonym.

⁴² A pseudonym.

⁴³ Intimate details of this story are omitted due to their sensitive nature. Based on the emotional tone during the interview, it was clear to me that this experience profoundly shaped how he positioned himself relative to the rest of the world, and that this informed his educational philosophy, including the development of the school's hospice program.

death and pushed him toward greater engagement with the nonmaterial dimension of humanity's existence:

There's a way of dealing with one's self I think. It's an honest business in terms of being able to sit there with somebody [who is dying]. What have you got you know? They see that at the end of life, at least as far as I know, nobody talks about bank accounts, material things, it's all non-market values and those are the things that really in the end are what we all hunger for and want to build towards. We just think that we need money in order to create this aura to satisfy what it is that we want to be "happy" and usually that pulls us into a path that creates more and more unhappiness. How do you deal with this? I don't know, you know, we have to have electricity I guess and all sorts of things, I understand that, but emotionally it's really tough. (Teacher Interview, 4/25/2012)

In another dimension, one of the science teachers had a Masters degree in environmental science law that informed his classroom pedagogy:

Well, I did a Masters in environmental science in Maryland. It was mostly on the eastern shore at a little lab. Did a little graduate experience there, and also the environmental law stuff that I did, kind of a little bit of the policy, kind of that background in environmental science. Otherwise just kind of being sympathetic with the cause and that kind of stuff. (Teacher Interview, 11/7/2011)

Another science teacher tasked by administrators with engaging the institution in citizen science activities⁴⁴ had a rich set of experiences that included taking students outside to collect scientific data on birds and the nearby creek (Teacher Interview, 5/13/2013). One administrator had previously worked at a different private school where he was involved in pioneering sustainability efforts:

⁴⁴ Such activities typically involve the crowd-sourcing of scientific data toward achieving experimental goals. This is a growing practice in informal and formal science instruction and was in the job description of one of the science teachers at Oikos Academy. See Volume 10, Issue 6 of the journal *Frontiers in Ecology and the Environment* (August 2012) for more on citizen science as an emerging form of scientific inquiry.

I think for my background going back to where I first started teaching which is at the [Other] School is really important. Yeah, that kind of more than any other one experience defined who I am as an educator. What's the word...cultivated who I am as an educator, but also [Other School] is a boarding school with a heavy emphasis on sustainability. I wouldn't say it was before it got popular, but it was before it got trendy, they were early adopters of the kind of sustainability movement. I mean they were cutting edge with sustainability. (Administrator Interview, 5/24/2013)

The school's head financial officer was himself even a casual lavender farmer on his family's land in his spare time (Administrator Interview, 11/4/2013). Another administrator had a background in chemical engineering and was sympathetic to environmental science. His office bookshelf contained a number of books on ecological crisis and organizational change dynamics (Fieldnotes, 3/29/2010). An Oikos board member was concerned about the future his children were going to inherit given current scientific trends:

I mean, they're going to have to figure out how to fix this cause we're in a big mess. I mean, we are consuming the earth at an alarming rate and I guess in the grand scheme of things, I suppose, you know to be a little depressing, this is the way it is. I mean, we're going to consume the earth. You know, we'll consume it before the sun goes out or we won't and we should do our best to think about that stuff. (Board Member Interview, 6/6/2012)

And finally, the lead benefactor who donated one million dollars to help construct the new building is the Chief Executive Officer and founder of a local renewable energy company:⁴⁵

⁴⁵ I was unable to interview this person despite multiple attempts. I therefore rely on secondary information (school produced media) for their representation. I will never know this person's ultimate intentions for supporting the school and their sustainability education project and this is a limitation of this research. Triangulating across data sources mitigates this limitation, hence the above inclusion.

But when I think about how many people are going to be living on this planet in the next 100 years, and how much food and water and resources we're going to consume, I have to admit it feels a little scary. I feel almost as if I don't have a choice - if I want to leave a better world for my kids and grandkids, then we have to figure out how to make this a sustainable world. (Interview, as sourced from Oikos alumni magazine, 2012 edition)

The shifting identities and intimate life stories of Oikos community members are surely more complex than can ever be detailed here, especially given the study's unit of analysis. Nevertheless, it was clear to me, mainly through interview examinations, but also through secondary information, that Oikos Academy contained a number of people who were committed to the goal of sustainability education in a number of ways. For some, they saw a new curriculum as a vehicle for attempting different types of environmental science investigations (Figures 5.17 and 5.22, for example). For others, agriculture was a legitimate way to engage students in authentic learning experiences. For one teacher, his program allowed him to find greater spiritual meaning in the material world via the establishment of a hospice education program. And for some of the school leaders, sustainability education needed to happen given the perception of scary future conditions facing their own children and humanity. It is within this fertile intersubjective cultural ground that the idea of sustainability education was able to take root and grow, and upon which the foundation of Oikos new building, The Commons, and subsequent programs now occur.

Inheriting Symbolic and Material History

While various members of the Oikos community were sympathetic to aspects of the sustainability education push in their own particular way, a series of events⁴⁶ stimulated the development of a culturally and materially specific educational and institutional form. As I mentioned earlier, one of the early historical Oikos school buildings was a barn structure. After the school received the donation to create a “green” building, the school’s sustainability teacher received word that a barn was about to be razed in a nearby town. Around the same time, the school’s hospice teacher received a financial grant from a major national foundation to support expanding the original hospice course into a much larger empathy and mindfulness program. These bits of news catalyzed a much larger institutional planning and envisioning process among key figures at the school. With the donation of an old barn structure and the new grant in hand, a vision began to develop around the construction of the “green” addition and subsequent programs to further develop the lacunas developed during the earlier *Characteristics of an Oikos Graduate* exercise. And it was also during this time that I came onboard as a result of this larger planning process.

Early versions of the design of the new building refer to the building simply as “The Barn,” but this eventually shifts to “The Commons” after the anonymous donor becomes public later during my fieldwork and for which the building is now named (Fieldnotes, 10/31/2011; School Alumni Magazine, 2010, 2013; School Press Release,

⁴⁶ Some of these events preceded my time in the field. I have done my best to reconstruct them via alternative triangulated sources of historical information.

10/31/2011). For the purposes of maintaining anonymity, I refer to the building simply as The Commons in this dissertation, even though the donor's surname precedes it in reality. At the time of this writing (March, 2014), The Commons is officially open to and embodied by members of the Oikos community.

Retrofitting Existing Infrastructure

Because The Commons did not physically exist yet, early fieldwork at Oikos involved detailing and documenting other changes to the physical and curricular infrastructure at the school. As the sustainability push occurred prior to my arrival, a number of physical plant changes were already in place and involved the retrofitting of technologies in the preexisting Oikos campus (Figures 5.17, 5.18, 5.21)

Figure 5.17. “Green roof” test plots. Installed by Upper School environmental science class over existing school roof infrastructure. (11/29/2010)

Figure 5.18. Compost buckets in Oikos Cafeteria. Sign reads “Grow it. Eat it. Compost it.” (11/13/2012)

Some of these changes originated via administrative decisions with minimal involvement from faculty or students. Others involved teacher and student input, sometimes controversially. Some of the earliest meetings I attended at Oikos involved participating with an *ad hoc* group of students, faculty and staff around changes to the food service dimension of Oikos Academy. Other changes to the Oikos Academy system were driven by teacher and student led pedagogical inquiries and were less controversial (e.g. Figure 5.17).⁴⁷

⁴⁷ The specific social dynamics of these institutional processes are detailed further in Chapter 6.

Multiple interviews with the school's head financial officer detailed the extent of financial savings that resulted from altering the old school's physical infrastructure in the name of achieving the goal of sustainability:

Me: Which aspects of the sustainability program that's been implemented so far have been the most successful?

Administrator: Oh, it's clear it would be the energy programs that we put in place, the conversion of electric to gas and the co-gen. There's a real economic return to it. (Administrator Interview, 11/4/2011)

I also witnessed multiple committee conversations about how replacing lightbulbs in the field house saved the school "thousands of dollars" per year in operating costs (Fieldnotes, 2/17/2011; 3/8/2012).⁴⁸ It was clear from early interactions with faculty and staff that persons in positions of leadership had decided that retrofitting the old school made sense for economic reasons. Early fieldwork (Figures 5.19 and 5.20) at Oikos detailed this as part of a longer-term plan: the sustainability push would begin first with addressing the low-hanging fruit as part of longer term plan. During my very first day at Oikos I took the following pictures:

⁴⁸ I was not afforded access to internal school financial documents and have to rely on secondary information sources for financial claims.

Figure 5.19. Gantt Chart of “Oikos Energy Upgrades and Barn Science Annex” taped to whiteboard in Head of School’s office (3/29/2010).

Figure 5.20. Hypothetical timeline of events in Head of School’s office (3/29/2010).

Early conversations with faculty and administrators reinforced the institutional focus on energy and subsequent changes made to the institution with energy efficiency in mind.

During one visit a faculty member took me into a mechanical room underneath some stairs to show me the new high efficiency natural gas HVAC units (Figure 5.21)

Figure 5.21. New high efficiency boilers in Oikos mechanical room. Sitting just outside the frame at image left are cleaner natural gas co-generation units. (11/29/2010)

The investment in newer and more efficient natural gas fired heating units meant the removal of older, oil fired units and an overall decrease in the consumption of a dirtier fuel energy source for the school (Administrator Interview, 11/4/2011).

The institutional focus on energy was evidenced within classrooms too, as early fieldwork involved speaking with students and their teacher in an Advanced Placement Environmental Studies class about one of the experiments sitting near the back of their classroom (Figure 5.22).

Figure 5.22. Algae bioreactor experiment in back of AP Environmental Science classroom. (3/29/2010)

According to the this environmental science teacher, students were working with a local university to test different variables regarding the production of energy from algae (Fieldnotes, 3/29/2010). It was clear that energy, and the conservation of energy, was an early and pervasive environmental discourse among a group of individuals at Oikos. This discourse is important because it surfaces again in the creation of new physical and pedagogical infrastructure at Oikos in the form of their new building, The Commons.

The Emergence of *The Commons*

Imagine a building where in one room children learn to care for a human being, everything from bandaging wounds on a mannequin, sharing experiences of grief and loss, to preparing to volunteer in local areas and across the globe in hospices and orphanages.

In another room students build boats and furniture with machine tools and 3D printers—bringing to life the math and engineering principles learned all year. Other students carefully analyze charts and graphs from a control room to monitor energy levels and productivity of an algae farm and carbon-sequestering activity, as well as the co-gen and solar sources.

And in still another room, students gather to discuss civic leadership, the U.S. political process, public-private partnerships, and how the School can support students to become good citizens of its own school community, , and of the global society.

Figure 5.23. Oikos Academy website advertising The Commons building. (Screen Capture, 12/21/2013)

At the time of this writing (early 2014), Oikos Academy has recently opened The Commons and has begun the process of embodying their sustainability curriculum. The building itself is vested with a particular vision of future education and the unique spaces of the building are designed with specific idealized educational goals. An Oikos administrator, working with the main building contractor and the architect, crafted a more complete listing of building systems and design philosophy in a potential “walking tour” document for members of the Commons Steering Committee, board members and funders (Fieldnotes, 5/21/2012). The document text is presented here in its entirety due to its thorough nature:

Commons Structure and Systems

Design Philosophy:

As a one of a kind facility, the design by necessity has evolved throughout the process. We expect, and hope this will continue. The school partnered with a construction manager (Business Name), a designer (Name) and architect (Name)

to create this “living building”. The facility’s features and operations will continue to evolve after the initial opening in the Fall and we expect our students and staff to be at the heart of this evolution. During the initial stages after occupancy, the students will work to help design and manage the systems design and some of the “fit out” of the facility.

The facility has been designed with three complimentary and sometimes competing interests. Cost, sustainability and beauty. There are many instances where this tradeoff has helped shaped the building. For example, from a construction materials standpoint, (CEO of Construction Company) has articulated “the most sustainable construction material is one that is not used”! The Facility has been designed such that the construction techniques and materials take advantage of current thinking about sustainable and cost efficient construction. Designs included many sustainable systems, while taking into account the construction costs and long term operating efficiencies. The goal was not to optimizing the design solely to achieve a specified level of LEED certification or include a feature for demonstration purposes only.

Material and structural systems selections were made with the goal of balancing longevity, aesthetics, and initial costs.

Systems:

Solar power:

The facility has the capacity to produce 17,000 watts of solar power. Some of this power will be stored in batteries used to operate the Solar Chimney and irrigation in the green house. A design challenge for students will be to understand and manage the building’s operations to achieve a Net Zero energy consumption. Net Zero is not expected to be the base line, but an operating challenge based upon building and environmental conditions.

Solar hot water:

Provides hot water into the science rooms, and lavatories using a series of evacuated tubes to capture solar heat gain inside a vacuum and transfer the energy to a fluid medium. This technology was originally designed for satellites.

Geothermal:

Providing heating and cooling into the green house space with direct exchange technology. This system should operate around 4.0 COP (Coefficient of

performance) and be complimentary to the passive solar heat gain that will be captured within the thermal mass of the greenhouse floor and walls.

VRF system:

This system, a Variable Refrigerant Flow system, more commonly used in Europe and the Far East, is the main “powered” HVAC system in the building. It was designed into the building in place of an extensive geothermal system because it is more efficient, in particular in providing cooling. Due to the roof and wall construction, greenhouse and solar chimney, and heat load created by students occupying the facility, the primary driver for system’s design was cooling, not heating. This system is more effective and has the ability to deliver both heating and cooling into different Zones within the building at the same time. The system will also transfer excess heat, or cooling between the zones where a classroom for example may call for cooling or an office for heating.

Solar Chimney:

The facility’s ventilation and heating will be supplemented or provided by a passive solar chimney, operated by students. This solar chimney, integrated into the green house, allows heated air to move into the building when needed. When ventilation is needed to cool the building, the convection created in the chimney (called stack effect) will draw air out of the facility through open exhaust vents by creating negative pressure zones inside the building. During the first few months of operations, the students will be studying this system and designing hardware and software to implement controls over this system.

Energy Recovery Ventilation:

ERV’s will be used in each building zone to provide outdoor fresh air year round while capturing and reusing the embodied thermal energy already produced in the occupied spaces. With this technology, un-conditioned fresh outdoor supply air will be heated in winter and cooled in summer using the temperature and moisture energy available within the exhaust air that would otherwise be lost. With this low energy use system in place, the other, more energy intensive HVAC systems will be able to operate less.

Radiant floor heating:

Flag Hall will take advantage of the main school’s highly efficient boiler and co-generation system. The most efficient way to provide heating into this area adjacent to the school, is to tap into the school recently upgraded hot water heating system. With the School’s boilers approaching 97% efficiency, and a co-generator creating 100K watts of power and 1 Million BTUs of heat, Flag Hall

will utilize the existing capacity in the system. With Flag Hall in close proximity to the schools boiler room, this was an efficient and cost effective way to heat the space.

Rain water collection:

Rain water will be used in the green house for watering plants. The gravity-fed collection network will use irrigation pumps powered from the DC PV panel(s).

Electrical Usage monitoring:

Each electrical circuit in the facility will be monitored by a Veris Data Monitoring System. Students will be able to see real time, energy consumption on a circuit by circuit basis within the facility. Circuits have been designed with this in mind. Actual understating and monitoring of the electrical consumption will take time, and be another source of learning opportunity for students.

Water consumption:

Overall water consumption in the building will be captured electronically and monitored in the control room.

Building design and features:

Greenhouse.

An extensive 2.5 story green house will provide space to eventually install a green wall, carbon sequestering experiments, and support Oikos' food and other organic gardening projects. This space will initially be open and will evolve as students and staff develop programs and systems.

Green Roof:

A green roof will be installed over Flag hall. The roof has been designed to support this usage and for access by students. A green roof will be installed over time, with one current option of installing a program for raising bees currently being considered.

Control Room and data monitoring:

Each of the systems in the facility will have data readouts and controls located in a central control room. Students will be learning the systems, designing additional monitoring and controls, and will be responsible for managing some of the set points (within parameters) for building operation. The trade-offs between energy consumption, environmental conditions, classroom activity, and building set points will have to be understood and modeled.

Evolution of the Building and Systems:

An important goal for the project team was to design and provide a platform for the students and the school to learn about sustainability and design/development. This platform, while operational, will still need to evolve to reach its potential. The fine tuning to fully utilize the capability of the systems will be in the hands of the students, and will lead to the educational experience that is the goal of the project. Students and staff have the opportunity to learn about the design and function of systems and could design projects with “real time” feedback taking into account; humidity, weather conditions, forecasting, automation, computer programming, energy consumption and storage, Carbon sequestering, remote monitoring, the like. This list can go on, at the imagination of the students and staff.

Construction materials and designs, brief notes:

Walls, consisting of 4 different construction types including pour, and tilt up walls.

Structural framing, obtained from an old barn

Reflective siding and roofing

Roof SIP panels 8 ¼ inches thick, r-32

4” metal sandwich wall panels R 29.2

Permeable pad outside Project space

Bio Swale and rain garden

The spaces and curricular goals within this building are explored further in Figures 5.24, 5.25, 5.26, 5.27, 5.28 and 5.29.

The Third (Top) Floor

Figure 5.24. Screen capture image of top floor schematic of The Commons from the Oikos Academy website on 12/21/2013. From left to right: Center for Mindfulness & Empathy Education (includes hospice classroom space and a meditation rug), Center Offices & Loft, Center for Civic Engagement (includes community meeting space with projection capability). Top floor structurally reinforced with salvaged barn wood.

Figure 5.25. Photograph of top floor curriculum description on a display in the lobby of main school building on 4/18/2013.

The Second (Middle) Floor

Figure 5.26. Screen capture image of middle floor schematic of The Commons from the Oikos Academy website. Middle floor includes two science classrooms (one for Upper School and other for Middle School), a section of a green wall, public display areas and an entrance to The Commons via Flag Hall (which is prepped for eventual installation of green roof technology). Website accessed 12/21/2013.

Figure 5.27. Photograph of middle floor curriculum description on display in lobby of main school building (4/18/2013).

The First (Bottom) Floor

Figure 5.28. Screen capture image of bottom floor schematic of The Commons from the Oikos Academy website. Bottom floor includes two flexible classroom spaces for “maker” projects, an office for the sustainability teacher, a central digital control room for collecting data on the building performance, mechanical infrastructure, base of the solar chimney, geothermal installation and a gray-water tank for collecting building runoff.

Figure 5.29. Photograph of bottom floor curriculum description on display in lobby of main school building (4/18/2013).

The Commons, as an educational and material form, emerged from a highly localized set of cultural characteristics. First, the school leaders determine that they need to expand what it means to be an “Oikos graduate” and begins planning with this in mind. Shortly afterward the board of trustees hires a new Head of School who is also sympathetic to environmental issues and brings his personal chemical engineering background to this new role. They hire a sustainability teacher with the goal of supplementing their already-existing disciplinary liberal arts, college preparatory curriculum. This faculty member has a set of life experiences rooted in agricultural experience and this leads to the construction of a Micro-farm, which in turn alters the food and educational dynamics of the pre-existing school structure. A wealthy community member (who is also C.E.O. of a local alternative energy company) donates one million dollars to create a “green” building on the campus. Other board members are similarly sympathetic to the cause. At the same time, the school already has a number of staff members who are either sympathetic to environmental education (mainly via their science education backgrounds and practices) or have distinguished themselves apart from others in the community somehow (e.g., the hospice program director and the Horizons program director). The institutional ecology now exhibits a sort of change momentum that results in the construction of a new building and the codification of unique educational programs into the institutional space on their campus and in the larger world (Figure 5.30)

Figure 5.30. South elevation of The Commons building. Procured from the building's architect and used with permission on 2/27/2014.

The Commons is designed with specific educational and environmental characteristics in mind, and these will be described and detailed further in the following chapter. And the building's architect, himself schooled in ecological design principles via the California State University system, has designed the building with future durability in mind:

So sustainability, you know, the Oikos Barn is certainly a sustainable building in that it is a building that will have very low exterior maintenance needs, you know, all the exterior material should be good for 100 years. There should be very little... There's no painting, no staining, you know... Glass, metal, concrete is the exterior materials and you have the ability for the Barn to make it's own power through solar panels. There's a direct current, and alternating current panel rays, you have

the ability for the Barn to make it's own hot water through the solar evacuated tubes. You have two different HVAC systems that are very energy efficient...

The physical building is designed, with a nod to the school's history, to house some of the more unique educational experiences occurring at Oikos: a dedicated space for their hospice program, now expanded to encompass their new Center for Mindfulness and Empathy Education. A Center for Civic Engagement that is to include community meeting space. Two new science classrooms (one Upper and one Middle) tasked with environmental citizen science endeavors, and a ground floor that includes flexible project and a hands-on "maker space" in addition to a control room capable of monitoring the physical activity of the building, including the performance of a three-story solar chimney and its accompanying vertical greenhouse. All of these spaces occur within a building designed to produce a majority of its own energy via a collection of passive (siting relative to the sun's angle, thermal mass structures) and active (solar, geothermal) energy components that will shape the material performance of the building itself.

The Institutional Nature of Sustainability Education

Like all institutions and communities, Oikos Academy remains in a state of flux as its relatively stable institutional form became destabilized, thus evolving into a new cultural and material educational form. I show here, and in the following chapter, that the elite-driven push toward amending the institutional form to include a broad definition of sustainability education was successful in altering the trajectory of the institution, despite significant social and ecological costs. The emergence of a new education form was rooted in the traditions and shifting values of the school community, and leadership

provided space for such a transition to occur, ultimately shifting the institutional goals and built environment of Oikos Academy into its current form, which now includes The Commons and a new ideation of what it means to be an Oikos graduate.

Applied Phronesis and Institutional Churn

Bent Flyvbjerg's phronetic approach (2013) informs analytic focus here on the institutional power dynamics at play in the retro-fitting of Oikos main building and in the envisioning and construction of a new building, curriculum and educational norms on their campus. In particular, Flyvbjerg's approach focuses attention on the following questions to guide analysis and interpretation: "(1) Where are we going with this specific management problematic? (2) Who gains, and who loses, by which mechanisms of power? (3) Is this development desirable? (4) What, if anything, should we do about it?" (Flyvbjerg, 2013, p. 153). With this framework, and the above chapter in mind, I now attempt to explain how the sustainability program emerged and evolved at Oikos, and implications for both Oikos Academy and other educational institutions.

During my time at Oikos, it became clear that their community was in the process of navigating substantial changes to both their institutional identity and physical and curricular infrastructures within the school. The sustainability education program was rooted in a broad and highly local understanding of sustainability and sustainability education. Particular pre-existing and non-traditional educational programs (e.g. hospice, micro-farm, design-thinking, civic engagement classes, citizen science) are now codified into the built and temporal spaces of the school. The construction of the new building

culturally represents the increased institutional valuing of such programs, as they now have a physical place to formally exist and are culturally celebrated by the community.

Ethnographic description also showed that the pre-existing cultural dynamics within Oikos provided fertile ground for the emergence and evolution of their sustainability education program. Many members of the institution, especially in positions of influence, were already ideologically and culturally supportive of the aims of the new program. After a review of existing programs and mission, leadership decided to push forward with a new initiative to complement the pre-existing liberal arts, college preparatory curriculum and to update their physical infrastructure. Both the curriculum and physical plant structures were seen as sufficient but lacking for different reasons, so changes were initiated that altered both.

A confluence of history, events and actors produces this vision and ultimately facilitates its existence. School members decide that they need to expand what it means to be an “Oikos graduate” and develop an expanded vision beyond a more traditional disciplinary approach to preparation for higher education. Rooted in the progressive tradition, the school values more than a narrow, instrumental approach and is attempting to achieve loftier ideals like civic engagement, mindfulness and environmental sustainability. After this envisioning happens the school community adds a sustainability educator, a Head of School with an engineering background and obtains a donation from a wealthy benefactor and parent who is C.E.O. of an alternative energy company. Add to this assemblage the inheritance of an old New England barn, a grant to expand their

hospice program into a larger Center for Mindfulness and Empathy Education, along with the Oikos genesis story, and we see the emergence of a particular institutional and curricular form in the The Commons.

The Sociobiophysical Nature of Sustainability Education

From a critical realist perspective, the emergence of form occurs in the socio-biophysical interplay between the socio-cultural discursive and bio-physical material realms of reality. Recall again Michael Carolan's (2005) causally dynamic ecological whole (Figure 5.31).

Figure 5.31. The interpenetrating sociocultural and biophysical realms that constitute a causally dynamic ecological whole. (Carolan, 2005b, p. 401)

Further, recall that the critical realist perspective:

Emphasizes the pervasive interconnectedness of meaning, social action, and the physical world, and the influence that each of these has on the others. This

influence is in principle two-directional, although the actual degree of influence in each direction depends on the particular situation. This perspective thus leads to a focus on the actual processes of mutual influence. (Maxwell, 2012, p. 180)

This study situates Oikos Academy and its sustainability education program, especially in the new institutional form of The Commons, within Carolan's middle nature dimension. That is, the construction and inhabitation of The Commons is an example of a socio-biophysical phenomenon that emerged from within socio-cultural realm and, via the retrofitting of one building and through the construction of another, impacted the biophysical realm.

A new institutional form emerged at Oikos via a confluence of sociocultural and material factors. This process was iterative, as a small community of elite thought-leaders with power began to alter the trajectory of the institution. For some of these members, the change logic was rooted in long-term institutional and economic efficiencies, producing effects on the energy dynamics of the pre-existing building. For others, the ideation of a new institutional form emerged over time via a series of important social actions (e.g. inheriting old barn materials, obtaining external grant funding, private donations). This series of events lead to the evolution of an idea for a new structure on the Oikos campus. Bringing an architect onboard who was trained in "green design" lead to a number of other material choices in the construction of the building, from the alignment of the building to the sun's path to passive solar heating via concrete slab design in The Commons. These are but a few of the many construction and design choices that lead to

The Commons in its current form. All Oikos actors were operating within known biophysical limits, with new technology (e.g. variable refrigerant flow technology) expanding these horizons in the new form. Their ecological implications over the longer-term remain unrealized and are a potential site for future study.

Material Implications

A few key transitions occurred within Oikos that have had significant ecological implications. Early efforts among administration led to the retrofitting of energy systems and fixtures within the school. This was done primarily for economic reasons. The school has also localized some of the production of their food via the establishment of the Oikos Micro-farm. Such changes will have tangible results on institutional and individual consumptive patterns. Smaller scale projects like the establishment of an apiary and green roof plots are more symbolic and less likely to influence ecological dynamics at scale in the older Oikos building.

The establishment of a new structure on the Oikos campus also has ecological implications. While some of the materials for constructing the building were salvaged and reused in its construction, other materials were not and had to be fabricated for inclusion in The Commons. This included all of the building's glass panels and windows, concrete, metal exterior and roof panels, and electrical systems among other materials that, when assembled together, now form The Commons. The building itself will hypothetically produce its own energy via solar panels, geothermal heat and passive solar heating systems, and its architect has designed it with materials that should need less continued

maintenance than now-standard building materials. Perhaps ironically, the construction of The Commons required a significant amount of building materials to be mined, processed and consumed due to this institutional change process. While the building itself may outlast other buildings on the campus, its existence nevertheless meant the increased transformation and consumption of natural materials from other places.

System Dynamics and the Emergence of Form

Oikos Academy can be thought of an institutional system embedded within and related to, other systems. Changes in Oikos energy dynamics now make them less beholden to larger-scale energy producers, for example. The effect of localizing a portion of their energy production and switching to more efficient methods of heating and cooling means that they are less reliant upon a large, multi-national energy corporation to maintain a continuous supply of energy to the school. While their institution is still connected to the larger energy grid system, they have intentionally altered their dynamics by retrofitting their old school building and via the construction of The Commons, which is capable of producing much of its own energy (if not more) via a combination of both passive and active local-scale energy systems. A similar process occurred as Oikos moved to localize the production of some of their food. The Oikos Micro-farm produces a percentage of vegetables for consumption within the school community. While Oikos remains connected to a larger capitalist food production and consumption system, decisions by members of the school community are altering those dynamics toward increased localization. The implications of this process is expanded upon in the following

chapters. A smaller example of this same process can be observed in the simple construction of a water collection system for watering the farm. Rather than relying entirely on the municipal water system for irrigation, the community is altering runoff dynamics to capture local source water.

Oikos Academy is also a single institution within a larger educational system. As a private school, the sustainability of their institution requires a steady enrollment and influx of revenue via this enrollment and through private donations, many of which are procured from alumni. One of the reasons that Oikos decided to construct their new building was to further distinguish the school within the local, and possibly national, educational system. It appears to have worked, as administrators report that enrollment remained steady through the recent economic downturn and they now keep a waiting list for enrollment in the Upper School (Fieldnotes, 3/4/2013; 7/2/2013).

Intersubjective Processes

Finally, the altering of traditional institutional form and the emergence of a new form at Oikos resulted from a unique intersubjective process among a handful of key project narrators within the community. Two administrators were sympathetic to environmental causes and acknowledged global environmental problems. Two science teachers were already engaging their students in environmental and citizen science-oriented investigations and pedagogy. Elsewhere, two non-traditional educators (the sustainability teacher and the hospice teacher) were developing high-visibility programs that did not fit into the spatial or institutional logic at Oikos. Early support for a new,

“green” building was reified in the form of a million dollar donation from a Oikos parent and board member who was also in the alternative energy industry. When combined with another external funding source in the form of a national grant to develop the mindfulness program further and another donation of an old barn structure, the The Commons idea hit a momentum that eventually became realized over time. At this point, external contractors were hired to handle the architectural and aesthetic dimensions of the project. Their histories and identities also shaped the specific institutional form.

Without these particular people and their unique backgrounds and forms of capital, both symbolic and real, Oikos Academy would not have altered their institutional dynamics. For example, the architect influenced the site selection to facilitate building alignment with the sun’s path during seasonal change, or the design of the bottom-floor “Maker Space” designed around the sustainability teacher’s desire to engage students in a “design-thinking” curriculum. Or, on the top floor, two new spaces that are now dedicated to facilitating greater civic engagement and mindfulness among future graduates in line with shifting institutional priorities around what it means to be an Oikos graduate. The emergence of these new infrastructural and pedagogical forms resulted from a highly localized intersubjective process that now situates current and future Oikos community members within a new educational and institutional reality in the form of The Commons.

Over the course of this chapter I have attempted to answer the following research question via the description and interpretation of ethnographic data: *How does a*

sustainability education program come into existence? In addition to the answers above, another dimension of the story involves the differential valuing of institutional priorities in the construction of the new building. The progression toward a new building and a modified curriculum was a fraught political endeavor within the school. This was partially because the change was an elite-driven process, with the ideation of the new building and its programs originating from a few members in key positions of influence (e.g. Head of School, board of education, major parent donor, granting institution, non-traditional educators). Nevertheless, as the above chapter evidences, the institutional change process was “successful,” as this sociopolitical grouping ultimately resulted in the realization of a complex sustainability education ideal as represented by the now-existing Commons building on the Oikos campus and the retrofit of existing infrastructure and processes. In the next chapter I examine how particular frictions played out in the institutional change process and their implications for sustainability education.

Chapter Six: Shifting Norms and Institutional Friction

Three years of ethnographic fieldwork at Oikos Academy detailed an institution in the midst of cultural and physical changes to both their curricular and physical infrastructures in the name of sustainability education and institutional evolution. The change process was, and remains, fraught with complexity and friction. Where Chapter 5 outlined some basics of the Oikos ecosystem and the social and material conditions supporting the rootedness and emergence of a new campus building, this chapter will explicate the different frictions present as this institutional change unfolded. These descriptive findings emerged via the gestalt process articulated in Chapter 4 and then unfolds by examining each of the frictional planes in turn: 1) interpersonal and managerial frictions, 2) curricular and pedagogical frictions, 3) space and time frictions, and finally, 4) political and economic frictions. A single representative case study of a sustainability education experience at Oikos is presented near the end of the chapter to illuminate how the aforementioned frictions present in the institutional change process. The chapter ends with theoretical interpretation to analyze the discursive and political nature of sustainability education and to answer the following research question that guides the entire chapter: *How do institutional frictions shape the implementation of sustainability education?*

Interpersonal and Managerial Frictions

Figure 6.1. Sign on an Oikos classroom door (3/8/2012)

Yeah, “The Oikos Way” is like this.... When I first got here they used to use it and they’d say oh, you know, it’s the Oikos Way to try to defend some kind of loose way that they do things at times... Which is a really nice thing about Oikos, there is this sort of relaxed, don’t control everything, a lot more student focused often when we’re doing it right and it works out, and I think that, in the best sense of the word, is “The Oikos Way.” It’s a sense of community, a sense of student responsibility, sort of like a loose version of Montessori or something that creates student responsibility.

In its worst way it’s like the thing you say when just something goes completely wrong and just another instance of somebody making... like your management making the same mistake all over again. A teacher who should have been fired a long time ago still keeps their job and then that would also be “The Oikos Way.” (Teacher Interview, 5/28/2013)

As detailed in Chapter 5, the social construction and eventual physical emergence of Oikos’ new building resulted primarily from the decision-making of a small group of elite thought-leaders within the institution. This process was not without controversy on a number of fronts, and some teachers and staff members took offense to how this change unfolded at Oikos. Most of the evidence for this friction became evident via ethnographic interviews and meeting documents and was not readily apparent during early days in the field. I suspect that this had to do with my outsider status relative to the community, but

also because the interpersonal tensions operated below the surface and in the “back-stage” (Goffman, 1959) of the institutional culture.

As my early research design kept me close to these same elite decision-makers, it was only over time and through the establishment of relationships with other less-central narrators that I was able to gain epistemic access to alternative perspectives. I began to hear stories of resistance from teachers, as exemplified by one teacher who directed their exasperation toward the specific individuals central to the new building’s ideation. This teacher perceived them as running roughshod over the rest of the institution and wrote, in an outgoing report to the Oikos community, on lessons learned during their final year:

Unfortunately, the lack of open communication has resulted in a difficult past that the project is still struggling to overcome... Decision making is the area where The Common’s history haunts the school most noticeably. In the early years, only a select number of people close to the then current Head felt the freedom to initiate an open discussion about the new building. For others, it was never an option to question the assumption that the building would in-and-of-itself enrich the Oikos experience and/or propel it in a new, desirable direction. Before receiving the Foundation Grant, most hoped it was an idea that would fade away for lack of further funding. (Teacher Annual Report, Historical Document, Acquired 5/29/2013)

Or another, who relayed a perception of concern coming from some of the school’s parents as the project came closer to fruition:

I’ve been hearing more and more about from parents like just outright asking “Why are you building this barn. Why did my tuition go up \$1,500 and I’m not getting financial aid anymore and you’re building this barn?” There’s a void, there’s not the enthusiastic faculty... Not that the faculty is going out and saying things to parents because the faculty is really professional about that, but there’s this void between the enthusiasm of the faculty. There’s like a dead silence coming from the faculty on this. (Teacher Interview, 5/28/2013)

Others saw the new building as taking future resources away from the needs of existing infrastructure. One teacher articulated how frustrating it was to see their administration focus on this new project at the perceived expense to other areas of need:

All of a sudden there was like a 6 foot wooden barn [model] and all this other stuff and yet there was no curricular input. Like there was nobody in the school, not a single teacher saying we need a space, even just we need space, they were like we need a theater, we need the theater to be redone, the place is going to burn down soon. We need the science rooms, which they ended up doing. We need an air conditioner in the math hallway because it's 95° in there as soon as the weather gets warm...

The faculty treats the barn like a punch line. It's a shame and I hope that it straightens out, but the faculty is worried, the school hasn't always been in great financial shape, and even now they say that we're in great financial shape, but most of the faculty doesn't believe we're in great financial shape. We keep pulling in more and more students at a greater reduced tuition and we have bills coming due, and with the financial guys always trying to figure out how to cut this and cut that. (Teacher Interview, 5/28/2013)

This was a similar perception among some teachers too: that the creation of a new building was an unaffordable distraction from other, more immediate infrastructural, pedagogical and institutional needs at Oikos (Teacher Interviews, 11/28/12; 5/28/2013).

One administrator reflected on related resistance coming from the Upper School in particular:

So I can only speak to the upper school, but there is definitely tension in the Upper School, the feeling that this building has taken away too many resources from where it's needed in the academic program here and the building itself that needs some renovation. (Administrator Interview, 5/24/2013)

Apparently resistance was so strong at times to the project that the students created a joke group to protest its existence: S.T.A.B. - Students and Teachers Against the Barn. I heard

about S.T.A.B every once in a while from faculty members, but I never saw direct evidence of the group's existence (Fieldnotes, 5/28/2013). Apparently S.T.A.B. buttons were made, and unfortunately I was unable to procure one for this analysis. For me, the buttons, along with the existence of the group itself, existed only mythically via word-of-mouth:

Students and Teachers Against the Barn. It's like a joke among some of the Upper School kids. I know there's a lot of kids in the upper school that don't have any sense of why this barn needs to be built. They've been forced into a few things where they're supposed to plan for it and it just ends up falling flat, it doesn't work out very well. (Teacher Interview, 5/28/2013)

One of the head administrators at the time was keenly aware of this dynamic at the time and seemed to appreciate the concern while also rejecting its validity:

For a music teacher, for a language teacher, for a drama teacher, there's nothing out there that's part of their experience at the school, so to expect them to be adopters or engaged in the project is an unrealistic expectation right. So those folks I think you move them once there's a tangible addition to the school, right... You can kind of spend all your time thinking about do we have everybody engaged and that's probably an unrealistic thing. The timeline for engagement has to include when it's done, the people who were late non-adopters or late adopters, that's when they come on board, right? They're not going to come on board when it's still conceptual, right? (Administrator Interview, 2/16/2012)

This same administrator, the one critiqued by the teacher above, elaborated on this change dynamic by waxing scientific about what counts as education in a school:

It is, by its very nature, an entropic undertaking. What I expect as a kind of cultural spasm is the response, "How does that person get to do that, when I have to do this?" or "That not REAL education, what I do it REAL education" that I heard in the halls of Oikos Academy as these programs have evolved. You do get past it as a community though when the beauty of what the students accomplish comes to life, again and again. (Historical Document, Acquired 6/6/2012)

Nevertheless, and despite resistance from some within the community, others saw the benefit of the process, despite its social and interpersonal costs within the institution:

So people have rejected it out of hand which I think is very sad because [Administrator] did an extraordinary number of wonderful things for the school and dragged us kicking and screaming into the 21st century, so I'm sorry that that's how some people feel. (Teacher Interview, 5/13/2013)

One teacher who was more centrally involved in the creation of The Commons nevertheless felt that such an elite-driven decision-making process was unfortunate given the established culture of the school:

This [new building project] is amazing and really exciting, groundbreaking and forward thinking in so many interesting ways. I understand that it's not, it hasn't been done in perfect ways. We need to come together as adults though. We need to grow up and embrace this because this is a phenomenal vision of education. (Teacher Interview, 11/2/2012)

It was clear that a unique institutional interpersonal dynamic had evolved over time and that vestiges of this dynamic continued to play out as those closer to the ideation of the new building and its programs worked to support the emerging form. Others less central and tangential to the change were skeptical, if not outright hostile.⁴⁹

Change as “The Oikos Way”

During my time at Oikos I witnessed three different people occupy the helm as Head of School after the first Head (and the one who invited me into the community to study it in the first place) left to take a position as Head of a much larger private school in

⁴⁹ I note that I am methodologically limited in making this claim. A different research design and perhaps more time in the field may have explicated further depth and complexity present in this dynamic. While I am comfortable making the claim that the change process was institutionally and interpersonally stressful, the full institutional nature of this stress remains unknown given this study's methodological focus on those planning and implementing sustainability education at Oikos. Nevertheless, the overwhelming awareness of institutional friction still warrants the claim.

another state. After they left, a different administrator became Interim for a year while the board and other Oikos community members formed an *ad hoc* hiring committee to search for the current Head of School. I interviewed the outgoing Interim Head (the middle leader during my season in the field) right after they retired. During that interview I asked them to reflect on the aforementioned change dynamics that I intimated were playing out at Oikos, producing the following interview exchange:

Admin: I mean the culture is interesting.

Me: Yes, that's what I was going to ask you is, what's your sense of how transitions played out in the past, like is this just "The Oikos Way?"

Admin: Yeah it is, I mean the thing is is that ...

Me: It's so interesting how ...

Admin: It's so interesting. So first of all I think that if you were to poll the faculty, probably 98, 99% are sort of left of center Obama supporters. And people that would consider themselves really open-minded, and they resist change like crazy and I don't know if that...Honestly I don't know if that's just a human trait or if it's more so among faculties, because I think by and large, no matter how liberal we are at Oikos, schools are conservative institutions and, I mean, resist change like freakin' crazy. I mean I've heard so many times from people who would be ashamed if they stepped back and reflected on what they just said, they say things like, "I've been doing it like this for 30 years, you know, and it's worked and I'm not really going to think about it any other way." Well you know what? It's not working. It's not a robust way to do anything anymore.

Me: Yeah.

Admin: And I mean they'd be ashamed of their own words if they reflected upon them. So I mean that is a trait that I was surprised in discovering early on in the early 90's whether I was in parent council, "This is the way we've always done it," or among faculty, "This is the way we've always done it" among really liberal, open-minded people.

Me: Right, right.

Admin: So change is a real freak out, but I was going to say that in every...I mean I think I've witnessed two or three capital campaigns there. There was the art renovation, there was the middle school and library renovation and now the Barn, so I've lived through three different renovations.

Me: Right, those are the big ones that people talk about.

Admin: And at every turn when we had the art wing renovation, or brand new art wing...I mean we got from the rank and file faculty...It was the same reaction, "Are you kidding me? We're spending money on an art wing and on a glass studio when I don't have windows that close? I don't have carpeting that's clean, that I don't have air conditioning in my classroom" and ... do you know what I'm saying?

Me: Yeah, yeah, yeah.

Admin: And why are we doing this for the art wing, why aren't we doing this for everybody. So there's always tension between us and them, whoever the us and them are.

Me: Whoever the us and them are.

Admin: So innovators and traditionalists. That just happens to be what it is now and I think there's always been some tension around that but I think that this is the Oikos way: Bitch about something until it's there and then we're all going to jump in and embrace it to the best way we know how.

Me: And has that happened with the other things too, is it just part of, is it like normalized now, can people just go on their day like the ...

Admin: Yeah. I mean there's not ...

Me: Like what happens, it's like years later that just becomes part of the normal?

Admin: Yeah it's part of the normal, it's part of the school, that's where we're going to hold, I mean this is where you know, there's going to be all this wonderful new programming with hootenannies and all the civic engagement kinds of things and movies on sustainable education, movies on different things that are going on in the world with a sustainable bend. It's just going to become a part of the fabric of this school. But everybody has got to moan and groan until we get there.

Me: No I know it's just ...

Admin: I know. It fascinates. I mean ...

Me: It's just an interesting process and actually so I have a journal article⁵⁰ that's about to come out on the kind of cognitive issues at play in the hydrofracking debates, and one of the arguments we make is that the people who are resisting hydrofracking right now are actually making conservative arguments.

Admin: Isn't that funny how the course changes?

Me: Yeah right because it's change, right, it's a reaction against the change and there's something in social psychology called status quo bias, and people wrap their identifies up with what's familiar to them and so they become very comfortable in that it's safe. It's safe, right. Change is scary.

(Administrator Interview, 7/1/2013)

The administrator was attempting understand how institutional change unfolded during the evolution of Oikos Academy over time. This person perceived their colleagues as holding progressive political tendencies while operationalizing a reactionary conservatism when it came to institutional changes. It is yet another example of the institutional aversion to change that played out as Oikos Academy shifted goals to accommodate sustainability education.

In Chapter 5 I detailed how the institutional change process occurred via an assemblage of elite decision-makers coming together to envision and organize the construction of a new building on the Oikos campus. This was an exclusive process, first starting with a few interested participants who were innovating in their own particular, identity-supportive ways within the pre-existing institutional structure and with the

⁵⁰ Henderson & Duggan-Haas (2014).

blessing of the board of trustees.⁵¹ Ultimately, this process, while exclusive, was productive in the sense that a new educational building now exists in the world, and members of the Oikos community are now tasked with bringing forth a particular vision of sustainability education. And yet, it is *a* building on a much larger school campus, and its existence occurs relative to that larger community. Some members of this community supported its construction. Others did not. It is within this fraught social reality that The Commons and its sustainability education program emerged and now exist.

Moving Toward Greater Inclusion

It was clear from fieldnotes that others at Oikos were having a similar engagement experience with the project as our institutional trajectories unfolded over time. For example, early meetings involved some of the few key engaged participants referenced in Chapter 5, and notably, few students (Fieldnotes). As time progressed, the dynamics of planning meetings also evolved, as more and more students, teachers, administrators and community members became engaged with the process (Figure 6.2). Participation was increasing as administrators worked to bring more and more Oikos community members into the fold. One administrator, realizing that the initial planning

⁵¹ As previously stated, I entered the Oikos community via this same elite process and had to navigate these waters during the three years of field experiences. Early field experiences involved attending planning meetings held by some of the project's most significant narrators. I gained access to the Oikos community and culture via interactions with those same elites already shaping the vision of the new building and its sustainability curriculum. During our initial meeting to establish the research project the Head of School at the time even stated that he was interested in establishing relationships between this project and the local university community in order to document the transition (Fieldnotes, 3/14/2011). My physical presence at Oikos represented even more elite decision-making. This was not obvious to me at first, as I was struggling to simply navigate extremely unfamiliar terrain by just accounting for the simple who, what, when and wheres of data collection. However, over time I began to know other members of the community who were tangential to the project and I was increasingly welcomed. This increased my access to other non-central members of the community, which in turn increased my exposure to the "back-stage" institutional interactions.

process had been exclusionary, admitted the intentionality of the widening circle during an interview:

Me: This may be a simple question, but what have you learned from that, from this?

Admin: What, the process of the Barn?

Me: Yeah I mean taking over and navigating that, like what are your take-aways from that? It's a tough question maybe.

Admin: I mean obvious ones, but obvious ones, I mean in the sense that it is so important to have multiple voices at a table. I mean wow, if you get out in front of the troops you're going to get shot in the back. You need to be bringing the troops along with you every single step of the way and empower them, and also put financial resources there for them to develop programming and ... but I think it was also part of what I had to do this year was offer reassurance that the program wasn't going to be 100% developed September 1st and not to sweat the small stuff. That as long as we are moving forward with this front and center. (Administrator Interview, 7/1/2013)

This leadership stance was evidenced within the expanding committee structures themselves as well. Right before the first Head announced his departure and before the time that the Interim Head took over the leadership position, a new Barn Steering Committee and a related set of subcommittees was formed by the school's administrative leadership team (Figure 6.2).

Commons
Steering Committee Meeting
January 24, 2012
Kick-meeting

Mission and Goals of the Steering Committee
To have a sufficient number of people who understand the big picture of the project and who take responsibility for the iterative analysis necessary for a high quality design-build.

Agenda
Where are in the project cycle and how do we determine an initiation date

- History
- Milestones

Organizational structure (see included floor plan)

Steering Committee		
Physical Space--Microgroup	Programs	People
Center for Mindfulness and Empathy Education, CMEE	Hospice, Empathy Education	
Center for Civic Engagement, BCCE	Civic Leadership, Horizons, SummerLeap (GRSLA)	
Science Center	7/8, US Biology and Env. Science, Citizen Science	Science Dept.,
Projects Space	tbd	Art Dept.,
Fabrication Laboratory	tbd	Art Dept., Science Dept.,
Greenhouse	Vertical Agriculture, Food Production	Food Committee
Systems & Data Room	Student management of building	
Flag Hall	Banner Affinity Groups	Development Office, Alumni
Center	Student Center, Cafe	Students, Faculty, Parents

Figure 6.2. Administrative planning document from early Commons Steering Committee meeting. (1/24/2012)

Steering Committee meetings continued into the Interim Head's tenure and I was invited to join this main Commons Steering Committee, as well as the Living Building Sub-committee which met monthly (represented in Figure 6.2 as "Systems and Data Room" at

the time). The Steering Committee met more or less bi-monthly and these meetings frequently included many new faces (at least to me anyway) in the planning process.⁵² For the first time I observed sustained student participation in meetings, the inclusion of interested parents, and outside contractors (e.g., electrical, mechanical, art designers, architects) as the meeting content demanded their attendance on any particular day (Fieldnotes, 3/4/2013, 3/28/2013, 8/5/2013). While the conceptual parameters of the new building were already firmly established, the presence of new voices at the table signified a growing circle of participation within the Oikos community.

As the project became a closer social and material reality, more and more members of the Oikos community began to engage with its emergence, despite some lingering vestiges of the inclusion/exclusion tension. After leaving the field to write up these findings, administrators and teachers tasked with implementing the new building were still attempting to deal with the historical institutional social dynamic. In one of my last ethnographic interviews in the field, one administrator described the hopeful, while still stressful, practical reality of preparing the Oikos community for embodying the new building:

I struggle a little bit with “present” still. We’re still not where we need to be in terms of student involvement, in terms of everybody being on the same page. I think there’s a lot... still in the place of like a few high up administrators processing immediate questions about getting the building up and running. So that’s fine, I understand that. I’m optimistic about next fall when we have the 9th

⁵² Many of these meetings were digitally audio-recorded and fieldnoted. They remain only partially analyzed for this dissertation study however, as the content of these meetings frequently involved the negotiation of minute details in the design of the building itself. Such a fine-grained analysis of the actual building construction process may figure into future analyses, but they are excluded from this study.

grade class in there, we have the science classes in there. We know kids are going to be in there. We know they're wrestling with some important questions and we also know the administrators are going to be more hands off because they're not worried about these immediate pressing questions, it's more educational stuff and I think they're going to be back to worry about more of their day job things and then that's going to leave a lot more on the kids' plate. So I'm very optimistic about next fall. (Administrator Interview, 5/24/2013)

The building was originally planned to open in the fall of 2013 but its formal opening became delayed due to weather and construction issues (Fieldnotes, 3/4/2013). It remains beyond the purview of this study to examine how the social and institutional frictions play out at Oikos heading into the future, as that is a future study with a different suite of research questions and methods.⁵³ Regardless, a new building now exists on the Oikos campus. It will be embodied in one form or another and with differential participation among the members of the community.

An assemblage of elite decision-makers gradually expanded their membership over time toward greater inclusivity once the building vision was closer to fruition. This mitigated some of the sociopolitical tension within the institution. However, vestiges of this elite decision-making process remain in the school culture and administrators are attempting to deal with them as they move forward. How they navigate these social dynamics as an educational community remain unresolved at the time of this writing and are one recommendation that I have made while presenting this research for their future use.

⁵³ Or, perhaps future action research work by those within the Oikos community. I have worked with a few teachers and administrators to discuss what this research might look like into the future and expect to continue acting as a resource for this community based on their needs and as my availability allows. This is an intentional stance toward this community in the name of research reciprocity.

Curricular and Pedagogical Frictions

Another dominant institutional friction that emerged in this change process was about what fundamentally “counts” as education. Recall from Chapter 5 that the construction of the new building, The Commons, literally involved codifying previously placeless institutional programs into the built physical infrastructure of the Oikos campus (Figure 6.3).

Figure 6.3. Final transverse schematic of building floors and programs. From display in Oikos main entrance. (4/18/2013)

Of the spaces in the new building, the first and third floors now house dedicated areas for programs that existed in the margins of the pre-existing building. The sustainability teacher’s workshop space was literally tucked into a corner room behind and underneath some stairs in the older school building. This room also contained water pipes and physical plant infrastructure. Hot and cold water pipes were scattered among drill presses

and wood lathes in this room (Figure 6.4). Students were frequently jammed into crevices as they worked on various building projects in one form or another, from Adirondack chairs to model windmills (Fieldnotes, 1/11/2012).

Figure 6.4. Image of Sustainability Teacher's Former Office (1/11/2012)

The sustainability teacher now has his own curricular space to construct projects with the students and other teachers in both the workshop and flexible project spaces in The Commons (Figure 6.5).

Figure 6.5. New sustainability teacher instructional space in The Commons. Student (de-identified) using bandsaw to make new homework folder for one of his classes. (1/10/2014)

Similarly, the Center for Mindfulness and Empathy Education (CMEE, which includes the hospice program under its umbrella) was also tucked into a storage room near, and in the corners of, the founding English teacher's room in the older school building. Due to increased grant funding and the construction of the new building, these staff members also now have their own dedicated curricular space (Figure 6.6).

Figure 6.6. Image of Center for Mindfulness and Empathy Education (CMEE). Procured from the building’s architect and used with their permission on 2/27/2014.

The Center for Civic Engagement (CCE) did not even exist in the older building and is in the process of being developed based on the aforementioned desire to expand what it means to be an Oikos graduate. Like the others, this project now has its own space (Figure 6.7) and both programs are referred to as “Centers of Excellence” in website advertising (School Website, 12/21/2013).

Figure 6.7. Image of Center for Civic Engagement (CCE). Procured from the building's architect and used with their permission on 2/27/2014.

The only spaces that are remotely similar to their prior forms exist on the second (middle) floor of the new building. These are two science classrooms, one for the Upper School environmental science teacher (Figure 6.17) and the other for the Middle School science teacher. Both teachers have vacated their previous classrooms to move out into these new spaces.

Each of the new building spaces, along with the overall educational philosophy that guides the building, are succinctly described in a school press release announcing the one million dollar lead gift. The complete nature of an early (2011) press release document makes it worth quoting here in full:

The Commons will be the first K-12 education space in the country to offer students multiple dimensions of education around creating a sustainable future. The 14,000- square-foot structure earns its status as a "living building" because it will generate its own energy, heat and cool with renewable nontoxic resources,

capture and utilize water and carbon in its greenhouse, and operate efficiently using students as the "brains" or controls for managing its operations. The \$3 million project was funded by a \$1 million lead gift from the [Donor Foundation Name], as well as fundraising and donations to Oikos Academy. The Commons is expected to be complete by September 2013.

"When complete, The Commons will support a rich social curriculum that puts our students in charge of resource use and waste production. Students in the building will work toward a net-zero operation in energy, water, and carbon dioxide," said [Administrator]. "We'll be able to offer our students a unique and creative educational experience that challenges them to think differently about science and our environment as a whole. This is an experience they won't get anywhere else in our region."

The Commons will be constructed in the barn located near the athletic fields on The Oikos Campus. It will be home to three new educational resources at the school, including the Center for Civic Engagement, Center for Mindfulness and Empathy Education (CMEE), and a state-of-the-art Science Center.

The Center for Civic Engagement will focus on programs that put students, faculty, and the institution in positions of civic leadership-expanding Oikos's leadership in public-private programs. The CMEE will support emotional literacy among students, and build upon Oikos Academy's Hospice Outreach Program, an elective course where senior students volunteer to provide end-of-life care as full-fledged caregivers at nine hospice care homes in the area.

The Science Center will focus on student-led programs that welcome broad participation and collaboration in tackling authentic science projects, which will join science and civic responsibility to tackle current science problems. In addition, Projects Space - a creative problem solving and design program - will be housed in the bottom floor of The Commons. This hands-on area will provide students in grades K-12 with the space and support necessary for design thinking and student exploration focused on bringing ideas into reality.

Plans include a greenhouse and systems for carbon sequestering, a green wall, and solar chimney to naturally regulate the temperature in the building. Solar panels will be installed as well as a geothermal system and variable refrigerant flow air source HVAC system, rainwater collection, and solar hot water heating system. Systems will be controlled and monitored from a central control room operated by students.

Oikos Academy selected local organizations to design and build The Commons. [Name] was chosen as the designer for the project, while [Name] Construction and architecture firm [Name] will build The Commons using sustainable practices and material. (Oikos Academy Press Release,⁵⁴ 10/27/2011)

Variations of this description emerged in other data sources as well (Alumni Magazines, 2012, 2013, 2014). As I showed in Chapter 5, the envisioning of the building's physical and curricular spaces materialized as an assemblage between particular faculty and administrative members via financial and leadership support from donors and the the board of trustees. Their visions are reflected in the new physical structures and curricular visions of the new building described by the above datum.

The construction of The Commons and the codification of select curricular programs highlights an institutional friction point. By showcasing new transdisciplinary programs in the new building, a message is sent within the institution that some aspects of education “count” more than others. That is, the institution is changing its focus by valuing some programs and not others in the construction of a new building. The valued programs (the flexible project space, the CMEE, the CCE, the green wall, the net-zero curricular goals, the citizen science experiences) are presented as cutting edge curricular experiences that cannot fit within the traditional confines of the “normal” institution, either physically or symbolically. Science classrooms are the only traditional spaces that translate into the new building, and even these are now presented as interdisciplinary, with descriptions that relate them as necessary to the larger interdisciplinary mission of

⁵⁴ Lightly edited to preserve anonymity.

the new building. This potentially sets up an institutional situation when some aspects of curriculum are seen as central to sustainability education and others are more peripheral. As mentioned earlier in this chapter, Oikos members who were more central to the construction of The Commons were aware of, and sensitive to, this frictional dynamic and we working to mitigate its effects as the building became a reality.

An Emerging Vision: Managing Nature, Selves and Future Unknowns

While the building has particular spaces with specific curricular goals, one of the main narratives guiding the formation of a “social curriculum” of the building was to place the students in decision-making positions regarding the management of both resources and people in the new building:

We’re doing rainwater capture in the barn yeah, so it will be treated somewhere. This the mechanical and the control room, this is the center part of where the social curriculum in the barn plays out technologically right, so that the data for what’s going on in the barn can be displayed all over the place, right, we can wire that all over but here this is where we want to put kids in control of the behavioral side of decisions they make, how the barn is doing with the net zero challenge, right, we want it to be net zero in energy, water and atmosphere. That’s where all the systems of the barn will tie in and we’ll be able to present to kids a written report of what’s going on this month, we’ll be able to show the visuals of, you know, so that we can have the group that’s trying to implement reactions that will go on down here. I imagine the larger discussion of how we’re inhabiting the barn will go on up here. (Administrator in Planning Meeting, 3/14/2011)

This decision-making process is to be facilitated via the building’s “Control Room” (Figures 6.8 and 6.9) that utilize digital technology to aggregate and display both real time and historical data on the performance of the building.

Figure 6.8. Looking into Control Room from lobby of ground floor. (1/11/2014)

Figure 6.9. Control room curricular vision on poster from official opening of The Commons. (1/11/2014)

This educational approach mirrors the environmental education philosophy and practice deployed at the Adam Joseph Lewis Center at Oberlin College in the state of Ohio, United States. The Adam Joseph Lewis Center is a famous environmental education case study in intentionally using the educational building itself as a curricular agent via the quantification of natural resources, rendering them visible for discussion, and debating social and individual action accordingly (Orr, 2002, 2006). This story figured into the original Commons planning and was cited occasionally during meetings, as well as in planning materials (Figure 6.10)

Figure 6.10. Example of Dr. David Orr's educational influence at Oikos. Image from administrator presentation to potential funders in the Oikos community. (1/24/2012)

Like the Adam Joseph Lewis at Oberlin, the Oikos Commons was built to be responsive and to intentionally interact with the local environment (Architect Interview, 8/12/2013), and the building contained a number of systems (e.g., energy, water, heating)

that interact within the surrounding built and other-than-human environment. Over and over again I saw the new building, including the student management vision, presented as a “model for education in the 21st century”:

In 2011, Oikos will break ground for a new building on campus - a barn that will bring our school to the forefront of 21st-century education for a sustainable future and connect us with our humble beginnings. Oikos is positioned to become a national leader among independent schools as we take on the challenges of a net-zero building and, as is our tradition, put the responsibility of achieving a minimal operational foot-print in the hands of our students.

But our new barn won't stop with a vision of environmental sustainability. The Oikos Barn will go beyond the scope of the environment to provide visions of sustainability that include social and cultural preservation and transformation, responsible local and global citizenship, an understanding of the dynamics of replenishable systems, nature and ecological principles, and the creativity that underlies inventing solutions to the problems of our future - the multiple dimensions of sustainable living. (Excerpt from Oikos Alumni Magazine, Summer 2010 Edition)

The new building was sold as a place where students would deal with the unforeseen nature of the future:

The need to roll up their sleeves and tackle the challenges of the 21st century lies ahead for our future graduates. As Bill [an alumnus] has reminded so many of us over the years, engaging ourselves fully in our world is essential to living a thoughtful life...it is an attitude future generations will need in the face of so many unknown challenges. (Excerpt from Alumni Magazine, 2010)

Early adopters and promoters of the project often spoke of uncertain future environmental and social conditions and the need to begin dealing with this educationally:

We're preparing our kids for a world without fish. (Administrator, in Fieldnotes, 9/19/2011)

I mean that the survival of the planet, that the survival of mankind depends on our thinking about this in important ways, taking action. (Administrator Interview, 11/9/2011)

Well I find it [the sustainability program] appealing because it aligns with a lot of my visions of what education is, but it's that it has a level of, in my view, kind of some appropriate urgencies as far as issues that our world are facing. Not an Armageddon type vision of like, "This is all going to end in ten years and we've got to go at it," but some urgency, you know. Shit's messed up and we've got to help kids be the people that, be the leaders that they're eventually going to need to be as they evolve into adulthood and allow them to be equipped with the knowledge and the skills and the attitudes to really take on those challenges and really create change in impressive ways, in ways that help everybody including themselves and are environmentally sound in their unfolding and all the rest of it. (Teacher Interview, 3/1/2012)

Even I played into this dynamic when I was interviewed and was quoted in the school's alumni magazine on the need for this type of educational programming:

"We own it to the kids to be honest with issues in this world," Henderson says. "Learning is done when people can relate. Oikos' unique model of education is preparing kids for what's happening now; it's action-oriented. (2013 Alumni Magazine Excerpt)

In the face of perceived future environmental crisis, many at Oikos, including myself, promoted the need for a new type of educational experience. Part of this adaptation involved the rendering visible of natural resources, especially energy, so they could be more efficiently managed. This represented a means of controlling future uncertainty, which was stressful for participants. Nevertheless, this new curriculum was positioned as necessary, with the traditional, pre-Commons Oikos curriculum deemed as important but insufficient for dealing with future ecological risk and decay.

While environmental science concerns were certainly at the fore for some in

their reasoning, for others it was about something deeper - spiritual and ethical - that demanded shepherding natural resources in the face of crisis. For example, each year the Center for Mindfulness and Empathy Education community invites local Buddhist monks into the school to create a sand mandala over the course of a few weeks in the school's main entrance (Figure 6.11).

Figure 6.11. Oikos Mandala. From school website on 1/11/2014.

While standing in front of the mandala with the school's sole sustainability teacher, I asked him how mindfulness was related to sustainability, but when pressed he struggled to articulate a connection and stated that he "needed to think about it some more" (Fieldnotes, 3/23/2012). I struggled to make the connection too myself, so I brought it up to the school's hospice teacher in an interview, which produced the following exchange:

Me: So I don't know if this is a good question or I'll try to think about how to say this but... so I was walking with [Sustainability Teacher] one day when I was trying to get a sense of what was going on and he was trying to make the connection between the Mandala and the monks and sustainability and, you know, I've been in the [Head of School]'s office where there's the empathy education as one of the tenants of sustainability and I'm trying to see the connection, like what is the connection, is there a connection?

Teacher: That's an interesting one.

Me: You'll be out in the barn right, or The Commons is it's being called now, which is this kind of complex thing that's happening. How does that play?

Teacher: I think cyclically in a sustainable idea that things are, we create a sustainable environment within which things can flourish and grow, knowing that there's a beginning, middle and an end, but a cycle that moves along, right, growing cycle or whatever. The Mandala is certainly an example of, certainly metaphorically, of taking something and creating beauty and appreciating it for what it is, seeing it for what it is and at this moment but trying to attach to it to possess it or in some way keep it but having it there and at some stage it becomes dismantled and given back with the idea that nothing is permanent.

So it is a reminder to us for us to appreciate things as they are right now because in the end we ourselves are not permanent beings, thinking that I'm going to wait and not do this, this, and this until I retire I do this, this, and this, well you may or may not get there and if you do you might not be healthy. I mean are you living, how much of your life is being lived in preparation for living your life you know, and how much are we just living and saying well we are living we're not how much, no every moment is a breath in a life.

So the Mandala, the one we do is, there's many different ones, they're all involved in empathy and compassion but this one is the Mandala of compassion and what that is is that [Monk's Name] says prayers in the morning and his meditations before he does anything and that is to instill in himself his mindfulness and as much empathy that he can build up it's called Meta, you know this loving kindness so that when he goes to start and does his work every grain of sand that is put into this symbolically and otherwise, all his sweat equity, every drop of that and every grain of that is done in a kind way with the idea that he's expressing loving kindness for everyone. So when the piece of art is finished and then the kids come out and they start to push it all together ...

Me: Yeah I saw that last year.

Teacher: They gather it all and then it's brought out and poured into the creek with prayers and all with the idea that all of that loving kindness that is resident there is now not to be kept by us on shelves as urns like a burial right, it's to be given out so that it can go forth and giving it out with asking nothing in return and that's part of the sustainable sort of a thing I think: that we want produce and we want cash crops because again it's a business. So okay, we want to make this and we want to feed people, we need to be fed, but also the drive for the major Monsantos of the world and all that is to make a huge bottom line. So they're going to do whatever they can and hold patents and other things from other people, drive out the competition to do what they're doing, "Yeah you get fed if you can afford it, but also the world gets hurt because well if I had fertilizer I'd do this and do this, my yield goes up by 50%" or, "Well yeah there's a problem with the water, but well we can deal with this let's just keep going." We want really good pictures from Kodak, well okay so they were allowed to pollute the river and still do and you know, I mean we say well that's the trade-off for business, well okay.

Sustainability says wait a minute, but how sustaining is this idea of doing? We are feeding people, but at what cost, what is the cost? Here in the hospice program in particular and especially with Mandala, one of the things that we try to instill or at least bring into consciousness is that it is not only possible but it is necessary for a peaceful society, for people to have a natural sense of being able to provide assistance and support, love and kindness for somebody else just simply because that support and that loving kindness and compassion is needed and is wanted, rather than "because if I do this I get that."

I pressed for more information on the civic and spiritual dynamics of this connection

between sustainability, capitalism, education, consumption and the teacher's conception

of a just world and the good life:

Me: Yeah my question was going to be: do you think society can do that? Society right...whatever that means.

Teacher: I don't know, I don't know and I sometimes think that I don't need to know. I know that we can aspire to it and I think if more people aspire to it there will be more good deeds and more positive things out there just as if that's what we want to do. Will there be 100%, nothing can be because there's that Yin

and Yang situation, because we're human you know. But I think that we can aspire to that and if it's in our interest somehow, if we can redefine that what does it mean in our interests but make it more global, more community, you know, that it's our obligation as a community to do certain things rather than this rugged individualistic "me, myself, that's my stuff." I think we have a better shot at less conflict and still try to keep people's pride up there in terms of, in a good way. of "I really feel good when I've really done my best, you know, as long as it's not at someone else's expense."

For this teacher in particular, the school's emerging sustainability focus provided an opportunity to think about the implications of one's consumption, pollution, and other related dimensions of consumer capitalism and the construction of a good and just way of living for the future. This vision was reinforced by official descriptions of the project in Oikos communication material:

Figure 6.12. Image from Oikos brochure promoting new building. Early design. (3/19/2012)

For still others, the higher purpose in the educational vision was about greater civic engagement in the world - that the halcyon days of the traditional preparatory curriculum were simply not enough. During one interview I asked an administrator to

explain why the management curriculum in The Commons was necessary. What did it provide that the pre-existing school could not already provide? They responded:

The Commons is supposed to be a living building which in our case we mean to mean that it will be something that we can manage. We can manage the systems of it and students will be able to manage the systems of it in a way that allows us to minimize the carbon footprint. You can imagine a scenario in which you have kind of old-fashioned environmental sustainability goals, namely net zero sort of carbon impact, and the question of how to get there morphing into students working through sort of democratic institutions with the other students to affect the change they want.

So alright everybody we have to have a town meeting because last month we ran way over in this particular area of The Commons. At the town meeting you might have according to a Robert's Rule sort of a timing format, proposals for how to address it, a vote on how to do it and then some sort of implementation plan. So to me that's a sort of micro granular example of the interrelationship.

The broader philosophical relationship is just a pretty dreamy high-ended stuff about what does it mean to live well, you know, and I really think that Jaime Cloud takes that question to really inform what she means by sustainability, I think. I think probably other writers do the same thing. So to leave a world that works and which will continue to work generations into the future, what are the institutions that you set up that will cultivate that, you know, absolute monarchy is a bad one, right. Participatory democracy is a good one. So it's really just kind of broader, at least in my mind, really broader dreaminess about what it means to be an educated person and to leave a livable world behind. (Administrator Interview, 2/13/2012)

Again, everyone involved in the project tended to speak about their unique dimension of the project - the sustainability teacher about the need for students to design their way out of future problems, the hospice director on the need to mindfully examine one's place in the past, present and future, with administrators working to tie all of these threads together into a coherent vision and narrative. The original Head of School originally responsible for shepherding the project in its early days tied the various parts together:

It's not just the technology side, it's not just environmental, we're also talking about the role of empathy, right, in terms of being a global citizen. We're talking about the role of civic mindedness in democracy. (Administrator in Building Planning Meeting, 3/14/2011)

At the heart of all of this complex vision is a common thread of future uncertainty and the need to begin preparing both students and the institutions for dealing with these conditions. I play into this dynamic as well in this very dissertation, as I reference the shifting goals of education in light of climate change and environmental and social conditions. For members of the Oikos community involved in shifting the institutional goals, dealing with these conditions involved the construction of a building capable of facilitating new and different educational experiences: whether by the quantification and management of resources within the building or through an increased ethical and civic engagement with both self and community.

Designing Future Leaders

In addition to creating managers and future ethical environmental stewards, one of the main goals of the emerging education was to produce students capable of embodying entrepreneurial problem-solving traits and skills, including the ability to provide for both self and community at a practical level. For the sustainability teacher, this meant engaging students in a “maker culture” (Fieldnotes, 9/27/2012) rooted in principles of design thinking (Figure 6.13).

Figure 6.13. Front of sustainability teacher's old office door. (9/27/2012)

The dynamics of this vision were both forward and backward looking at times. Official school media referred to this educational stance as fostering “Googley” and “innovative” thinking (Alumni Magazine, 2012), reflecting the modern Silicon Valley technological innovation zeitgeist. For the sustainability teacher, innovation was sometimes as simple as building a chair or table by using one’s hands and reclaimed building materials, or, by returning the school’s food sources to the local scale via the construction of the micro-farm (Teacher Interview, 3/1/2012; Figure 6.14).

Fostering...

- Systems thinkers who are reinventing the world
- Problem solvers with empathy and awareness of real and important needs
- Collaborative thinkers/designers with the knowledge, skills and attitude to support participatory processes.
- Equipped, impressive, and effective agents of positive change.
- Excited, enthusiastic, and active learners.

Figure 6.14. Powerpoint slide from sustainability teacher presentation on the bottom floor of The Commons (11/2/2012).

Reflecting on the need to provide this kind of education for the future, and the previously mentioned institutional stress that such curricular change engendered within the institution, this same teacher was nevertheless unapologetic about its importance:

If we're not able to give kids the ability to kind of, to take on real roles in understanding problems and in working collaboratively to creatively problem solve answers, then we're not educating for the 21st Century, and I'm unwilling to fall into the book smart trap of college prep schools and the glorious nature of an education and we will push kids to think far more deeply and dynamically about these issues, and we will produce graduates that are on the line of being real leaders in creating change around this stuff. (Teacher Interview, 3/1/2012)

Again we see the emergence of a view that the traditional way of educating (at least at this institution) no longer works and that an alternative vision is necessary given the needs of the present and future. The resulting alternative vision is complex, spanning across science, engineering, ethics, civics and the environment, among other fields. This vision is then parlayed onto the design and vision of the new building, The Commons.

During the official groundbreaking ceremony for the building, the acting Head of School described the totality of the project:

In the Commons, we are taking on the challenge of a net-zero building and - as is our progressive school tradition - we will put the responsibility of achieving a minimal operational footprint in the hands of our students. The Commons will include a greenhouse and systems for sequestering carbon, a green wall and a solar chimney to naturally regulate the temperature in the building. Solar panels will be installed along with systems for rainwater collection and a solar hot water heating system. The Commons earns its status as a living building because it will generate its own energy - heat and cool with renewable - non-toxic resources - capture and utilize water and carbon in its greenhouse - and operate efficiently using students as the brains or controls for managing its operations. Systems will be controlled and monitored from a central control room operated by students. The Commons will demand that the Oikos students keep a careful eye on its systems to be sure they have the energy needed to power lights, equipment, and to heat and cool the space. Students will have multiple opportunities to democratically decide how to inhabit this space—simple decisions such as deciding whether to keep the temperature at 60 degrees in the winter and encourage their peers to don sweaters. These discussions will become a part of the daily life in the Commons. (Interim Head of School comments at The Commons Groundbreaking Ceremony, 11/26/2012)

Notice again the positioning of students as “the brains” for managing the building and its operations. This is a managerial logic and couples with the aforementioned entrepreneurial logic of making one’s way in risky conditions. Such a curriculum is necessary because the traditional methods are perceived as insufficient for attending to the magnitude of issues facing students in the future.

The Commons therefore represents the physical manifestation of a shifting vision in the goals of education in the 21st century for this school. Among those promoting this vision, a concern exists that the current and traditional educational practices are no longer enough given the state of the world. The educational solution, for this institution,

involves learners and teachers shifting focus toward greater: a) civic engagement, b) spiritual engagement and c) physical engagement with the material dimensions of life. The Commons is seen as a place where this ethical vision can become operationalized. Again, The Commons is *a* building on the Oikos campus. Whether and how this new curricular vision integrates with those members of old school infrastructure remains to be seen and is a future challenge for the community.

Space and Time Frictions

The Commons' aesthetic and architectural form is one of the most obvious frictions at Oikos in both the manifestation of the new building and in its related curriculum. Recall from Chapter 5 that the design of the new building involved bridging high modern and emerging technologies (e.g., vacuum tubes pioneered via the United States space program and a variable refrigerant flow HVAC system) with more mundane and "old-school" technologies (e.g. old barn beams for structural support, concrete slabs as passive heating, alignment of the building to maximize relationship with the sun's path). The integration of old and new technology was an intentional design choice on the part of the building architect:

So there's a combination of ancient dumb technology and high tech technology and you have to kind of find that balance and I think Oikos Academy is doing that, they have an array of old and new stuff and that building they're building for \$250 a square foot. (Architect Interview, 8/12/2013)

One can also see this aesthetic preference in early design representations of the barn itself:

Figure 6.15. Early building design and quote from administrative presentation (3/14/2011).

The “old meets new” dynamic was present even before the construction of the new building, as the institution decided early on in this change process to retrofit their old energy technologies with more efficient models (e.g. cleaner natural gas co-generation units, replacing lightbulbs). These modernization decisions were coupled with the sustainability teacher’s passion for “returning to the farm” (Interview, 3/1/2012; Figure 6.16). For him, progress involved conserving knowledge that was at risk of being lost, and localized farming practices and technologies provided an avenue for satisfying this desire:

Figure 6.16. Sign on main gate of Oikos Micro-farm. Note that progress is positioned as entering a farm setting. (6/5/2013).

The “old meets new” cultural aesthetic was also convenient for Commons fundraising, as it allowed the school community to index past years in the school’s history, which then aimed to stimulate alumni nostalgia:

The Barn is more than just a building - it's a connection to our past and a promise to our future. The physical structure will remind us of Oikos long ago, when it was situated in a converted barn on this very land. (Communications Director, excerpted from 2010 edition of Oikos Alumni Magazine)

A celebration of our founding and history is one rationale for re-raising the barn; it connects our past with the present. But there are equally if not more compelling reasons to do so that are essential for Oikos' future. The 21st-century version of our new barn will be at the forefront of education spaces, nationwide. The programs housed within merge timeless elements of education such as project-based learning with emerging ideas such as education for a sustainable future. (Administrator, excerpted from 2010 edition of Oikos Alumni Magazine).

The actual physical infrastructure also represents this aesthetic form (Figures 6.17, 6.18 and 6.19)

Figure 6.17. Image of The Commons exterior. Note classic barn structure juxtaposed with metal outer shell and solar chimney structure image right. Procured from the building's architect and used with their permission on 2/27/2014.

Figure 6.18. Image of environmental science classroom (1/10/2014). Note visual aesthetic of VRF air handling technology next to barn wood. Procured from the building's architect and used with their permission on 2/27/2014.

Figure 6.19. View down Flag Hall that connects the old school to The Commons. The plan is to line this hall with previous years' class banners. Image procured from the building's architect and used with their permission on 2/27/2014.

Walking down Flag Hall literally situates the traveler as moving from the old school and into to the new, futuristic (yet old) space. Along the way the walls are to be lined with class banners from previous Oikos class years. One achieves the sense that The Commons represents a leap forward into addressing future concerns while also holding fast to past traditions. This cultural aesthetic is represented in both the physical and curricular designs that shape the construction of The Commons.

Localizing the Global and Making Present Solutions

In another way, the vision and construction of the sustainability education program and its new building represents the internalization of external, future and distant existential concern into the local geographic scale and present timescale. One observes this in the aforementioned curricular positioning that situates the building as necessary for solving conditions of present and future uncertainty. The sustainability teacher expresses this institutional desire in his celebration of local culture (Figure 6.20) and in his desire to engage students in creating locally-focused solutions to problems.

Figure 6.20. Image on sustainability teacher's door (5/9/2011).

The Commons building, and the imagined lived curricular experiences contained within, then represents an educational community attempting to alter their campus to begin locally dealing with conditions of global future uncertainty. More detail on this particular friction is described later in the case study section of this chapter.

Political & Economic Frictions

In addition to the aforementioned vision of a more appropriate education for the 21st century, it is worth noting that one of the main reasons for constructing the Commons was the financial sustainability of the institution itself. Remember that Oikos Academy is a private school and thus must compete for students whose families or guardians generally have the ability to choose their educational institution. Interviews with Oikos administrators evidence the desire to build a showcase program to draw students to the school:

We will grow programs of distinction, such as our international hospice corps, and reinforce Oikos fundamentals such as a commitment to a student-led democratic process. Our School in a sense has come of age, as much of what is considered essential to an Oikos education is our commitment to the creative process, individual responsibility, and in-stilling a life-long love of learning - now widely recognized as the desired outcomes of an education for the future. We are in a wonderful position from which to continue our tradition of bravely embracing leadership in new education opportunities. (Administrator, excerpted from 2010 edition of Oikos Alumni Magazine).

This desire is reflected in Oikos marketing materials, and increasingly so given the recent official opening of the building:

- Faculty-student advisory program guides students through academic and social development.
 - 100% of graduates go on to college. Recent matriculations to Yale, Dartmouth, Pomona, Case Western, NYU, Vassar, Carnegie Mellon, Cornell and Rhode Island School of Design.
 - Award-winning lunch program features locally sourced food and own Micro-farm produce.
 - Middle School green science building breaks ground 2011.
 - Class trips, gamelan, Chinese language & culture, glass-making, fencing, robotics, boat-building.
- Curiosity | Creativity | Passion
- \$2 million in financial aid awarded annually.

Figure 6.21. Description of Oikos programs from marketing postcard. Note celebration of elite post-secondary institutions, the Micro-farm and the green science building. (2010).

Figure 6.22. Building announcement on school website. Note text image at right: "This is an experience they won't get anywhere else in our region." (1/4/2014).

Figure 6.23. Public art donation from Oikos Academy in local shopping complex. Note Dr. Seuss' Lorax theme design selected by school members to represent their school. (9/3/2010)

Or, as the Head of School at the time summarized during the official groundbreaking ceremony:

The Commons is a 21st Century barn that will house a cutting edge educational experience for Oikos students - dedicated to creating a sustainable future. There is no other building or educational program like it - anywhere! (Head of School comments at The Commons Groundbreaking Ceremony, 11/26/2012)

Situating this school appears to be working, as school leaders report that the school has weathered the recent economic downturn without declining enrollment and that they now keep a waiting list for admission in the Upper School (Administrator Interviews, 7/1/2013, Local Business Journal Article, 11/15/2013). There is clearly a market for this type of education among the surrounding area, and the local business journal highlighted this trend as the building neared completion (Local Business Journal, 11/15/2013). It is clear that part of the reason, although certainly not the only one, for building The Commons was to increase the visibility of the school and to promote it within the local educational market.

I also note that the addition to the Oikos Academy campus was not without local conflict. When the one million dollar lead donation was announced to the public, a number of local news websites reported on the subsequent press conference and groundbreaking event that occurred in tandem with the unveiling of this donation. This produced some passionate responses from some in the local community. In a letter to the editor in the main local paper titled “Economic disparity seen behind the headlines,” one resident from the same town as Oikos wrote:

Last week was quite a week for news. I read that [Donor Name] has given Oikos Academy, a local private school, \$1 million. The already privileged children get more. And the very next day, I read that a 2011 report on children in our County finds that kids are worse off than they were 10 years ago "despite the fact that many problems kids face are preventable."

I'm sure there is something gratifying about having a building named after you, but I've been thinking what \$1 million could do for proven programs that address issues that are helping the urban poor break the cycle of poverty. Imagine what \$1

million would do for the YMCA, Catholic Family Services or even Habitat for Humanity. Jeffrey Reiman wrote a book years ago titled *The Rich Get Richer and the Poor Get Prison*. What kind of society have we created? (Letter to Editor in Local Paper, 11/7/2011)

At the same time as this editorial, a local reporter posted information to her public Facebook page about covering the press conference announcing the lead gift, eliciting a complex online debate around the role of this particular businessman and the institution's role in the surrounding community and the trajectory of the larger society (Public Facebook Conversation, Local Newspaper Reporter, 10/31/2011). Some responses critiqued the existence of private education during times of growing economic inequality. Others celebrated individual charity and the entrepreneurial ethos. The debate was contentious in nature.⁵⁵ Some members of the Oikos community appear aware of this political dynamic within the larger community, as I had conversations with various members, especially the sustainability teacher, about the classed nature of the sustainability program at Oikos (Fieldnotes, 3/4/2013; Teacher Interview, 3/1/2012; Member Checks, 3/3/2014). How this debate unfolds within and relative to Oikos Academy remains unknown, and I deal with the implications of this dynamic in the following chapter.

Brief Summary of Institutional Frictions

The change process at Oikos involved a number of institutional frictions, some of which continue to manifest in the culture. The elite nature of the sustainability program formation roiled the interpersonal dynamics of the institution with some members hoping

⁵⁵ Specific data omitted here for IRB reasons. The reader will have to trust my interpretation.

for its failure and actively resisting its development. This friction has been partially ameliorated by the community as more members have moved from positions of exclusion and toward greater inclusion. Despite some resistance to the change, the project's momentum was facilitated by an institutional culture that was sympathetic to the larger educational goals and because the decisions were largely made by elites within the community at the exclusion of others. Other Oikos members had little recourse due to the top-heavy nature of decision-making at this institution and the vestiges of this social tension remain at Oikos.

Oikos also now contains a curricular friction between “the old way of doing things” and “what’s needed for a 21st century education”. This plays out in terms of what the institutional celebrates as important in their representational documents and the physical structure of the new building itself. The new building itself also contains aesthetic frictions, as it too reflects emerging technologies like a solar chimney that are blended with older and more traditional materials and technologies like passive slab heating. Finally, as a private school, Oikos has to market themselves within the community. While the building is called The Commons, it is a privatized building in the sense that it is only common to the members of the private school community.

The Lamb Slaughter Experience as a Representative Case

While teasing apart and describing institutional frictions present in the change process traces broad patterns present in the institutional change process, a specific case study can illuminate at a greater depth (Flyvbjerg, 2006; Stake, 1995). I present one such

case here, and use it to begin a pivot toward theoretical interpretation of sustainability education at Oikos Academy.

Early field experiences at Oikos involved my participation in an early sustainability subcommittee meetings on the topic of food. The school's sustainability teacher was central to the functioning of that meeting (e.g., the setting of meeting agendas and minutes, the running of the meetings themselves, and making sure everyone knew when and where future meetings were to occur). Since I had early research access to this teacher, I also had access to his food committee meetings and attended four of them during the first year of fieldwork. One of these meetings focused on the topic of meat consumption at Oikos Academy and during this meeting it emerged that the sustainability teacher had engaged a small group of students in the slaughter of a lamb as an educational experience (Fieldnotes, 5/3/2011). This story stuck with me as an odd learning experience, and it emerged again during the first phenomenological interview with the sustainability teacher (Fieldnotes, 3/1/2012). We eventually scheduled an ethnographic interview to talk about this event, and the teacher helped me track down one of the students involved in the experience who then also became part of this dissertation research.

Idea Origination

According to the sustainability teacher and one of the main students involved in the activity, the idea to slaughter a lamb originated when the student - already partaking in some of the informal agricultural activities at Oikos during his free periods - asked the

sustainability teacher for advice on making a belt. This catalyzed a series of conversations that eventually lead to an inquiry on the killing of animals for food and product:

And so that's where it got really interesting. Then we started talking more and more about that stuff and moved away from the belt and started realizing the really interesting idea here was that it was similar and that something we do every day, eat meat, but there's so much more to it. I mean the backstory of a belt is kind of interesting, you know, like there's actually a big thing that happens before it gets on your body. But the meat that's on your plate might be just as interesting, if not even more interesting because it's so relevant to everybody and right now it's starting to become kind of a big issue. (Student Interview, 8/16/2012)

The focus of the investigation moved from something relatively small (making a belt) to a much larger topic (the killing of animals for human sustenance). As the sustainability teacher recalled to me in an interview:

So it ultimately turned into this idea of really exploring that idea and maybe not only exploring it intellectually but let's actually physically involve ourselves in the process of eating animals from beginning to end and kind of really trying to understand and see if we're okay with this or not. (Teacher Interview, 5/9/2012)

The teacher facilitated a broader pedagogical experience for the student. They read books by Wendell Berry, Michael Pollen and others on the ethics and ecology of agriculture and animal consumption. The student brought three of his friends onboard and together they drafted an independent study form for the Oikos administration so they could move forward with an officially-sanctioned academic project that involved slaughtering an animal and investigating all of the complexity involved in such a process.

Approval, Execution and Blowback

With the help of another faculty member teaching an Upper School elective course on food and politics, the sustainability teacher and the group of students presented the following independent study form to the Upper School administrator for their approval:

On the Lamb

An independent study under the real work studies program

Student: _____ **Grade** _____ **Date** _____

Duration of Study: Tri One **Credit Requested:** One Tri

Included Reading: The River Cottage Meat Book and a few Michael Pollan articles.

Special Resources: Area experts in related fields.

Meeting Times: Occasional 7th period meetings, and times out of school and off site.

Process/Outcomes:

Step One: The Choosing

Visit a local farm and learn about sustainable and humane approaches to raising meat. Work with an experienced farmer to select an animal for slaughter, and prepare our selves for the project ahead.

Step Two: The Killing

Visit a local butcher shop and learn about the art and skill associated with small scale meat processing. Work with an experienced butcher to slaughter and process the meat of our animal.

Step Three: Full Utilization

Work with local experts to utilize all possible parts of our animal and among other things, construct a hat (or two).

Step Four: The Presentation

Screen a short, self produced documentary about the process and/or install a display of still photos documenting the process with some written reflections to round it out.

Evaluation:

The student will be evaluated on the level of commitment and dedication to the project and on the quality of the hat and meat products produced.

Project Advisor: (History Teacher as consultant)

Sustainability Teacher _____

Student Signature _____
 Department Head _____
 Advisor _____
 Head of Upper School _____

(Project Approval Document procured from Sustainability Teacher, 5/9/2012, lightly edited to preserve anonymity and for space)

The Upper School administrator formally supported this independent study for course credit, signed off on the project, and justified approving the educational experience to me during an interview:

Yeah, well, so in the case of the lamb project is that, that was deeply considered, you know, (Sustainability Teacher) and I thought a ton about that but although at the same time I pretty much knew as soon as it came out of his mouth that I wanted to do it for (Student) and I think it was a deeply authentic and exceedingly meaningful learning experience for (Student). There's no doubt in my mind about that and it would be for anybody who tried something like it. (Administrator Interview, 11/28/2012)

After securing formal institutional approval (including approval from the students' parents too) for the project, the sustainability teacher and four students traveled by personal vehicle to a local farmer's operation in a nearby rural town. This farmer, with the help of his family, specializes in raising grass-fed livestock for human consumption.⁵⁶

The sustainability teacher arranged to purchase a lamb from the farmer, and when they arrived, the farmer and his father had the lamb isolated for the commencement of the educational experience. The students and their teacher had spent the car ride talking about

⁵⁶ Incidentally, this is the same place where my family procures our meat for consumption. My wife and I decided years ago to move our consumptive choices away from the industrial animal slaughter system and toward local, grass-fed sources for ethical and economic reasons. I am friends with the same farmer mentioned here and have visited his farm on numerous occasions. I mention it because I am wrapped up in this cultural system as well.

the ethics of what was about to happen and who was going to actually perform the killing act. They drew straws and the original student who started the process in the first place was chosen. The farmer handed him the knife and they prepared for the killing process.

The student described what happened next to me in an interview:

Yeah, and so like when has a knife ever been a freakin' weapon of death for me other than on TV, you know? So that was crazy. Then the lamb is already up there and like, "Oh, we're not picking this up from a pasture, it's already like all set up." Like, you know, I had another half hour set up for me to kind of register this and then like boom it's coming up man, you know what I mean?

So then we talked a little bit about more like the technique I guess you could say and just protocol for what happens and you know we had just kind of like a little small talk to calm everybody down and stuff and you know, got ready and we just kind of had like a, it wasn't like a huddle, it was just like a last, you know, "remember what this is about" because you know it's a crazy thing and you just got to keep your head on straight for all this is how we felt. So we were careful about just kind of taking everything slow and everything.

And so then we took it out of the trailer and like the four of us and I think our teacher was kind of in the back, he was filming [for the documentary assessment] and so the four of us guys like they propped it down and then we just like held it down and then the camera is going and we kind of just, we didn't count down or anything, but I kind of just stood over and like took a few breaths and just cut the throat and like just do it a few times to just make sure everything that needs to be cut is cut so it happens immediately and like brain connection is lost immediately and did that and it kind of, it just like it jerks a little bit at that and then it bleeds out and we kind of just all held it there and then for a minute like we all just kind of like chilled and held it and made sure everything was done and then we kind of stood up and walked away for a minute and started getting ready for everything else.

Then I got pulled over for like an exit interview type of thing, like right after it happened, you know, we wanted to see my immediate reaction type of thing. I hate what I look like, like I think we, I don't, I think it's still on, we lost a lot of our footage when they switched computers over for stuff, but I think we still have the footage of me like right after and like I hate the way I look because I was like, I mean it's a rush you can't deny the fact that you're, I was just like shit you

know, it's a big thing, it's one of the biggest things I've done in my life, or at least that's the way I felt about it and I still feel that way.

...

Well what we did there, so we like cut the ankles off so we could use the, I can't remember the, I knew the names of the bones there a little bit and we took a hook and stuck it through the legs so we could pull it up and it like hung out and all the rest of the blood came out and we skinned it and took all the organs out. (Student Interview, 8/16/2012)

After processing the lamb a bit at the farm, the students and their teacher brought the animal back to the teacher's house to cure and a few days later to Oikos Academy, where they finished processing the animal behind the sustainability teacher's former office (the custodial closet):

Yeah and we had like a sheet metal stainless table that we cleaned up and stuff and we had some like butchering paper and stuff and like little dish like paper things, dishes to put the cuts. We took out a book that had all the different cuts and how to get them and sawed away and got all these different cuts and wrapped them up and wrote them up and we put them in the freezer.

...

We butchered it all out there and like there was a History of Foods class that was going on so they came out to watch us butcher it up. And they helped out and helped package it and took some pictures and stuff. So it became, everybody knew what was going on that day, they found out the whole story. (Student Interview, 8/16/2012)

Shortly after the experience commence, the Head of School sent the following description of the project to the Oikos community via a weekly email update celebrating the experience:

Not for everyone, but kind of amazing. A small group of students have been working on an independent study with (Teacher) this fall, a course that is an

intellectual and experiential exploration of the practices and ethics of eating meat. The students have been reading Wendell Berry, Hugh Fearnley-Whittingstall, Michael Pollan and others and discussing the issues on both on a philosophical and practical plane. All this toward preparing to face the element of meat-eating that most of us prefer to not face: the death of an animal. The premise of this course, really, is that if one is going to responsibly eat meat then perhaps one should personally experience the death that is a necessary part of that practice; only then can one have a fully realized discussion of the rights / wrongs / unknowns of the practice. And so on Saturday, (Students) accompanied (Teacher) to a farm in (Nearby Town) and they took part in the slaughtering of a lamb. Under the guidance of the farmer and (Teacher), the students engaged every part of the process with great seriousness, respect, contemplation, and reflection. It was “a transformational experience,” said (Teacher), an observation I confirmed with several of the boys this morning. This group of students will complete a documentary of their experience later this winter and will have a screening and discussion during an assembly thereafter. Wow. (Newsletter Document, procured via Sustainability Teacher on 5/9/2012, bolding in original title)

I asked the student what happened once the rest of the school found out about this educational experience. According to him it provoked what the student called a “shit storm,” and what the sustainability teacher diplomatically referred to it as a “controversy” (Student Interview, 8/16/2012; Sustainability Teacher Interview, 5/9/2012).

According to the student, many of the students he talked with afterward understood why they had had such an experience, and that much of the blowback originated from within the ranks of the Oikos faculty and staff. The sustainability teacher confirmed this sentiment as well and explained why he thought some on the faculty took offense to this independent study:

But the faculty issue is far more obviously well thought out and far more complicated and it ranges all over the map. Some of it was there’s a handful of people and certainly what brought it to the kind of passionate level was the handful of vegetarians and others that we have on faculty that are just like it’s never okay to kill an animal for food, just bottom line, that’s just where they’re at

ethically and morally. So on that level the conversation is kind of tough you know, it's kind of agree to disagree or bicker about this and we'll see.

But more importantly what it turned to then is just like internal process. Like, "How did this happen and how did faculty not have more input on how and if this should happen?" But it took us a while to get that. At first it was just like, "What are you doing?" Like, the assumption, when people heard about it they heard this sort of the random, you know, our kids, the four kids came back to school on that Monday afternoon and they were like, "Yeah we killed a lamb this weekend."

So some of the initial controversy and reaction was just because of some assumptions were made that like that was it. Like we just went down and like killed a lamb for the sake of killing a lamb, you know? And [they] didn't know that it was after three months of reading and discussing and talking about all this. They didn't know that it was like part of this larger project and all the rest of it.

The knee jerk reaction was like "What?! That's totally not okay." And then so we spent a while sort of back and forth with the handful of teachers that really took offense to this on kind of ethical grounds of just like where we were with this whole project, what the thinking process was, what our current ethical stance is and what the students are trying to understand and us maybe being a little defensive too.

But wow, seriously, like not a peep from any of you as far as we serve hundreds of animals a day to feed this school who die in horrific, nasty ways and not a word. We try to dig into this a little bit and it causes the uproar.

Shortly after this interview the sustainability teacher shared a historical record of some of the emails sent back and forth between himself and various faculty members who were challenging him on the educational, institutional and ethical merits of the lamb slaughter experience.⁵⁷ For example, in responding to a question about whether or not this

⁵⁷ Data representing opposing conversational parties in this particular information source are excluded from this study, as I did not secure IRB permissions from these people. I cannot fully represent their side of the story and it remains a limitation. Nevertheless, the sustainability teacher's comments are briefly included to give a sense of the conversation.

experience reflected “The Oikos Way,” the sustainability teacher responded in the affirmative:

I truly believe that this project represents the critical thinking, compassion, and agency I hope to help develop within youth. I have spoken with many people about this project outside of Oikos and everyone has been impressed (as well as a bit surprised). The project requires the background story, the ethical discussions, and the intended goals to be articulated to make it make sense, but with that I would pitch it as a “Bright Spot”...and very much the “Oikos Way”, learning through action, action towards positive change. What seems very “un-Oikos Way” to me is our practice of serving factory farmed meat at the school and totally putting blinders on to the destruction and suffering that causes and not actively seeking change. (Historical Document, procured via Sustainability Teacher on 5/9/2012)

While some members of Oikos objected to the experience on ethical and moral grounds, others felt that the institutional approval process should have been more committee-oriented and less administrative.

I asked the administrator who approved the independent study for his thoughts on why this particular event was so controversial in retrospect. For him, it spoke to a cultural and curricular schism within the institution itself:

To speak to the real or imagined schism on what counts for real learning, you know, clearly: English, history, math, science, foreign language. And the question: Does hospice count? Does the lamb project count? Does civic engagement, democratic engagement, experiential service learning, mindfulness, empathy education, citizen science, project based learning count? The way I have thought about that real or imagined schism is more cultural to be honest with you, you know.

I’m always open to people persuading me in the way that I’m thinking it’s wrong or I try to be, or I delude myself that I am, and I’m just waiting for somebody to tell us we’re wrong about this and we’re not. The stuff that we’re doing in that long litany of sort of educational initiatives that The Commons is meant to

support is in fact stuff that is derived of early progressive education movement statements about what a meaningful education amounts to and I said at a meeting last year, “If John Dewey were to walk into a meeting right now and hear about what we were doing he would nod his head and say this is what it should look like now.” I totally believe that and have yet to hear a persuasive argument that it’s not true.

So then you ask yourself well why the schism, and what’s going on there? I have tended to think that it’s sort of cultural or just idiosyncratic having to do with how this stuff unfolded at Oikos.

...

So I’m not sure how to process that schism. I haven’t had a good idea about how to fix it. I don’t know to what extent it’s just that people don’t like change, I don’t know to what extent people didn’t like the way it kind of got rolled out, or maybe just the position of our putting a ton of money and time into making this building happen and the programs happen and really expanding what we mean by a Oikos education.

Our pay scale is embarrassingly low and people work incredibly hard and we have to sort of sell kidneys to get extra sections of math funded. So I myself feel it. Just the position of delivering really fully in a robust way in our longest held promises about mathematics and English and all those things, with the kind of huge commitment of resources to the commons project, and by that I mean both the building and the programmatic development. It bugs people and you can’t blame them. (Administrator Interview, 11/28/2012)

For this administrator, the controversy was a reflection of a deeper institutional tension about what fundamentally counts as education: a cultural schism between the emerging and novel educational programs and the traditional disciplinary programs at Oikos that were perceived as lacking in support. That is, the lamb slaughter experience was just the next in a long line of informal educational experiences gaining increased visibility at the financial and cultural expense of other, more-traditional and disciplinary curricular experiences.

Impact

The sustainability teacher and I talked of this entire experience and while I am paraphrasing here from fieldnotes, he stated that it was “one of the most powerful experiences that he’d ever had as an educator, even though it almost cost him his job” (Fieldnotes, 3/1/2012). The student who performed the killing similarly reflected that it was “one of the biggest things I’ve done in my life” (Student Interview, 8/16/2012). As previous data evidenced, multiple administrators saw intrinsic value in this as unique learning experience and celebrated it within the institution despite the controversy it ultimately engendered.

I was curious as to how this experience impacted the student who actually killed the lamb. I interviewed him post-graduation and during the summer before he was to attend his first year of college at an elite liberal arts school in the Northeastern United States. I used that timing to have him reflect on the experience in light of his life transition. It turned out that he wrote his college essay on the entire experience because it was “just so different than anything else I’ve ever done” (Student Interview, 8/16/2012). He mentioned that he tried to make more ethical choices when dining in restaurants and that this experience helped him understand his own relationship with animals at a different level. I asked how the lamb slaughter experience impacted his future personal goals, and the question produced the following exchange about how he saw himself heading into the future:

Student: You know, so I got ideas. I'd like to make money because I love having luxury things and shit. It's bad, but whatever. Thankfully I can't really defend it, but I'm telling you I like it. But I also want to ...

Me: Do you ever wrestle with that one?

Student: Definitely all the time. I've flip-flopped through my life so many times on that sort of thing. But I think for the most part I want to have a positive effect in the end, and that's like a lazy and kind of pussy attitude about it, but hey you know, in the end I just don't want to offend too many people and I'd like to be pretty comfortable. So if could actually help some people too that would be ideal.

Me: Yeah.

Student: We'll see how it goes, I go to college on Monday.

(Student Interview, 8/16/2012)

This excerpt is part of a much longer exchange on how the experience informed his future interests. He expressed an interest in becoming an attorney because of his family tradition. This led to an intellectual connection with the film *Food, Inc.* (Kenner, 2008) and its portrayal of the issues that farmers face when dealing with patent law, large corporations and genetic engineering. For the student, having a positive influence in the world was also perceived as exhibiting a position of potential weakness - of being a "pussy" - compared to making money. The unresolved challenge was how to be ethical while also maintaining material and symbolical privilege. Nevertheless, the experience was formative for him, even though exactly *how* this carried into the future was unclear.

An Interpretation of the Case as Representative of Institutional Frictions

The story of the lamb slaughter experience at Oikos is presented here because it represents a case example of larger cultural processes and institutional frictions at play in

the transition toward sustainability education. This educational event was controversial at Oikos Academy and as such is useful for understanding shifting institutional norms. In the Foucauldian sense, institutional norms are those considered “normal” within a particular cultural context (Foucault, 1972). By destabilizing these norms, as the sustainability teacher and his students did when slaughtering a lamb, they challenged the normative logic of what counts as education and learning at Oikos Academy. The very experience itself challenged the institution and created political tension. These frictions rippled across the institution and became embedded in the culture of the school.

This case is then representative of the larger institutional transformation at Oikos Academy as it grapples with adding sustainability education to its culture. We see the influence of one sustainability teacher working on the margins of the “normal” structural operations of the school: taking students on a weekend independent study experience to a local farm to slaughter a lamb. This was not something that occurred in the more traditional courses at Oikos Academy. A small group of powerful administrators approved and celebrated the educational experience, thus validating its curricular merit within the institution. For some of the formal faculty (who were only brought into the fray after it occurred), the experience did not count as “real education,” nor should it have been approved. For the sustainability teacher, it was a moral and educational imperative that the school community grappled with the fact that their cafeteria purchased, processed and served large quantities of factory-farmed meat on a daily basis and that no one was talking about this in the school. The lamb slaughter experience rendered this process

visible within the school. Ultimately, the food committee (established as part of the larger original sustainability transition) decided to begin sourcing some of their meat from a local farm with supposedly more humane practices.

The lamb slaughter case also exhibits the emerging educational goal around developing ethical selves relative to environmental issues. Both the student and teacher were profoundly affected by the experience and ranked it as among their most powerful teaching and learning experiences at Oikos. For the student, the experience impacted his imagined future trajectory, even though the connection was hazy at the time of our conversation. He wrote his college essay to an elite liberal arts institution on the process and, carrying forward his family attorney lineage, planned to make a lot of money while also being ethical at the same time. This all occurred because he, along with a non-traditional educator in a non-traditional institutional position, developed a project outside the traditional disciplinary structure of the school. It focused on civic engagement, spiritual engagement and physical engagement with the material dimensions of life.⁵⁸

The entire case occurred prior to my experiences in the field at Oikos. When I first entered the school I attended food committee meetings focused on where the school sourced their meat and whether or not those sources were ethical or sustainable (Fieldnotes, 7/25/2011). As a result of these meetings and in consultation with the

⁵⁸ There is another potentially interesting and, given this dissertation's design, unexamined, interpretation of the lamb slaughter experience. All of the central participants in the initial experience, from its initial development and approval to its execution and subsequent processing were male (personal identifications of gender are unavailable at this time of this writing). Although I have been privy to little information on the subsequent push-back from others in the school, it appears on the surface that many of those upset about the experience were female. Also, the student's use of derogatory and privileged language suggests that he did not want to be perceived as weak or as waffling. The gendered dimension of this student's education, while outside the parameters of this particular study, is interesting and worthy of future inquiry.

school's chief financial office and cafeteria staff, Oikos decided to locally-source some of their meat for consumption. Students in the history of food course now travel to the local slaughterhouse to learn about how animals become food. While the school continues to purchase some of its meat from larger suppliers (mainly chickens for economic reasons), the shift toward local meat production can be interpreted as another example of the localization of what was once a larger hidden systemic process. As Timothy Pachirat (2011) showed in a masterful ethnography on the spatial politics of industrial slaughter, such killing processes are hidden from us within the confines of modern society. This was also the case at Oikos Academy, and the existence of the sustainability teacher and this particular educational experience helped render these processes increasingly visible within the institution. Similar processes occurred around vegetable and food production, human dying and death, and the production and consumption of energy in The Commons. The invisible became visible. What was once far away became near. What was once old - individually slaughtering an animal for food - was now new again, resurrected under the banner of sustainability education at Oikos Academy.

The Discursive Nature of Sustainability Education

Members of the Oikos Academy community are attempting to respond to global and potentially unknown present and future environmental conditions. Many reference future risk and conditions of ecological degradation in official and unofficial communications. This institutional concern is used to situate the perceived insufficiency of the traditional college preparatory liberal arts curriculum. Particular members of the

community are well-versed in environmental discourses and these same people occupy positions of institutional power. This helps drive establishment of sustainability discourse and practices in the school community.

For some members of the Oikos community, the sustainability discourse is heavily scientific and technologic. “The environment” is positioned as something to be quantified and managed, as members imagine student governance of “common resources” (mainly energy) as a curricular ideal. Such management experiences are meant to produce students capable of dealing with future natural resource management issues around energy, water, and food in particular. The building itself is presented and marketed to outsiders as a “living building” capable of producing its own energy, which students will then be responsible for monitoring and managing. How this unfolds is currently uncertain among the faculty and students charged with implementing the building.

For others, the new building gives space for experimenting on and with the natural and built environment in their science courses. Space on the middle floor of the new building is dedicated to this endeavor. And for still others, the new sustainability-oriented building provides space for contemplating the spiritual, ethical and civic dimensions of human existence. Many of the faculty charged with occupying and implementing this new building were selected for previous novel work that did not fit within the purview of the traditional school building. Their work is now physically codified into the built environment and curricular ideals.

While there is no commonly held definition of sustainability or sustainability education at Oikos (rather, it is used for different reasons by different cultural narrators), the vague and shifting educational goals of The Commons serve as a kind of “boundary object” (Star & Griesemer, 1989) that are “plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites” (p. 393). Sustainability education is an “ideal type” boundary object in this particular educational context because it is vague and presently unformed, thereby allowing different actors to ascribe meaning and vision onto the institutional form within the communicative system (Star & Griesemer, 1989).

Mitigating future risk and dealing with present conditions of degradation and uncertainty provide the cultural thrust necessary for shifting the school community into a sort of institutional existential crisis. Ameliorating such crisis was dealt with at Oikos by indexing the historical dimension of the past and using it to inform future, local decisions. We observe this in the intentional re-localization of food, energy and furniture production, for example, which signify for some at Oikos the return to a time of self-provision and thriftiness. This temporal tension is also reflected in the aesthetic and design within The Commons building itself, as the building blends “the old” of salvaged barn materials and alignment with the sun with “the new” and unknown practices surrounding futuristics and space-age technologies like a solar chimney and VRF technology. Sustainability education then, at this particular school, emerges as a highly specific blend of local tradition and custom blended with a global and novel sensibility.

Environmental Managerialism as Neoliberal Environmentality

At Oikos, nature is also positioned as something to be managed efficiently and consumed ethically. This is especially true when it comes to how the community envisions itself interacting with energy in The Commons and with the sourcing and consumption of food species. Such a vision of nature evidences the continuation of an instrumental and capitalistic rendering of the material world, particularly under capitalism's current neoliberal form (Hamilton, 2013; Peet, Robbins & Watts, 2011). Nature becomes a resource to be efficiently managed and students become its ethical managers in the current Oikos vision. Socioecological problems are to be solved via localized entrepreneurial efforts in "making" and "design-thinking." The solution to environmental problems are seen as solvable via techno-scientific design fixes. Often left unexamined in such approaches are the social, economic and political causes of environmental problems in the first place, namely the overconsumption of resources and capitalism's cultural expectation of never-ending growth on a finite planet (Hamilton, 2013; Speth, 2008).

Such cultural action also works to downshift the solutions to larger social, political and economic problems to the local scale, thereby potentially absolving larger-scale operators (i.e. the multinational energy company that continues to supply energy to Oikos, or, governments that allow distinct public/private educational systems to exist) of responsibility and accountability (McKenzie, 2012). Such institutional rendering is also problematic because it fails to understand how the local is intimately shaped by, and

embedded within, the global (Massey, 2005; McKenzie, 2012). Again, how this unfolds in practice at Oikos remains unknown and up to the community as they evolve. The inclusion of spaces for civic and spiritual engagement in The Commons shows that the community values a more holistic and experiential approach to educational experiences. Some educators at Oikos (e.g., the hospice teacher) appear prepared to make the case for engaging with environmental limits and the limits of the dominant form of capitalism. Others, including the main project donor, see sustainability as an emerging business opportunity, for both the school itself and in their industry in particular: energy. The shifting environmental discourses at Oikos are not totalizing and remain at play within the institution as they embody their new building.

Environmental management and the neoliberal disciplining of bodies emerges in another form at Oikos in the design and ideation of “The Control Room” on the bottom floor of The Commons. This room’s goal is to monitor the quantified natural resources that are produced and consumed within the building. This room is physically located in the middle of the bottom floor and is symbolically situated as the “brains” of the building. In this sense, The Control Room can be interpreted as a potential ecological panopticon (Foucault, 1978), working as a technology of social, behavioral and ecological control. We see this in the descriptions of how students will embody The Commons: “We want to put kids in control of the behavioral side of the decisions they make” with the aim of achieving net zero energy consumption. Energy efficiency is a righteous goal and

students will learn to discipline themselves accordingly. Again, *how* this occurs in reality remains to be seen, as the Oikos community only recently occupied the building.

While the neoliberal environmentality is certainly present at Oikos in their rendering and design of The Commons, it is not a totalizing environmental mentality. Instead, the efficient management of energy and other resources is coupled with achieving greater civic and political engagement regarding institutional and ecological operations. Further, Oikos has now developed increased capacity to engage students in mindfulness practices that focus on what it means to live a finite life and to take greater responsibility for themselves and their larger community at a number of scales, from their family to the local community and on to the global stage. How these educational ideals play out in The Commons is a significant opportunity for future research and is beyond the scope of this particular study.

Chapter Seven: Realizing Sustainability Education

This dissertation study reports on three years of ethnographic research at Oikos Academy, an elite, private, nursery-through-12th-grade educational institution in the Northeastern United States that was, and remains, involved in the construction of a new building on their campus in the name of sustainability education. This study attempts to answer a single ethnographic research question: *What is the nature of the infrastructure supporting sustainability education at this particular school?* In this final chapter I attempt to provide answers to this question that build on the two previous findings chapters by applying the studies' conceptual, theoretical and methodological lenses to the data presented in the preceding chapters. This chapter attempts a higher level of interpretation and abstraction with the goal of explaining the various research meanings of Oikos Academy's institutional transition and subsequent frictions. I conclude by summarizing implications for various audiences, limitations and cautions in applying findings, and suggestions for next steps for both the Oikos community and the larger fields of education and environmental studies.

Shifting Educational Paradigms and Institutional Transformation

In 1999, the systems theorist Donella Meadows published an influential paper on the nature of leverage points and systemic change. She established a hierarchy of points in order of increased effectiveness to stimulate change (1999, p. 3). Given the complex subjectivities, histories and materials that assembled to produce The Commons, Oikos

Academy succeeded in leveraging one of the most difficult of Meadows' systemic change mechanisms: altering the larger systemic paradigm:

[Whole societies] resist challenges to their paradigm harder than they resist anything else. Societal responses to paradigm challenge have included crucifixions, burnings at the stake, concentration camps, and nuclear arsenals. So how do you change paradigms? Thomas Kuhn, who wrote a seminal book about the great paradigm shifts of science, has a lot to say about that. In a nutshell, you keep pointing at the anomalies and failures in the old paradigm, you keep speaking louder and with assurance from the new one, you insert people with the new paradigm in places of public visibility and power. You don't waste time with reactionaries; rather you work with active change agents and with the vast middle ground of people who are open-minded. (p. 18).

All of these characteristics were present as Oikos shifted their educational paradigm from the stable to the unstable and back toward a semblance of homeostasis: 1) continued attention to the limitations and failures of the traditional educational form, 2) resistance in the form of teacher anger and the *ad hoc* formation of S.T.A.B., 3) leveraging people in positions of power and visibility who supported the emerging vision and, 4) a growing sphere of middle ground supporters over time.

Nevertheless, constructing The Commons as a place for sustainability education did not result in a holistic and total institutional transformation. Rather than the mere *accommodation* of sustainability into the existing school structure (which is what the

community was doing prior to the construction of The Commons and its associated processes), Oikos appears to have achieved Steven Sterling's (2004) institutional *reformation*, as the institution is now "teach[ing] values and skills perceived to be associated with sustainability, and attempts to 'green' the operation of the institution" (p. 59). However, for Sterling, this is *a* first step, but is insufficient and misses the larger opportunity for *transformation*. That is, Oikos now has *a* new building on their campus tasked with a particular educational goal: the students will actively manage, via greater civic and spiritual engagement, the material and social dimensions of the learning environment to achieve the goal of achieving "net zero" energy consumption and production. For Sterling, such an institutional and educational goal is potentially transformative, for it "engages the whole learning institution, whereby the meaning of sustainable living is continually explored and negotiated" (2004, p. 60). While this ideal presently exists in theory at Oikos, the actual practice of realizing such an ideal remains unrealized as of this writing, at least in terms of the embodiment of The Commons.

However, and as previously stated, The Commons is *a* single building across a larger campus landscape. Its physical location is literally hidden behind the school and is spatially isolated from the main building. And while some of the classroom spaces in The Commons are designed with pedagogical flexibility in mind (the Maker space, the Center for Civic Engagement, the Project Space, and the Center for Mindfulness and Empathy Education), two other spaces remain discipline-focused around science. Merely tacking these new institutional spaces onto the existing Oikos structures (e.g., material, curricular,

temporal) without also altering the experiences for teachers and learners risks simple *accommodation*, and thereby not actually challenging the norms of the institution and the learning experiences of its community. That is, rather than a holistic sustainability education program, Oikos could develop into something like a college preparatory, liberal arts curriculum *plus* the sustainability education experiences of The Commons. There is a risk that the Oikos community fails to heed the original mission of managing The Commons and it falls away as an institutional priority. Questions of whether and how existing courses become inter- or trans-disciplinary remain unanswered in this dissertation study and should be examined in future research as the building becomes embodied and its programs evolve over time.

Sustainability Education as Eco-Chic

One of my early experiences at Oikos Academy involved food service staff members meeting with a regional food-service company to inquire about the ethical sourcing of meat for consumption at the school. The salesperson from the company gave me a brochure for the Niman Ranch and mentioned that they were beginning to receive more inquiries like the one from Oikos for ethically-sourced meat products (Fieldnotes, 7/25/2011). This is the landing page when one loads the Niman Ranch website on an internet browser:

Figure 7.1. Screenshot of the main Niman Ranch website. Excerpted on 2/22/2014 from www.nimanranch.com.

Notice some of the same themes present across both the lamb slaughter case and the larger institutional culture at Oikos: 1) a focus on humane and ethical localized production, 2) appeals to temporal legacy via present environmental ethics, 3) a celebration of the actual people behind the production via visibility practices, and 4) elite product distinction. Niman Ranch, like Oikos Academy, represents a growing and larger cultural phenomenon at work around sustainability: the development of a ethical eco-chic sensibility and subsequent marketing opportunities.

The emergence of The Commons and related programs at Oikos therefore represent a growing “eco-chic” trend in elite communities, and this is one of the main findings of this dissertation. The eco-chic phenomenon is characterized by “a

combination of lifestyle politics, environmentalism, spirituality, beauty, and health, combined with a call to return to simple living” (Barendregt & Jaffe, 2014, p. 1). We observe this at Oikos in the localized and artisanal nature of food production, in mindfulness educational activities, in marketing the green lifestyle to prospective parents, in efficient and aesthetically pleasing green design technology, and numerous other examples from previous chapters. Such institutional practices “represent forms of cultural and moral capital that are central to the creation and maintenance of class distinction” and are “increasingly a part of the identity kit of the upper classes” (Barendregt & Jaffe, 2014, p. 1). Sustainability education at Oikos Academy is an eco-chic discourse and practice.

The eco-chic cultural phenomenon emerges within Late Industrialism as a relief valve for the inherent contradictions of late neoliberal capitalism and its environmental implications (Dauvergne & Lister, 2013; Giroux, 2013; Parr, 2009). Put another way, “In this zeitgeist of crisis capitalism, the environmental crisis itself has become a major new frontier for value creation and capitalist accumulation” (Sullivan, 2009, p. 18). We see this process unfold at Oikos as they attempt to grapple with the ethical and ecological dimensions of their consumptive choices and in the creation of The Commons itself as an institutional business proposition. The solution is to consume and manage nature differently, whether educationally or ecologically, rather than to consume less in the first place.⁵⁹ We see this in the contradictory nature of the lamb slaughter experience for the

⁵⁹ This is similar to the environmentally problematic practice of recycling one’s cans and bottles, thereby maintaining one’s ability to continue consuming at current, if not greater, levels. Reducing and reusing materials are more systematically radical actions, for they undermine consumptive capitalistic logics that promote the ever expanding need for more.

student. He wanted to continue to be environmentally ethical while continuing to pursue material and symbolic advantage via consumption.

Sustainability education at Oikos can then be interpreted as a classed expectation of the good life, and of the good education. This is all to occur in a building called The Commons that was funded via a million dollar private donation to ensure the fiscal sustainability of the institution itself. Upon the public announcement of the gift to this private institution, a local, non-Oikos-affiliated community member took to the pages of the local newspaper to ask, “What kind of society have we created?” Sustainability education at Oikos could, potentially, branch out to include the larger community. Ironically, engaging with the greater community would involve aspects of de-privatizing The Commons. It is also possible that in the future The Commons could remain privatized within the Oikos community and only available to an elite few who have the necessary means to gain institutional access. The school prides itself on its progressive social justice ethos in its guiding documents and in its cultural understanding of itself. Member-checking these findings with participants has stimulated some critical conversations about the nature of class privilege at Oikos. They are aware of their institutional dynamics and see engaging with them as one of the longer-term goals of The Commons project. Exactly how this unfolds remains an unanswered question in both this research and at Oikos itself.

The potential capture of sustainability discourse by larger capitalist structures also reflects a larger sociocultural move occurring in modern environmentalism:

Turning sustainability into eco-business, moreover, is altering the nature of environmentalism, increasing its power to accelerate some forms of change, but limiting what is on the table to question, challenge, and alter. Sustainability as an idea can be radical: not just calling for changes in the rules of the game (i.e., market dynamics), but also to the game itself (i.e., the global economy).

(Dauvergne & Lister, 2013, p. 25)

By capturing sustainability discourse, it can be stripped of its critique of modern capitalist consumer culture and its impact on ecological systems. Industrialized consumer capitalism is a remarkably sustainable sociobiophysical system and attempts to modify it often become subsumed within its logics, thereby neutering them of their potential radical critique (Potter, 2011; Prudham, 2009). This may be occurring to the broader sustainability discourse, and Oikos Academy may be an example of how such capture occurs. As the cultural and educational critic Henry Giroux simply states, subsumption occurs because “It is easier to imagine the end of the world than it is to imagine the end of capitalism” (in Ablow, 2013). Whether Oikos’ sustainability education program ultimately challenges the deleterious dynamics of neoliberal capitalism remains unknown given the premature nature of their program.

Overall, Oikos is shifting their sense of what it means to educate students for the future. School leadership sees this shift as a moral and ethical imperative. They are supported by numerous ancillary community members (e.g. wealthy alumni, parents, local professionals, myself as university-based researcher). At the same time, other

members of the Oikos community hold this change at a distance and this results in a fundamental tension around the goals of the school. For some, it is preparing students to be sustainability literate. For others, and importantly as this is a wealthy private school, the standard liberal arts college preparatory curriculum is privileged. Sustainability is seen by some as a nice addition to the school, but as a distraction from its identity as a college-preparatory institution. These conflicting institutional goals create political tension for members of the community. Nevertheless, the school is now situated within the larger local community as one that expressed “green” ideal around sustainability education. At the time of this writing the school recently started running advertisements on the local public radio station that showcase their new “living building.” The construction of The Commons represents the Oikos community’s investment in the financial sustainability of the institution. Rightly or wrongly, elite members of an elite community decided that sustainability education would be beneficial to the fiscal stability of their educational institution. We shall see how this evolves into the future.

Implications

This dissertation study attempted to answer a single overarching ethnographic research question: *What is the nature of the infrastructure supporting sustainability education at this particular school?* As present and preceding chapters evidence, the answer is multifaceted and not easily reduced to a few pithy sentences given the ecological and sociocultural complexity at Oikos Academy. Nevertheless, some implications emerge from the findings and I articulate them in this section, first by

reviewing implications for the institution itself and then by shifting scale to the fields of environmental and sustainability education - including my role as a researcher - and finally ending with implications for humanity.

For Oikos Academy

For Oikos Academy, the past few years of educational change have resulted in significant social and material churn as their institutional form evolves. This process began as an elite-driven process and although attempts to mitigate the effects of this exclusion have widened the participation of others in the change, vestiges of this social process remain as The Commons opens for school practices. The shifting and expansion of educational goals also means that new programs are becoming increasingly centered in the Oikos educational experience for learners. How this process occurs remains unexamined, as it remains emergent. Oikos community members will have to deal with the lived reality of a new structure and its programs on their campus and will have to adjust experiences accordingly. Or not. I believe that this “how” process provides fertile ground for self-study in the form of practitioner-based action research, and for additional academic research if this is something the institution is interested in pursuing.

Finally, The Commons is idealized as a space where community members wrestle with the social and political dimensions of natural resources, particularly around energy and food. Although The Commons is currently privatized within this school community, I would urge Oikos members to critically evaluate how they define “community” and who has access. Oikos has the potential to expand The Commons to include those who are

traditionally excluded. Doing so might mean radically rethinking the role of private education in society and is potentially risky for the members of Oikos Academy for it could undermine social and economic privilege. Or, and in line with their social justice mission, broadening the school's boundaries to include marginalized populations might strengthen both in the process and add another dimension to the educational mission of The Commons.

For the Fields of Environmental Studies and Sustainability Education

Sustainability education is a relatively recent educational concept, with few ethnographic studies detailing how such programs emerge and become operationalized in the real world. This study attempts to address this lacuna in the field by presenting thick description, phonetic analysis and theoretical interpretation of one particular program. The story that emerges from this scholarly process is one of an institution acting to alter their identity to include a more holistic and complex concept of what it means to graduate as an “educated” person. Such action is perceived as important in the face of present and future ecological crises. Present educational practices are seen as insufficient by some, hence the need for institutional change. What emerges, in this particular school, is a highly localized and classed ideation of sustainability education that includes attending to the civic, spiritual, vocational, scientific and agricultural dimensions of human existence in addition to the school's pre-existing liberal arts, college preparatory curriculum.

Much of the friction and heat in the environmental education literature on sustainability education surrounds contestation of the “sustainable development” concept

as it applies to educational processes. Given industrial capitalism's cultural focus on never-ending growth, some question whether development can ever be truly sustainable (Kahn, 2008; Speth, 2008), thus throwing the entire education for sustainable development project into question. While this will be an enduring debate in the field, this study speaks to it only in the sense that the version of sustainability education that emerged at Oikos is deeply contradictory. Elite and neoliberal capitalist discourses were clearly present, but they were not totalizing in their implementation. Instead, they coexisted with other discourses that could potentially subvert the otherwise dominant nature of neoliberal environmentalities. For example, Oikos Academy also contains a strong ethical and spiritual imperative in their approach to education and environment, coupled with a commitment to increased civic engagement in both the operation of the institution and in their coursework. How these programs interrelate to produce particular learning effects remains unknown, along with the ecological implications of such programs.

The fields of environmental studies and environmental education have a history of exclusionary practices, and are critiqued for their privileged discourse. Recent attempts to redress this condition imagine the conceptualization and operationalization of a more just sustainability that “(re)frames environmental education along lines which recognize cultural diversity and all its implications...as *the* project for environmental educators” (Agyeman, 2002, p. 10, italics in original). The ethnographic research reported in this dissertation examines the nature of sustainability education at an elite

private school and finds the resulting program shot through with chic and elite discourses and practices, including the privatization of a building titled *The Commons*. This study reinforces environmentalism as elite discourse and practice. However, the implications of these elite discourses and practices within the larger community remain unknown and provide a fruitful opportunity for asking future questions of these fields, such as: 1) what are the implications of elite discourses across larger contexts? and 2) what responsibility do vanguard elites have for both producing and mitigating deleterious ecological and social conditions? I suggest that they are crucial questions given the political ecology of education described in this dissertation study.

Finally, given the known reality and present disruptions of anthropocentric global climate change, it is imperative that researchers engage in “documenting the institutions shaping these [climate change] activities from local to global levels, understanding the conditions under which the institutions can effectively advance mitigation and adaptation goals, and improving understanding of the conditions for institutional innovation and change” (Moran, 2010, p. 146). This study was framed with this methodological reality in mind and I hope that its findings provide one particular way of thinking about how to study institutions and nature and the benefits and limitations of environmental sustainability education.

For Myself as Researcher

As I reflect on this multi-year process, from my naive initial days in coursework and then onto the ethnographic and intellectual fields to the production of this document,

I realize that I have learned some important lessons along the way. First, ethnographic work is messy business that takes a long time to process. There have been many days where I felt completely lost while trying to answer the “what’s going on here?” question that foregrounds much of our work. And honestly, I still feel this way sometimes, especially during the production of this document. The world is irreducibly complex and I am remain humbled by this fact. I clearly have much to learn.

On a different but somewhat tangential front, I am learning how difficult it is to navigate the established boundaries between academic and intellectual traditions. There are many institutions and fields in the academy (and in society) that have evolved over time with distinct normative traditions and habits. My work exists somewhere between the natural and social sciences, with a good bit of educational research at its foundation. Given the nature of the academy, this is odd intellectual terrain, and while I am excited to plow some new ground in this dissertation, doing so presents its own unique set of personal and political challenges.

Finally, the lived experience of conducting ethnographic work and knowing a phenomenon like sustainability education at a deep level has altered my larger perception of the whole. That is, the ethnographic process itself has altered my understanding of the world, and this had lead to even more questions. This is both exciting and daunting at the same time, and I am learning to be peaceful in my uncertainty and mindful of how much I still do not know.

For Humanity

In his recent book *Earthmasters: The Dawn of the Age of Climate Engineering* Clive Hamilton (2013) makes the case that the common responses associated with living in the Anthropocene represent a troubling sort of utopian and technologic thinking:

Technologic thinking understands the world as a collection of more or less useable resources. According to this view, technology transforms potentially useful things into useful things without asking about the origins of the world as an assortment of potentially useful things. As such, modern technology reveals something essential to the nature of modern humans - the determination to shape the world around us to suit desires that seem to have no limit. (p. 200)

We see this desire playing out at Oikos Academy, as the The Commons is designed around making resources visible via quantification and teaching students how to manage them efficiently. Such a move reflects the desire to greater control of nature so that a way of life can be preserved. Recall again the definition of sustainability written on the Head-of-School's office whiteboard:

Figure 7.2. Sustainability definition on whiteboard in Head of School's office. Note that the word "world" is cut off at image lower right. (3/29/2010)

At Oikos, taking responsibility means many things: the efficient management of school grounds and its resources, the development of an ethical consumption stance around food and goods, a greater spiritual and civic sense of one's place in the world, and knowing how to provide for one's self and community. Some of these actions are deeply embedded in the managerial control logics that position human beings as having power over nature as object. Altering management systems and practices surely brings ecological implications, as Oikos Academy evidences. But if environmental education discourse remains at this instrumental level, it risks silencing a deeper cultural question: Do we merely seek to control nature for our exploitative ends, or do we seek a higher form of human flourishing as stewards? Such instrumental and intrinsic goals are at play in the Oikos Academy cultural ecosystem, and they reflect larger cultural themes as humans continue to try to figure out and design a "proper" relationship to the environment. Whose values are sustained and what are the ecological implications of such actions? This dissertation delves into the complexity of this dynamic in one educational institution. There is much more work to be done.

Limitations

Readers should heed a number of cautions when reading and extrapolating findings from this dissertation study. First, this is an ethnographic study of a single institutional context. It is a highly localized and contextually specific example with unique participants who have shaped the findings. The goal of such a methodological approach is not to produce generalizable claims. Rather, via description and

interpretation, such an approach potentially produces “ruptures” among readers to expand their conceptions of what is known and possible in the world (Fortun, 2013).

This study is methodologically challenged in another way too. As the primary research instrument, both my time at Oikos and ancillary life experiences are partial. That is, I am a singular and fallible human being, incapable of ever knowing The Truth due to the limits of human intelligence and experience. Such partiality invariably shaped this research study and a number of quality control criteria were deployed to mitigate the effects of this limitation. Nevertheless, I see this as a feature rather than as a bug, for it gives me cultural humility in my work as I attempt to navigate the “other,” human or otherwise.

Additionally, there are a number of theoretical lenses that I could have deployed in this study’s analysis. For example, I have intimated in this document that gender dynamics are at play in this institution. Spatial dynamics are also present and spatial and geographic theories could have been deployed in a more systematic way. While not explicitly dealt with in here, such approaches could form the basis for future work on this data corpus and I am already planning this future work.

Finally, I question ethnography’s ability, as a research methodology, to attend to the material world in the richness that such ecologically complex research questions demand. I have done my best over this dissertation to leverage ethnography to explain sociomaterial effects in the world, but I remain skeptical in its ability to attend to biophysical elements of the world that are not able to be linguistically or semiotically

represented. Given the ontological, spatial and material turns now underway in educational and anthropological studies, I expect ethnology to evolve accordingly and look forward to contributing to such conversations. Nevertheless, readers should understand that making claims about the nature of nature potentially prioritizes the humanistic aspects of the endeavor and while I have attempted to address such complexity in this study, my effort should be understood as a necessary, if insufficient, first step.

Conclusions

The dissertation research reported here attempts to understand and explain the nature of sustainability education in a particular institution. As one of many institutions in society, schools tend to reflect broader conversations about ourselves as we attempt to make sense of our lives (Tyack & Cuban, 1995). We are complex, often contradictory, creatures and we produce similar institutions. As a species we face the emerging realities of Late Industrialism and global climate change, and as supporting structures begin to decay, others emerge and evolve. This dissertation reports on how this process unfolds in one specific context: an elite, private educational institution grappling with what it means to be educated in light of emergent social and environmental realities.

Schools exist as but one type of institution across larger cultural and material fields in societies, and they come in many forms. Institutions can be observed as complex assemblages of humans, other-than-human species, abiotic materials, values, symbols, and norms that both influence and are influenced by larger socioecological discourses.

This dissertation reports on one example of a school that is attempting to change form based on a localized conception of sustainability. It is helpful to remember that, in the course of the human trajectory on Earth, institutionalized schools are a relatively recent phenomenon, and their aims and forms are constantly shifting. Speaking about the context of American schooling, the educational historian David Labaree (2010) writes, “America has had a long-standing compulsion to fix its most pressing social problems by reforming schools.” (p. 195). While this dissertation reports on one such institution as it navigates new environmental realities with a conception of the future in mind, we should remember that schools are but one institution among many, and they are often quite conservative in their operations. Expecting schools to “solve” environmental problems is a necessary but insufficient response given the magnitude of emerging ecological realities that now face humanity.

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Appendices

Appendix A

IRB Approved Pilot Study Interview Protocol

Joseph A. Henderson, *Primary Investigator*

R.Q. #1: *How does this school understand and operationalize a particular vision of sustainability in education?*

R.Q. #2: *How do school members understand sustainability? What does it mean to them and what transitional decisions are made accordingly?*

Hi and thanks again for making time to speak with me today. All answers will be confidential and used for the research purposes as assigned in the agreement you signed a few days ago. Do you have any questions? Earlier you agreed to be recorded, if you still consent to that I would like to start recording... if at any time you want me to stop, please let me know. [Press record] Please state your name... and as I stated earlier you agreed to be recorded, do you still consent to that? [Pause for them to answer]... If at any time you want me to stop recording, please let me know.

1. Can you tell me a bit about your current position here at the school?
Prompt: What do you do? For how long? What is your typical day like?
2. How have you come to be involved in Oikos' sustainability program?
3. How is sustainability being done here at Oikos?
4. What does sustainability mean to you? How do you understand the concept?
5. Has Oikos's sustainability program changed your role here at the school? If so, how?
Prompt: How are things different than before this program? The same?
6. How has the program been received by the community so far?
Prompt for specific illuminating stories here if they mention them.
7. Which aspects of the sustainability program have been successful so far? Why?
8. Which aspects of the sustainability program have been unsuccessful so far? Why?
9. How should sustainability be implemented or taught here at Oikos?
Prompt: What could be done differently?
10. How do you see Oikos' sustainability program changing in the future?
11. Is there anything else you would like to share about your experiences with the Oikos sustainability program?

Thanks again for making time to speak with me today. Do you have any questions for me about the research or the interviewing process? [Turn off recorder]

Appendix B

IRB Approved Pilot Study Focus Group Protocol

Joseph A. Henderson, *Primary Investigator*

R.Q. #1: *How does this school understand and operationalize a particular vision of sustainability in education?*

R.Q. #2: *How do school members understand sustainability? What does it mean to them and what transitional decisions are made accordingly?*

Materials: This protocol sheet, Recorder (w/ extra batteries), Notebook

Hi and thanks again for making time to speak with me today. All answers will be confidential and used for the research purposes as assigned in the agreement you signed a few days ago. Do you have any questions? Earlier you agreed to be recorded, if you still consent to that I would like to start recording... if at any time you want me to stop, please let me know. [Press record] Please state your name... and as I stated earlier you agreed to be recorded, do you still consent to that? [Pause for them to answer]... If at any time you want me to stop recording, please let me know.

1. What has been the hardest part about implementing the sustainability program here at Oikos?
2. What has been the easiest part?
3. What confuses you about the concept of sustainability? What are you still wondering about? Why?
4. Can you tell me how you see your role as a [teacher, student, administrator, facilities worker, board member] influencing the sustainability program here at Oikos?
5. What has surprised you the most about your experience so far?
6. How do you see this program playing out in the future?

Thanks again for making time to speak with me today. Do you have any questions for me about the research or the interviewing process? [Turn off recorder]

Appendix C

IRB Approved Pilot Study Information Letter

Information Letter

Study Title: Sustainability Education: A Pilot Study
Principal Investigator: Joseph A. Henderson, Doctoral Student
Co-Principal Investigator: David W. Hursh, Ph.D.

This form describes a research study that Joseph Henderson, principle investigator (PI) from the University of Rochester, is conducting in order to understand how a school implements an environmental sustainability education program.

You are being asked to participate in this study due to your involvement in the environmental sustainability planning process at the [redacted]. The study involves understanding the cultural processes involved in sustainability education, and the PI will be observing and recording how this occurs in the sustainability planning committees.

You may also be asked to participate in interview and focus group discussion experiences about your participation in the [redacted] sustainability planning process. The interview and focus groups may contain some personal questions about your participation and will take approximately an hour each to complete. Additionally, you may be observed, photographed, and/or audio- and video-recorded while participating in sustainability-related projects and meetings at the Harley School. Recording is necessary for data accuracy. Audio and video files are for transcription and analysis only and will be destroyed once the analysis is complete. Only the investigators will have access to your individual responses. All the information received from you, including your name and any other identifying information, will be strictly confidential and will be kept under lock and key. You will not be identified nor will any information that would make it possible for anyone to identify you be used in any presentation or written reports about this study. Only de-identified data will be presented at meetings or in any publications. We would like you to participate in all of these experiences, but you may skip any of the activities that you do not feel comfortable with. The PI estimates that approximately 5 students and 25 adults from the school will take part in this study.

Your participation in this study is completely voluntary. You are free not to participate or to withdraw at any time, for whatever reason.

For more information about this research you should contact: Joseph Henderson at the Warner School of Education, Dewey Hall, University of Rochester, Rochester, NY, 14607, (585) 469-5163

If you have questions, concerns or complaints about your rights as a research subject you may contact, anonymously if you wish, a Human Subjects Protection Specialist at the University of Rochester Research Subjects Review Board, Box 315, 601 Elmwood Avenue, Rochester, NY 14642-8315, Telephone (585) 276-0005. For long-distance calls, please call, toll-free, 001* (877) 449-4441. You may also call these numbers if you cannot reach the research staff or wish to talk to someone else. ***[Include International Code 001 if outside the US]**

Appendix D

IRB Approved Pilot Study Parental Permission Form

Study Title: Sustainability Education: A Pilot Study
Principal Investigator (PI): Joseph A. Henderson, Doctoral Student
Co-Principal Investigator: David W. Hursh, Ph.D.

Information Letter with Parental Consent Form

Introduction

This form describes a research study and what you may expect if you decide to allow your child to participate. You are encouraged to read this form carefully and to ask the person who presents it, and the PI, any further questions you may have before making your decision whether or not to participate. Joseph Henderson, doctoral student at University of Rochester's Warner School of Education, is conducting this pilot study. The PI estimates that approximately 30 people will take part in this study.

Your child is being asked to participate in this study because he/she is participating in the environmental sustainability planning committee process at .

Purpose of Study

The purpose of this pilot research study is to explore the cultural processes of a school as they implement an environmental sustainability education program.

Description of Study Procedures

If you decide to allow your child to participate in this study, your child may be asked to:

- Be interviewed about their participation in the sustainability planning committee. This interview will be audio-recorded and will take about 30 minutes to an hour to complete.
- Participate in a discussion with fellow students about their participation sustainability planning committee. This will also be audio-recorded and will take about one hour.
- Be observed, photographed, video-recorded and/or audio-recorded while participating in normally scheduled sustainability projects and meetings at .

Benefits of Participation

You child will have the opportunity to share their experiences with sustainability education. As one of a handful of schools in the United States implementing such a program, their story is unique and can influence other students' learning environments.

Risks of Participation

There is minimal risk associated with this study. There is a slight risk that you may find participation stressful or that you might feel pressured to participate by others in your school. You may find answering some questions uncomfortable, but you can always choose to decline to answer or to stop participation at any time. Additionally, all data (recordings, notes, documents, etc.) will be kept secure and confidential, and any potential identifying information will be made anonymous in this research study. All data, including recordings, will be destroyed five years after

*Child's Name**Date***Person Obtaining Permission**

I have read this form to the parent and/or the parent has read this form. I will provide the parent with a copy of this permission form. An explanation of the research was given and questions from the parent were solicited and answered to the parent's satisfaction. I have given the parent adequate opportunity to read the permission form and ask questions before signing.

_____ Print Name and Title

_____ Signature

_____ Date

Appendix E

IRB Approved Pilot Study Student Assent Form

Study Title: Sustainability Education: A Pilot Study
Principal Investigator (PI): Joseph A. Henderson, Doctoral Student
Co-Principal Investigator: David W. Hursh, Ph.D.

Student Assent and Information Form [Ages 13 to 17]

Introduction:

This assent form describes a research study and what you may expect if you decide to participate. You are encouraged to read this form carefully and to ask the person who presents it any further questions you may have before making your decision whether or not to participate. Joseph Henderson of the University of Rochester's Warner School of Education is conducting this pilot study. The PI estimates that approximately 30 people will take part in this study.

You are being asked to participate in this study because you are participating in the environmental sustainability planning process at .

Purpose of Study

The purpose of this study is to explore how a school implements a sustainability education program.

Risk of Participation

There is minimal risk associated with this study. There is a slight risk that you may find participation stressful or that you might feel pressured to participate by others in your school. You may find answering some questions uncomfortable, but you can always choose to decline to answer or to stop participation at any time. Additionally, all data (recordings, notes, documents, etc.) will be kept secure and confidential, and any potential identifying information will be made anonymous in this research study. All data, including recordings, will be destroyed five years after completion of the study.

Benefits of Participation

You will have the opportunity to share your experiences with sustainability in your own school. As one of a handful of schools in the United States implementing such a program, your story is unique and can influence other students' learning environments.

Description of Study Procedures

If you decide to participate in this study, you may be asked to:

- Be interviewed about your participation in sustainability planning committee. This interview will be audio-recorded and will take about 30 minutes to an hour to complete.
- Participate in a discussion with fellow students about their participation in sustainability planning committee. This will also be audio-recorded and will take about one hour.
- Be observed, photographed, video-recorded and/or audio-recorded while participating in normally scheduled sustainability projects and meetings at the .

Payment

You will receive no payment for participation in this study.

Confidentiality of Records

While we make every effort to maintain confidentiality, it cannot be absolutely guaranteed. Although every effort will be made to keep research records private, there may be times when federal or state law requires the disclosure of such records, including personal information. This is very unlikely, but if disclosure is ever required, the University of Rochester will take the steps allowable by law to protect the privacy of your personal information.

Contact Persons

For more information concerning this research, or if you feel that your participation has resulted in any emotional or physical discomfort, please contact: Joseph Henderson at: (585) 469-5163.

If you have questions, concerns or complaints about your rights as a research subject you may contact, anonymously if you wish, a Human Subjects Protection Specialist at the University of Rochester Research Subjects Review Board, Box 315, 601 Elmwood Avenue, Rochester, NY 14642-8315, Telephone (585) 276-0005. For long-distance calls, please call, toll-free, 001 (877) 449-4441. You may also call these numbers if you cannot reach the research staff or wish to talk to someone else.

Voluntary Participation

Participation in this study is voluntary. You are free not to participate or to withdraw at any time, for whatever reason, without risking anything. In the event that you do withdraw from this study, the information you have already provided will be kept private.

Subject Assent

I have read (or have had read to me) the contents of this assent form and have been encouraged to ask questions. I have received answers to my questions. I agree to participate in this study. I have received (or will receive) a copy of this form for my records and future reference.

Study Subject: _____ Print Name

Study Subject: _____ Signature _____ Date

Person Obtaining Assent

I have read this form to the *subject* and/or the *subject* has read this form. An explanation of the research was given and questions from the *subject* were solicited and answered to the *subject's* satisfaction. In my judgment, the *subject* has demonstrated comprehension of the information. I have given the subject adequate opportunity to read the assent before signing.

_____ Print Name and Title

_____ Signature _____ Date