

2017

Traditional Values in a Modern World: An Ethnographic Study of Permaculture Practitioners in Vermont

Rose C. Thackeray 6368276

Follow this and additional works at: <http://scholarworks.uvm.edu/envstheses>

Recommended Citation

Thackeray, Rose C. 6368276, "Traditional Values in a Modern World: An Ethnographic Study of Permaculture Practitioners in Vermont" (2017). *Environmental Studies Electronic Thesis Collection*. 43.
<http://scholarworks.uvm.edu/envstheses/43>

This Undergraduate Thesis is brought to you for free and open access by the Undergraduate Theses at ScholarWorks @ UVM. It has been accepted for inclusion in Environmental Studies Electronic Thesis Collection by an authorized administrator of ScholarWorks @ UVM. For more information, please contact donna.omalley@uvm.edu.

Traditional Values in a Modern World: An Ethnographic Study of Permaculture Practitioners in Vermont

Rose Thackeray
Undergraduate Thesis Proposal
In partial fulfillment of a Bachelors Degree of Science
Environmental Studies
Rubenstein School of Environment and Natural Resources
Honors College
University of Vermont 2017

University of Vermont Advisors:
Katharine Anderson, Senior Lecturer; Environmental Studies
Brendan Fisher, Associate Professor; Environmental Studies
Amy Seidl, Associate Director; Environmental Studies



Abstract

Our current agricultural system is unsustainable, creating lasting and accumulating effects on the Earth's ecosystems. Many people are growing unsatisfied with the ways in which our food system has degraded their individual and community well-being. Permaculture is an agro-ecological system, rooted in a set of ethics that in recent decades has sparked the interests of people far and wide, with varying backgrounds, to become more self-resilient and build healthier communities. This research seeks to understand individual experiences of permaculture practitioners in Vermont and the impacts to their environmental worldview, relationship to the natural world, sense of community, and resiliency. One focus group and six semi-directed interviews were conducted to assess the research questions. Informed by TEK, the data was analyzed within the knowledge-practice-belief (k-p-b) complex. Sources of knowledge acquisition are typified by: works of literature, notable figures, institutions of higher learning and opportunities for experiential learning. Daily and long term practices are organized by each individual participant. Relevant stories pertaining to evolved belief sets are included. Significant themes that emerged are: permaculture contains attributes of traditional ecological systems, the permaculture k-p-b complex impacts environmental worldview, relationship to the natural world and sense of community, community networks are central to permaculture, and personal food production activities increase resilience.

Keywords: community building, permaculture, resiliency, traditional ecological knowledge, Vermont

Abbreviations

CSA: Community Shared Agriculture
 GMO: Genetically modified organism
 G.C: Gillian Carlson
 k-p-b: knowledge-practice-belief
 MEI: Mother Earth Institute
 MOFGA: Maine Organic Farmers and Gardeners Association
 MWF: Maple Wind Farm
 NOFA VT: Northeast Organic Farming Association
 PDC: Permaculture Design Certification
 PINA: Permaculture Institute of North America
 R.C: Russell Carlson
 TEK: Traditional Ecological Knowledge
 UVM: University of Vermont
 WWOOF: Federation of Willing Workers on Organic Farms

Acknowledgements

The process of designing, conducting, and writing this thesis spanned sixteen long months and could not have come close to completion without the continuous love, support, and advice given to me by so many. Keeping with the essence of this project I would like to acknowledge those special people who have entered my life, no matter the length of time, and passed down knowledge, patiently taught skills, and informed the way in which I view and interact with the world. I am filled with gratitude and appreciation to you all for walking with me down this long, winding, oftentimes bumpy, but scenic road.

Mr. Hauptert, Mr. A. Smith, Mr. Marx- If I had asked myself question 4, your names, the courses you taught, the books we read, and the content you first exposed me to would have been my immediate response. Thank you, for challenging and engaging me at an early age.

Bruce Hennessey, Beth Whiting- For hiring a 'green', college kid from Boston at her first real job. Thank you for affording me my first opportunity for a lifetime of agricultural evolutions.

Ben Buckley, Erin Hammond, Maddie Ruth, John Smith- Because you are the farmer folk that gave me my first community in VT outside of UVM. Thank you, for your patience- teaching me how to do things and how to do things right, in every sense of the phrase, and always laughing through it.

Dr. Lisa Arensen- The task of this thesis would have been incredibly overwhelming had I not conducted research under your expertise and guidance. The information and experience you armored me with gave me confidence to keep going.

Dr. Brendan Fisher- For hearing me out, meeting me where I am at, providing a voice of reason and sending me off with a smile when our meetings did not always begin with one. I have appreciated your continuous advisement on this thesis, but more so your friendship.

Dr. Amy Seidl- If someone had told me fall of my freshman year that the captivating, yet intimidating, professor of my first 250-person lecture would advise me on my thesis and collaborate with me as teaching assistant for that same course four years later I would have screamed in disbelief. Thank you, for enhancing my undergraduate experience and for showing me mutual respect.

Dr. Katharine Anderson- The focus of personal experience, relationship to the natural world, and sense of community you bring to your courses- before I was even ready to begin considering those aspects- retuned me to places I had abandoned in new ways and introduced me to new places of which I have grown attached.

My study participants!- The generosity you extended to me by opening your doors, minds, and hearts was crucial to this thesis. Your words will stay with me as I move on through this evolution.

Emily Virzi- My partner, whom I look forward to living, learning, and growing alongside for the rest of our days.

My parents- I may be biased but I do not think you could find a more intelligent, loving, or supportive pair. Thank you, for supporting my endeavors, no matter how crazy.

Table of Contents

Abstract.....	2
Abbreviations	2
Acknowledgements	3
Table of Contents	4
Introduction.....	5
1. A Personal Narrative	5
2. Statement of Problem	7
3. Thesis Overview.....	10
Literature Review	13
1. Introduction	13
2. Decentralization.....	13
3. Localizing Movements	18
4. Motivations for Personal Food Production.....	21
5. Building Community	23
6. Conclusion.....	25
Methodology	26
1. Mixed Methodology Approach	26
2. Limitations	28
Results	30
1. Defining Permaculture	30
2. Sources of Knowledge Acquisition.....	31
3. Daily and Long Term Practice	34
4. Evolution of Belief Sets	41
5. Mechanisms for Resiliency	50
Discussion.....	57
1. Recommendations	63
Conclusion	64
1.1 Statement of Interest	64
1.2 Larger Gleanings.....	65
Appendix A	69
Interview Subjects:.....	69
Semi-Directed Interview Questions:	69
Appendix B	70
Focus Group Subjects:	70
Focus Group Topic:	70
REFERENCES.....	71

Introduction

1. A Personal Narrative

As a student of the environment I have accrued contextual knowledge of relevant and imperative concepts, research, and fields informing the discipline. This information was taught to me by attending classes and talks, all of which followed a similar format—regardless of the area of focus (Princen, 2005). The speaker would begin by detailing the ecological context of a given system that he/she is expert on. Historical context and the current state of what is disrupting or altering that system is then described. During the final minutes of the presentation the speaker would often conclude that the problem is not biological, chemical, or geologic, but human (Princen, 2005).

I came to realize my area of interest as those speakers and teachers captivated me with knowledge about our current food system and alternatives to that system. During my sophomore year, I explored those interests further in courses such as Sustainability Science, Ecology for Sustainability, and Ecosystems Management: Integration of Science, Society, and Policy. However, it was not until I worked on the poultry crew for Maple Wind Farm (MWF) in Richmond, VT that I began to comprehend the many systems - natural, social, and spiritual – that occur and are cultivated in people who work the land daily for various forms of food production.

During my summer as a non-genetically modified organism (GMO), grass-fed, poultry farmer, I began my day at 5:30 am, opening nest boxes for the layer hens as the sun rose over the Green Mountains. I performed daily chores at the farm for 1,000 layer hens and raised poultry birds from hatchlings to eight weeks. After one week at this farm, I was beginning to see some of the systems at work. Each day, as we moved our chicken

tractors forward one space so the birds could get fresh grass, I saw how quickly the grass grew back as nutrients were put back into the soil from manure. I will never forget the first time I looked back from where the tractors currently sat on the field and could visualize the transition from manure-covered dirt on yesterday's plot, gradually, to a new and lush grass-covered plot from seven days prior. In that moment, I understood the alternative agricultural systems that grass-fed animal production supports. I could close my eyes and see the cows in the fields during winter eating the summer's hay, which then transitions into chicken production for the summer. The chickens pick apart the cow patties from the winter, contributing to nutrient levels in the soil and adding their own nutrient-rich manure. Throughout the summer, as the chickens move across twenty-acres of fields, the grass is mowed, dried, and baled about twice a month. That hay will then be used to feed the cows during the next winter, when the food production system begins over again.

My summer working as a farmhand at MWF was one of the most influential and life-directing experiences I have had during my undergraduate career. My farm experience further developed my work ethic, as I began my days with the sun and labored tirelessly throughout the summer months. The knowledge and skills I acquired throughout that summer, personally caring for and raising 18,000 poultry birds, influenced my sense of self-sufficiency. As I began to see the fruits of mine and my co-workers labor after our first chicken harvest in June and as vegetables began to ripen in the beginning in July, my self-confidence in my ability to provide for myself and others skyrocketed. My individual sense of place within the environmental movement was also strengthened because I was doing work that empowered me to live in accordance with

some of my environmental values. This extraordinary summer job provided me with a sense of community as I worked passionately, determinedly, and intimately alongside a small group of farmers. This sense of community was then extended further when people from different farms in the area were brought together during events like Farmer Dinners at the Intervale Center and Farmer Olympics hosted by the Northeastern Organic Farming Association of Vermont (NOFA VT).

My experience farming informed and expanded the contextual knowledge I was taught in the classroom. As my contextual knowledge from the University of Vermont married my empirical knowledge from farming, my behaviors changed and my ethics, values, and belief sets evolved. The opportunity for self and subsequent community strengthening that I was given at MWF continues to drive my academic interests: to explore the nexus of food, land, and community.

2. Statement of Problem

Research and resources have been expended in recent decades to document what environmental scholars now term as the Anthropocene, coined in 2000, to describe the current geologic epoch that we have entered as human effects on the environment have reached levels severe enough to alter the natural systems within which we operate (Princen, 2005; Ruddiman, 2013).

The implications of this epoch have been modeled and explored by notable scientists such as Marion King Hubbert, Syukuro Manabe, and Richard Wetherald. Hubbert (1956) introduced his peak theory, predicting that fossil fuel production in the U.S would peak between 1965 and 1970. Two decades later Manabe and Wetherald modeled the effects of increased CO₂ emissions on “the distribution of temperatures in

the atmosphere” (1975, pp. 1). While monumental to the scientific community, these efforts do not discuss the individual and collective human behaviors inextricably connected to these phenomena. In his book, *Sacred Ecology*, Berkes (2012) highlights other academics who have incorporated the portentous trends, supported by bodies of data, into their research to better understand the intricacies of ecosystem dynamics alongside human behavior (Princen, 2005). Thinkers such as Aldo Leopold, Yi-Fu Tuan, and James Lovelock offer theories that encompass “a broader holistic view” of the science of ecology, contributing to “a new vision of the earth as a system of interconnected relationships” (Berkes, 2012, pp. 2). Their theories on the land ethics, topophilia, and Gaia, respectively, expand this vision further in their personal attempts to understand “human society as part of a web of life within the ecosystem” (Berkes, 2012, pp. 2).

Toffler contributes to understanding of the Anthropocene as he refers to the period 1950-2025 as the “hinge of history”, one that is defined by the exponential and unchecked growth of human societies, resulting in subsequent extinction, disruption, and alteration of natural ecosystems (Toffler, 1990; Snyder, 1995, pp. 13). Berkes posits that “environmental problems of the contemporary world”, stem from the collective human experience as alien from nature (2012, pp. 2). Consequently, this perceived alienation has resulted in the “search for new ways of relating to nature” (Berkes, 2012, pp. 2).

When viewed holistically, this ‘hinge of history’ requires a ‘restructuring’ of globalized systems and a ‘rethinking’ of individual roles within those systems (Toffler, 1990; Princen 2005). These reflective processes of ‘restructuring’ and ‘rethinking’ draw from conclusions regarding ecological crises facing the planet: human problems require

solutions born out of moral and cultural shifts, not just technological change (Synder, 1995).

Commonly proposed solutions emphasize maximizing the efficiency of machinery and resource use (Asafu-Adjaye, et al., 2015). The philosophy of ecomodernism has been introduced as a response to the Anthropocene and the challenges it poses. Ecomodernism argues that advancements in science, technology, and developments will increasingly decouple human impacts on the natural world from economic activity (Monboit, 2015). To achieve this, ecomodernists suggest focusing said advancements toward the intensification of human activity, “particularly farming, energy extraction, forestry, and settlement”, (Asafu-Adjaye, et al., 2015, pp. 7). The principles of ecomodernism rely on strong institutions and states for success, perpetuate “dominant political and economic narratives” and do not require effective restructuring of globalized systems or rethinking of individual behaviors, values, or norms (Blomqvist, et al., 2015; Monboit, 2015).

Alternatively, the philosophy of “degrowth” critically analyzes the credibility of such claims (Caradonna, et al., 2015). Degrowth discourse requires the restructuring of capitalism, the current globalized social system, and products of that system, such as Gross Domestic Product (GDP) and commodification (D’Alisa, et al., 2015). In a degrowth society individuals and communities are required to rethink new forms of living and producing to support systemic restructuring (D’Alissa, et al., 2015).

A third perspective incorporates aspects of both ecomodernism and degrowth, promoting the utilization of social organization principles for individuals, communities, and the interconnected global society to create long-term, sustainable resource use

(Princen, 2005). Relevant principles include: “fragmentation of modern empires, integration of global connections with old ideologies and scientific theories, environmental consciousness, fresh forms of community, communication networks, and new proposals in science” (Princen, 2005; Synder, 1995, pp. 13).

In summation, humans have entered a new geologic epoch, the Anthropocene, that is defined by both ecological degradation and subsequent degradation of our relationship to nature. The philosophies of ecomodernism, degrowth, and social organization offer opposing trajectories for individuals, communities, and the interconnected global society to move forward as this ‘hinge of history’ unfolds. The principles of social organization, specifically, will be explored further in the context of this study.

3. Thesis Overview

This thesis looks to explore the relatively new agricultural system of permaculture and its ability to provide strategies for individuals, communities, and potentially regions, to begin to undergo said moral and cultural shifts in response to environmental conditions of the Anthropocene. Permaculture, as an alternative agricultural system, navigates the space between ecomodernism, for advancing understandings in the field of agricultural science, and degrowth for its emphasis on creating new forms of living and producing.

An ethnographic case study of permaculture practitioners utilizing semi-directed interviews and a focus group was conducted to assess the research questions:

- 1) How can the acquisition of a permaculture k-p-b complex impact a practitioner’s environmental worldview, sense of community and overall resiliency towards daily stressors? If and how permaculture allows for “a direct relationship among

the individual, the community, and the natural world [to] be established and maintained” is analyzed (Cajete, 1994, pp. 74).

On an individual level permaculture experiences were explored during semi-directed interviews (Berkes, 2012). A focus group was organized to offer a specific perspective to the study: new and young (age >25) permaculturalists. A personal narrative reflecting on my experience working as a farmhand on a diversified farm has been included in this introduction as it provided inspiration and basis for the research hypothesis.

Informed by Fikret Berkes in his textbook, *Sacred Ecology*, the data collected through this research was organized within the framework of TEK. Many contributions have been made in attempt to define these “singularly ambiguous terms”, as they have been strung together and “collectively refer to a way of life” (Witt and Hookimaw-Witt, 2003 pp. 365; Berkes, 2012, pp. 4). Johnson adds to this definition of TEK, acknowledging that while its roots are in the past it is also “cumulative and dynamic, building upon the experience of earlier generations and adapting to the new technological and socioeconomic changes of the present” (1992, pp. 4; Berkes, 2012, pp. 4).

Martha Johnson offers another definition of TEK, which conceptually relates to the study and application of permaculture, “a body of knowledge built up by a group of people through generations of living in close contact with nature” (1992, pp. 3).

Traditional ecological systems begin with the process of k-p-b complex, where “sources of local knowledge such as practical knowledge or more specific environmental knowledge” is acquired (Berkes, 2012, p. 17; Lewis, 1993). This local and empirical knowledge informs one’s practices, or the way that people carry out livelihood activities (Berkes, 2012). The coupling of ecological knowledge with specific livelihood practices is understood in traditional ecological systems to evolve belief set, or “a person’s

perception of their role within ecosystems and how they interact with natural processes” (Berkes, 2012, pp. 17).

Extensive research has been done to understand the negative ecological, societal, and cultural impacts, of which the globalized food system is based in and perpetuating. Research has also examined the capability of alternative agricultural systems, such as organic agriculture, biodynamics, and agroforestry, as sustainable forms of food production (King, 2008). There has been extensive research into the individual and site-specific application of the agricultural design practice of permaculture (Telford, 2016). Currently there are five Permaculture Design Certification (PDC) courses offered within the state of Vermont: Prospect Rock Permaculture, Yestermorrow Design School, Mother Earth Institute, Whole Systems Design, and Designing Abundance. There are many people of varying backgrounds and motivations coming to the practice of permaculture in the state. This research will contribute to the understanding of the permaculture movement in Vermont and its abilities for future application.

Literature Review

1. Introduction

This literature review is divided into four sections: Decentralization, Localizing Movements, Motivations for Personal Food Production, and Building Community. In the first section a discussion is presented on the decentralizing tradition that has occurred within human settlements for time immemorial. The reoccurrence of that tradition is then explored through current localization strategies in response to global environmental issues. Also within this section, a brief history of the practice of permaculture, the ethics it is rooted in, and its status as a growing agricultural system is provided. The psychological feelings of resiliency and self-sufficiency that accompany examples of personal food production are then highlighted. In the final section, social permaculture is discussed as leverage for community building through the set of ethics it is rooted in as well as the mobilization of self-sufficient, resilient individuals.

2. Decentralization

2.1 Brief Historical Overview

When evaluating trajectories of societal development, cross-culturally, beginning with the evolution of *Homo sapiens*, there have been two pathways towards which human groups have organized (Sale & Princen, 2012). Generally speaking, these two paths can be categorized as the following: centralizing, where development goals for a given society are reaching toward creating a city-state or nation-state, which strives for domination, regional autonomy, and a balance of power or decentralizing, which “aims to give citizens or their elected representatives more power in public decision-making” and

has been systemically marginalized and portrayed as backward, despite its historical precedence in every human society (The World Bank, 2001; Sale & Princen, 2012).

These centralizing forces of social development are often met by severe impediments, such as war, disease and famine, where citizens are faced with the decision of how to respond (Sale & Princen, 2012). Individuals such as “farmers, yeoman, small landholders, shopkeepers, and local manufacturers”, in the face of these decisions, have historically created a “variety of decentralized organizations... to reinstitute government in local, popular, and anti-authoritarian forms” (Sale & Princen, 2012, pp. 146). The very foundation centralized powers rely on to grow, unchecked and exponentially, are those above individuals who remain resilient as “empires rise and fall” (Sale & Princen, 2012, pp. 142).

2.2 Case Study: Cuba post-1989

Examples throughout history show the existence of anti-authoritarian, independent, self-regulating, local communities as being “fundamental to the human record in the existence of centralized, imperial, and hierarchical states” (Sale & Princen, 2012, pp. 148). This phenomenon is highlighted in the urban agricultural developments of Cuba during the period after ties were severed with the Soviet Bloc in 1989 (Warwick, 2001, pp. 54). As their international markets crumbled, Cuba found itself “on the edge of collapse” (Warwick, 2001, pp. 54). The magnitude of this collapse was most seen within the country’s food system and can be understood in the following statistics: “57% of Cuba’s caloric intake was imported [before 1989]”, “80% of proteins and fats [were] imported from other countries [before 1989]”, “80% reduction of pesticides and fertilizer imports [after 1989]” (Warwick, 2001, pp. 54). The post-Soviet crisis incited a popular

response by large populations of people living in the country's cities, such as Havana (Warwick, 2001). By 1998, Cuba's agricultural system had completely altered with 30,000 people producing food on more than 8,000 gardens, or 30% of the available land (Warwick, 2001). The "farmers, yeoman, small landholders, shopkeepers, and local manufacturers" of Cuba organized into five main categories of food production during this time (Sale & Princen, 2012, pp. 148). Warwick details them as: "

- *Huertos populares* (popular gardens): gardens privately cultivated by urban residents in small areas throughout Havana,
- *Huertos intensivos* (intensive gardens): gardens cultivated in raised beds with a high ratio of compost to soil and run either through a state institution or by private individuals
- *Autoconsumos*: gardens and small farms belonging to and producing food for workers, usually supplying cafeterias of particular work places
- *Campeños particulares*: individual small plots cultivated by farmers, largely working in the greenbelt around the city
- *Empresas estatales*: large farms run as state enterprises, many with increasing decentralization, autonomy and degrees of profit sharing with workers" (2001, pp. 55).

Many individuals in Cuba responded to the fall of its country's international markets with creative urban agricultural alternatives that did not require chemical inputs, large-scale, corporate or state control, making "enormous strides towards agricultural self-reliance" (Warwick, 2001, pp. 57).

2.2 Current Status

In the last seventy-five years, as a nation, and more recently as an interconnected and globalized society, humans have experienced a "historically brief period", marked by "plentiful raw materials, highly concentrated and inexpensive energy sources, and an

abundance of fossil fuels” (De Young & Princen, 2012, pp. xvii). As global city populations increase and more people are surrounded by a built landscape, academics from many disciplines are exploring the disintegration of the human relationship to the natural environment (Berkes, 2012). This human alienation from nature has been documented as one of the contributors to the environmental destruction of today’s world (Berkes, 2012). Marx defines alienation from something as, “to fail to recognize it as something one has helped to *produce*”, which Vogel interprets in this context as “the failure to recognize the human origin of objects, and institutions, that have been produced by human activity” (2015, pp. 79).

Guha (1998) examines the influences and differences existing and interacting among Eastern and Western religious, political, social, and economic traditions, philosophies, and institutions. Vogel (2015) attributes the collective and historical understanding of that dichotomy to human’s idea of nature that subsequently informs environmental thinking, which in Western ideologies inherently excludes human beings from the concept of nature, and instills separation. Vogel (2015) highlights the pervasion of this separation by contrasting U.S environmental concern for conserving wilderness with German Green environmentalism, which seeks to “restructure [the] global economic system and patterns of global consumption in a way that would allow humans to live and work in ways that are both ecologically sustainable and globally just”.

Concerned global citizens recognize that the aforementioned period of human history is nearing its end, as the scientific community, notably the Intergovernmental Panel on Climate Change, analyzes data into the challenges that define the current and future generation(s) (Princen, 2005). Two of these challenges, anthropogenic climate

change and peak fossil fuel extraction, are inextricably connected, probing the question: “When localization occurs, how will each individual, household, community respond?” (De Young & Princen, 2012).

2.2 Localization as Response to Centralization

Localization refers to a process of social change where the primary concern is restructuring institutions and behaviors to adapt to and live within the limits of natural systems (De Young & Princen, 2012). The process of localizing requires people to assess their everyday behavior within a specific place-based community; however, the interconnectedness of the globalized world also requires localities to assess their relationship to regional, national and international networks (De Young & Princen, 2012). De Young and Princen (2012) assert that humans are problem-solving creatures with an inherent inclination to thrive within given circumstances and the process of localization provides leverage for individuals, households, communities and eventually regions and nations to shift from forces of centralizing development (Hemenway, 2015).

2.2.a Current Status

The “hinge of history” where humans are currently situated, differs from any other in human history due to the period after the industrial revolution, which marked a transition in the human population from “generalists with broad skill sets into workers with narrow training” (Hemenway, 2015, pp. 187). Those specialized individuals produced a myriad of complex technologies securing their roles as “essential for industrial life”, while simultaneously decreasing their individual self-sufficiency (Hemenway, 2015, pp. 187). Despite the historic pattern of a centralizing tendency existing alongside the minority decentralizing tradition, it is still not difficult to find “the

headstrong town” or the “self-minding neighborhood” in the U.S (De Young & Princen, 2012, pp. 150). In the coming decades, communities across the U.S, and globally, have the opportunity to decide “to establish patterns- of localism, self-sufficiency, ecological harmony, and participatory democracy” for generations to come in response to the aforementioned question (De Young & Princen, 2012, pp. 150).

3. Localizing Movements

After defining the modern world within a context of a “single human society” facing a myriad of environmental problems, in part due to people’s collective separation from nature, it is imperative to explore where this phenomenon has ignited a search for new strategies for instilling a connection to nature (Berkes, 2012, pp. 2). This project looks toward the emergence of the study and application of permaculture as one innovative, creative and novel process for reconnecting individuals, households, and communities to their places of nature (Berkes, 2012; De Young & Princen, 2012)

3.1 Permaculture

3.1.a History of the Movement

There are two prominent figures, David Holmgren and Bill Mollison, who together coined and developed the concepts and practices of permaculture in the late 1970’s (King, 2008). Although the foundation of this holistic theory seeks to transcend boundaries or definitions it can be viewed as:

- 1) “Consciously designed landscapes, which mimic the patterns and relationships found in nature, while yielding an abundance of food, fibre, and energy for provision of local needs” (Holmgren, 2002, pp. xix; King, 2008)

In 1981, Mollison and Holmgren came together to begin teaching the first permaculture course as an applied design system, quickly sparking the interests of

individuals across the globe (Henry, 2006). Morris reflects on the year 1993 as the movement of permaculture gained widespread recognition for “having the potential to help guide an earth ethic within landscape architecture” (2012, pp. 8). Scholars refer to this method as “positivistic and optimistic in nature” due to its ability to frame environmental change tangibly, set realistic goals, and provide a “comprehensible ecological viewpoint” (Morris, 2012, pp. 8). Since its beginnings, permaculture has spread virally because it provides a clear method for agricultural production that utilizes “ethics, ecologically derived design principles, and systems-thinking approaches to spatial arrangement that draw on ecological food-webs and nutrient cycling concepts” (Morris, 2012, pp. 8).

3.1.b Permaculture Principles and Ethics

The rapidity with which the permaculture movement has spread can be, in part, attributed towards the ethical foundation that permaculture is based. Permaculture is rooted in three ethics: “Care of the Earth”, “Care of People”, and “Give Away Surplus”, providing students with a platform to begin or continue evolving their personal land ethic or environmental worldview (Hemenway, 2015; Telford, 2016).

These ethics empower individuals to understand, holistically and systemically, the confounding global environmental issues that fifty years of relatively unchecked growth has created (Princen, 2005). Permaculture provides individuals with a positivistic approach to think about personal actions that we can each take towards creating a more sustainable future (Holmgren, 2002). These actions and behaviors are organized into twelve design principles defining the system of permaculture: observe and interact, catch and store energy, obtain a yield, apply self-regulation and accept feedback, use and value

renewable resources and services, produce no waste, design from patterns to details, integrate rather than segregate, use small and slow solutions, use and value diversity, use edges and value the marginal, and creatively use and respond to change (Holmgren, 2002).

When these principles of design are taught with an ethical foundation, individuals are enabled to support themselves in a way that also “care[s] for the community of people we are embedded in” (Hemenway, 2015, pp. 181). Cross-culturally, permaculture provides a pathway towards an ethical evolution that begins individualistic and site-specific in scope, but then integrates into a larger network at the collective and global level (Holmgren, 2002). Permaculture, as a design approach with an ethical foundation, recognizes the uncertainty of the future and the ambiguity of concepts such as sustainability, yet has still been successful in unifying thousands of critical and creative systems thinkers with the intention of creating change in the current institutions (Telford, 2016).

3.1.c Current Status

When searching the term “permaculture design course” (PDC) into Google one can find hundreds of organizations and schools teaching the theory and application of this lifestyle throughout every continent, sans Antarctica. Featured on the websites for these different courses you can find statements from students after they have received their PDC, detailing the motivations and benefits of the course (Permaculture Association, n.d). Graduates from the Permaculture Association in the United Kingdom commented on the positive responses permaculture provided them with when thinking about the efforts they can contribute to improve their self, household and community as well as

their changed worldviews (Permaculture Association, n.d; Holmgren, 2002). Students were quoted reflecting on their PDC experiences: “The frameworks for thinking that are part of permaculture helped me gain clarity and feel empowered to begin implementing change in my life’, and ‘If you apply it to your life, permaculture is a manual for surviving on the planet” (Roach, 2016).

4. Motivations for Personal Food Production

Using case studies from communities in Cuba and Austria, Van Der Stege, et al. (2012) explores the food production activities people partake in, the aims behind those practices and the ways they contribute to resilience through an increase in capital. Four indicators for building resilience were used at both study locations: learning to live with change and uncertainty, nurturing diversity for reorganization and renewal, combining different kinds of knowledge, and creating opportunity for self-organization.

For both study locations, it was apparent that “gardeners have had to learn to live with uncertainty and continue to adapt to new circumstances” through the application of different traditional personal food production activities (Van Der Stege, et al., 2012, pp. 261). Home gardens are often designed within “a diverse mosaic of ... managed and natural landscapes” creating “highly resilient small agroecosystems nested in larger agroecosystems” (Van Der Stege, et al., 2012, pp. 261). Many study participants expressed the importance of home gardens to serve as “a buffer to overcome disturbances” (Van Der Stege, et al., 2012, pp. 261). Home gardens provide direct benefits that can be accessed through “food, medicinal and ritual plants, and the profit from selling or bartering plant material” (Van Der Stege, et al., 2012, pp. 261).

Hemenway affirmed the notion of home gardens allowing individuals to better overcome disturbances when reflecting on his own experience with permaculture. He shared that the practice of permaculture provided him with a way to begin to deal with “panic attacks and other signs of stress” (2015, pp. 186). Deppe (2010) contributes other examples where the activity of canning and storing locally or personally grown food has enabled individuals to better cope with short and long-term stressors. The first being the supply of apples stored in her home, equipping her with a response to a “personal or regional emergency” and therefore strengthening her overall self-resilience (Deppe, 2010, pp. 54). She gives a specific example of a personal emergency where an individual lost their job, but had stored bulk amounts of staple foods, and therefore does not have to worry about going hungry, at least for a while (Deppe, 2010). Lastly, another example highlighting the benefits of storing personally or locally produced food occurs when an unexpected guest(s) arrives at one’s home and due to the availability of stored and canned foods, a meal can still be provided for all (Deppe, 2010). Consequently, this style of storing serves to “enhance the quality of [life] in ordinary times” through the promotion of community building and sharing, as well as “personal and regional resilience in hard times” (Deppe, 2010, pp. 54).

4.1 Current Status

Hemenway (2015) discusses the current monetized system of exchange in the U.S where an individual’s energy exchange for resources is focused solely on moneymaking and distribution. In relation to food procurement, we have moved away from moneyless societies and in turn have created complex global markets with associated monetary values for the goods, services, and exchanges necessary for daily life (Hemenway, 2015).

For time immemorial individuals have practiced personal food production activities and today those activities promote alternative systems within the global market as well as self-resiliency (Deppe, 2010; Hemenway, 2015). Permaculture design application utilizes home gardens for personal food production in creating “multifunctional contributions to the owning household and community as a whole” while also promoting bartering or gift economies (Van Der Stege, et al., 2012, pp. 261; King, 2008; Hemenway, 2015).

5. Building Community

Referring to the question posited by De Young and Princen (2012) (“When localization occurs, how will each individual, household, community respond?”), Hemenway (2015) adds that localizing movements first require individuals to work within their current living situation to design and build more reliable and meaningful livelihoods. The practice of permaculture can be viewed as a localizing movement that allows individuals to evaluate their needs, creating new ways to attain them that require less or no money (De Young & Princen, 2012; King, 2008; Hemenway, 2015).

Hemenway suggests “deeper, more direct connections to family, friends, neighbors, plants, animals, and the rest of the living world” for individuals to effectively attain the necessary goods, services, and exchanges for daily life (2015, pp. 192).

The monetization of goods, services, and exchanges has altered the daily life of individuals in the U.S, and contributes to a lack of community within food production and consumption (De Young & Princen, 2012; Hemenway, 2015). For example, Americans value hired help and entertainment instead of facilitating those services and exchanges with family and community members “who once took care and with whom we shared, made, and did things” (Hemenway, 2015, pp. 192). Personal food production is

one strategy that permaculturalist's utilize for demonetizing as well as creating and strengthening the community in one's life. One simple way permaculturalist's are promoting demonetization alongside community building is through potluck dinners, where people within a community are brought together to collectively share dishes that were individually contributed (De Young & Princen, 2012; Hemenway, 2015). In conclusion, modern forms of recreation that are costly, requiring expensive tickets and gear, decline in value over time when contrasted to value, skill and community building activities, such as meal sharing and do-it-yourself projects (Hemenway, 2015).

5.1 Permaculture and Community Building

Beyond designing an individual site, permaculture empowers practioners to strengthen relationships within their social systems and make contributions to the health of their community spaces (Holmgren, 2002). Hemenway recognizes that people are the most abundant resource in any town, all of whom actively contribute or hold untapped potential for their community's overall social, spiritual, and cultural capital, as detailed below:

Social Capital

The goodwill from others that service to community creates, the favors owed and are owed, and the connections and networks present.

Spiritual Capital

Participation in daily practices or rituals that allow humans to deepen connection to a higher order they are preformed, achieving deep connection with and guidance from something greater than human.

Cultural Capital

The shared art, music, myths, stories, ideas, and worldviews of a community. A collective capital, not held by individuals, that glues communities and whole peoples together adding depth and meaning to human life.” (2015, pp. 195-196).

One of permaculture's main design principles focuses on generating and storing a surplus, which can also be applied to this notion of human resources and associated forms of capital (Holmgren, 2002; Hemenway, 2015). Hemenway (2015) expands upon this concept and discusses the idea of social permaculture, which proposes utilizing permaculture design methods to help understand and work with people.

Ultimately, the study of social permaculture encapsulates the ethic of "People Care" and provides strategies for building social health (Hemenway, 2015). Hemenway suggests incorporating social permaculture principles such as: "The community is the expert", "Look for partners", "You can learn a lot just by observing", "Have a vision", "Start with the petunias: lighter, quicker, cheaper", and "Triangulate" to the design and implementation of public spaces, subsequently strengthening the aforementioned capitals, (2015, pp. 215). These principles empower individuals and communities to utilize their available resources for information, expertise, and partnerships when planning, while also advising to start small, yet diverse in regards to the elements included in said plan (Hemenway, 2015).

6. Conclusion

A historical context of decentralist tendencies existing within centralizing traditions was provided alongside a global environmental context to introduce the process of localization in modern constructs. The study and application of permaculture was then introduced as one opportunity people are exploring for localization in relation to personal food production and community building. The next section of this thesis seeks to explain the methodology used to gain insight into individual permaculture practitioner's experiences in the state of Vermont utilizing a TEK framework.

Methodology

The following section describes the methods used to achieve the research goal. The goal is to understand individual permaculture practitioner's experiences of knowledge acquisition, applied practices, and evolved belief sets to collectively contextualize them within the localization framework.

The following goals were established:

1. To understand individual permaculture practitioner's k-p-b complex;
2. To understand individual permaculture practitioner's perspectives surrounding self-sufficiency and resiliency;
3. To understand current community connections among permaculture practitioners.

1. Mixed Methodology Approach

1.1 Auto-ethnography

Intention for this research project was grounded in the methodology of auto-ethnography, a relatively new method of research that seeks to weave theory and personal narratives to share and make sense of life experience (Kaufmann, 2014, pp. 102). This approach moves from traditional ethnographic methods "into an approach that is more personally meaningful" to both the author and the readers (Tombro, 2016).

This methodology was incorporated within the Introduction section of this thesis in the form of detailed personal narrative describing a transformative experience, which provided motivation for the research question. Drawing on interview transcriptions, conversations, observations, and experiences, the inclusion of personal writing contributes to the authors aim of research: to find themselves in the context of a larger world (Tombro, 2016).

The broader field of ethnography, its case studies and consequent findings, are often “emotional, personal, therapeutic, interesting, engaging, evocative, reflexive, helpful, concrete, and connected to the world of everyday experience” (Tombro, 2016, pp. 43). Auto-ethnography enhances the ability for research to have that effect by including “a personal, evocative story to provoke others’ stories [that] adds blood and tissue to the abstract bones of the theoretical discourse” (Tombro, 2026, pp. 43). The intention of this thesis aligns with that of notable scholar Carolyn Ellis (2016): to be true to feelings, move away from time ordered structures and convey emotions.

1.2 Ethnography

To effectively understand the individual experiences of permaculture practitioners in Vermont an ethnographic approach was utilized. Fundamentally, ethnography is “the description of peoples or cultures” (Denscombe, 2011, pp. 79). To ethically conduct research regarding human subjects the *Protocol Exemption Review and Determination* application denoting the intentions of my study was submitted and accepted by the The University of Vermont Committees on Human Research. The names of those interviewed, as well as their respective businesses, have been altered to protect privacy and insure anonymity for my subjects.

To ground the study in this approach time was spent in the field amongst individual permaculture practitioners while conducting participant observations (Denscombe, 2011). Routine and typical aspects of everyday life were documented alongside the participant observations. Semi-directed interviews were then conducted to understand personal k-p-b complexes in relation to permaculture of each interviewee (Denscombe, 2011).

1.2.a Semi-Directed Interviews and Focus Group

To achieve the first two research goals listed above a series of six semi-directed interviews were conducted throughout the summer, fall and into winter. These interviews allowed for an introduction to varying individual perspectives and contributed to the development of an in-depth understanding of permaculturalists in Vermont (See Appendix A). A criterion sampling approach was employed where people that have a background in permaculture were specifically chosen to interview (See Appendix B) (Denscombe, 2011). Conducting in-depth interviews with a small number of the ‘*right*’ people offered significant insights into the lifestyle and culture amongst permaculture practitioners (Hay, 2005, p. 173). A focus group was then conducted that consisted of the summer 2016 Mother Earth Institute (MEI) team members to glean insight into a homogenous age and gender group containing practicing permaculture.

The interviews and focus group were audio-recorded and transcribed. Following the transcription process data was thematically analyzed into the three arenas of the k-p-b complex. The resulting data for each theme were then organized to locate them within more general institutional contexts and frameworks (Hammersley & Atkinson, 2007, p. 163).

2. Limitations

A relatively short study period of one-year limited the number of interviews and focus groups conducted for data collection. While the small population size of participants included within the study allowed for in-depth information to be collected, it does not allow for generalizations to be made about permaculture practitioners anywhere else besides Vermont. Also, this study was conducted during the summer and fall months

when farmers are especially busy, which may have hindered the number of willing participants.

Results

The data collected through six semi-directed interviews and one focus group with individuals practicing permaculture in the state of Vermont are compiled into five overarching themes: defining permaculture, sources of knowledge acquisition, daily and long term practices, evolved belief sets, and resiliency.

1. Defining Permaculture

Focus group participants were explicitly asked to discuss “what permaculture means to [them]”. As a part of their answers many offered personal definitions that I will include here:

- 1) Erica Freeman: Permanent agriculture. Creating a more permanent system of agriculture, less like agriculture like we know of it- with more perennial crops and giving some autonomy back to agriculture and plants rather than depleting soils with annual crops that need a lot of input from us.
- 2) Julie McDonald: Agriculture, not only being that of the earth, but that of relationship, a dynamic relationship to the earth and a dynamic relationship to the people and to the animals and to the plants, that can be sustained not just for this generation but generations back, generations forward. Input back to the earth is something that is held within the context of permaculture of not just, ‘What crops are we yielding? What are we getting from the earth?’, but ‘What are we giving? and What are we inputting back to the system that’s alive? and How can we support continuing to be fertile?’.
- 3) Madeleine Lynch: Including people in it, and thinking of it as a mindset and guidelines for relating to the Earth, that are informed by the Earth. It can be applied to our relationships to other humans as well and to other things that we do not consider agriculture
- 4) Andrea Allen: Mindful farming, using resources in a way that benefits the relationship between people and the earth and doing that in a mindful way

- 5) Ashley Norton: Working in line with nature's design and learning from natural systems to better construct more effective systems, whether within personal relationship, design on farms, gardens or landscape and social structures- relational or hierarchical or governmental. Learning for the future.
- 6) Brooke Smith: Incorporating nature's functions into the farm itself and trying to utilize natural processes as much as possible in the act of farming and living, lifestyle too.

Participants of individual interviews were asked a set of questions addressing their belief sets since integrating permaculture into their lives. As part of those responses, both Kennedy and George offered definitions of what permaculture means to them:

- 1) Mark Kennedy: Permaculture is a thing that you do, but it is also a way that you try to be because it is about an object of leaving things better than you found them, or figuring out how you take more responsibility for your needs and you are useful to your community. In a lot of ways, it is like a philosophy.
- 2) Aaron George: Permaculture can transform people and change, not just their lives and their livelihoods but the psyche. The psyche changes the longer you work on implementing these perceived systems and thinking in this way because it changes the way the world is perceived.

2. Sources of Knowledge Acquisition

The first four questions posed to the individual interview participants sought to document sources of knowledge acquisition in relation to agriculture and more specifically, permaculture. These sources of knowledge could come from books, schools, experiences, and people who have influenced their lives.

Many works of literature were reported as influential. These works include: *Reading the Forested Landscape* by Tom Wesell, *Edible Forest Gardens* by Dave Jacke and Eric Toensmeier, *One Straw Revolution* by Masanobu Fukuoka, the many publications issued from the Rodale Institute and writings by Wendell Berry.

Other notable figures within the permaculture world were mentioned. Half of my interviewees mentioned Bill Mollison as a source of knowledge of and inspiration for permaculture systems. Two interviewees also added David Holmgren as another source of permaculture knowledge.

Interviewees offered a myriad of institutions they attended and were exposed to agricultural related learning. Russell Carlson (R.C) pointed to his middle school and high school experiences at a Quaker boarding school as the beginning of his agricultural influence, where he was first exposed to the daily chores and hard work required for food production. Kennedy located two influential courses within his time at the University of Vermont as sources of initial exposure to agricultural systems: *International Environmental Studies, ENVS 002* and *Living Self Sufficiently*. Gillian Carlson (G.C) also noted her alma matter, The College of the Atlantic, for providing her with a foundation and opportunities to explore agriculture further. Kristen Alexander attended the Wisdom of the Herbs School to study medicinal herbalism with noted friend and mentor, Annie McCleary.¹

Every interviewee had a multitude of experiences that they sought out after college and later in life where they furthered their passions within the agricultural field. Both Nicko Ryan and Kennedy spent time travelling and farming through the Federation of Willing Workers on Organic Farms (WWOOF) in India and Italy, respectively.² Alexander noted former places of employment, such as the Smokey House Center in Danby, VT, a dairy farm, and a biodynamic farm as sources of information in relation to

¹ <http://www.wisdomoftheherbsschool.com/>

² <https://wwoofusa.org/>

agricultural production.³ Conferences such as the Bioneer's Conference, the Northeast Organic Farming Association of Vermont (NOFA VT)⁴, and the Maine Organic Farmers and Gardeners Association (MOFGA)⁵ were mentioned by four of my six interviewees as sources of knowledge acquisition through seminars, events, and networking.

Kennedy and R.C both spoke of intentional communities where they spent time living and cultivating food amongst and alongside community members with whom they lived. Kennedy spent a semester living, studying, and farming in Auroville, India, an intentional, universal city.⁶ Upon moving to Vermont in 1995, Russell and Gillian Carlson first settled in an intentional community, Ten Stones, in Charlotte, VT where they farmed and interacted with the beings of the community⁷.

To specifically understand sources of permaculture knowledge each interviewee was asked if they had acquired their PDC. Half of my interviewees had acquired a nationally recognized PDC from a school that has been accredited through the North American Permaculture Association (PINA). G.C attended Sowing Solutions with Kay Cafasso at the Sirius Community in Massachusetts, earning her PDC⁸. George attended Naropa University in Boulder, Colorado for his undergraduate degree where he earned his PDC. Kennedy attended and earned his PDC with Geoff Lawton at Zaytuna Farm in Australia.⁹ R.C took a semester-long permaculture course at the College of the Atlantic with John Navazio before the PINA accredited PDC course had been created.

³ <http://www.smokeyhouse.org/>

⁴ <http://nofavt.org/>

⁵ <http://www.mofga.org/>

⁶ <http://www.auroville.org/contents/95>

⁷ <http://www.ic.org/directory/ten-stones/>

⁸ <http://www.permacultureseries.org/>

⁹ <http://permaculturenews.org/venue/zaytuna-farm/>

2.1 Permaculture Background

Each focus group participant was first asked to share their permaculture background. Alongside each participant being fully immersed in a permaculture lifestyle at MEI, both Smith and Lynch were first introduced to the practice in college at UVM. Norton also expressed being introduced during college at the University of Massachusetts-Dartmouth, while working for Americore. Norton, Lynch, and Freeman had all previously attended the Integrative Permaculture Ecological Leadership Intensive Program at MEI and received their certification. McDonald obtained her PDC three-years prior at The Yoga Forest on Lake Atitlán, Guatemala¹⁰. Following her PDC, McDonald stayed on the program as head gardener and co-facilitated a permaculture immersion program there before landing in Lincoln, VT.

3. Daily and Long Term Practice

Following the questions about sources of knowledge acquisition, each interview participant was asked to describe, in detail, the daily and long term practices they have integrated for agricultural production, in relation to permaculture. The motivations for and the timeline of this integration was also inquired about. Each interviewee has different accessibility to and use of land, which must be made explicit when reporting individual land management practices.

Gillian and Russell Carlson own and operate the Mother Earth Institute (MEI), which functions as a center for contemplative ecology with educational programming, yoga, gardens, rotational grazing, and much more. When asked about their daily practices, both pointed to the first principle of permaculture: observe and interact. G.C

¹⁰ <http://www.theyogaforest.org/>

elaborated on that principle reporting that she is “constantly attuning, listening and paying attention” to her surroundings, which allows her to recognize patterns on a small scale of “happenings at the homestead”, as well as a larger planetary scale. During the two-weeks spent studying at MEI, I witnessed this daily practice among the human community as we joined together each morning to hold hands and attune to each other’s emotional, physical and spiritual state. I also witnessed this practice in place as R.C, G.C, and I transplanted Tulsi seedlings into a row of freshly turned soil. As we began, G.C asked that we all attune to the Tulsi plant by quieting our mouths and mind, being there solely with the seedlings, as we briefly disturbed them in their starter habitat to gently lay them to rest in their new bed. R.C spoke towards this practice of observing and interacting as also beginning a “practice of [creating] connection”.

The People Care, Earth Care tenets of permaculture have always been deeply embedded within decision-making at MEI. G.C attributes this focus from childhood where her continuous “sense of wonder” and “innate reverence for nature” began. Similar sentiment was expressed by both G.C and R.C, in relation to the permaculture tenets, underlining the importance to them of “honoring nature as it is” through respect, care, and consideration for all in fostering and maintaining intimate and balanced relationships.

When prompted about what is done with the food that is produced at MEI, R.C answered by saying that most is eaten on site, elaborating that there are often meals where he looks at the plate and “98% of what [he is] eating is grown right here on this land”. Both G.C and R.C commented on their ability to often barter or sell excess produce through a small Community Supported Agriculture (CSA) program with neighbors and friends. R.C added that some excess produce is often given away to the

local school or food shelf. Finally, with the abundant food that is produced at MEI, R.C added that not only is most of it eaten on site but last year alone they served approximately 2,000 guest meals.

George is the co-owner of Running Ramps, LLC in Montpelier, VT, who, despite not yet owning a plot of land, is a self-proclaimed “ecosystem-less permaculturalist”, and finds ways to put his extensive knowledge base to application. When questioned about his daily and long term agricultural practices, George first talked about his community garden plots outside of town that he has had for four years. He then got into very specific permaculture strategies that he has employed there, such as terracing the plot on a contour, remineralizing the soil, and utilizing a no-till system, where he instead used a broad fork to deep dig the land. He also spoke of a small nursery that he has been developing and the various gardens that he has put in for clients as a part of his consulting business.

In the interview, George focused mainly on the regenerative land management practices that he and his partner Graham U.R have begun implementing on a fifty-five-acre plot of rented land outside of Montpelier. For three growing seasons, it has functioned as a rotational grazing operation, supporting about twenty head of cattle this year. Every day throughout the spring, summer and fall the cattle are moved to a new paddock. Although George notes that it is difficult to quantify, he and U.R are attempting to calculate the resulting carbon sequestration capabilities of the soil from their regenerative land management practices. In the future George would like to expand on his current business venture by incorporating a silvi-culture agroforestry system because

of the increased ability for the soil to sequester carbon as well as providing other products from plant materials.

By the end of November, George noted that their model has been to harvest the entire herd. When asked to elaborate on what is done with the meat that is raised, George explained that the quarters, halves, and wholes are sold direct, while retail cuts are sold throughout the year. He also explained that he and his partner eat the beef that he raises for about two to three meals per day.

Alexander has owned and operated the Green Pastures Farm in Lincoln, VT for fourteen years, a constantly evolving and ever-beautiful plot of land, where her and her three children live, play and contribute to the growing of their own food. The first permaculture principle that Alexander thought of when asked about her daily and long term agricultural practices was: stacking functions. She told of a time where she had sheep and goats in the fields and the chickens would follow, a practice of “fertilizing the field using the animals”. She elaborated on this thought stating that she is “always trying to build the fertility of the soil: using cover crops and compost, rotating crops and never planting the same thing two years in a row, [polyculture] not mono-cropping, trying not to till very much ... or shallow till when deal[ing] with weeds, under sowing- putting clover underneath things like kale, silvipasture- trying to put trees amongst the gardens”. She then showed me and talked about a rain water catchment system that she is developing with gutters and a collection tank off her barn.

Another principle of permaculture she practices is “observe and interact” or as she worded it “trial and error”. She showed me a prime example of this principle in action at her farm when she tried to plant a small stand of peach trees. Alexander told me many

examples of experiments where she was trying to see what grows well and in what areas, as she “likes to try stuff and then modify it”, as she has done with the peaches. While she figures that growing peaches in Vermont is probably not a good idea, she can definitively say that trying to grow peaches on her land, in an exposed knoll is not going to work or yield any fruits.

When asked about the usage of the food she grows throughout the year, her immediate response was that a lot of it is given away. Alexander provided a bartering experience she partakes in where her neighbor will give her free acupuncture services in return for any kale she needs from the greenhouse. Alexander also loves to give away her products as gifts and offered another example where she made a medicinal salve for her daughter, who is studying abroad, to give to her host family. Alexander explained the importance of her decision to grow her own food stating- “I chose to raise my children in this environment and growing food is part of what I wanted for them.” Most of the products grown at Green Pastures Farm are used to feed and heal her and her children throughout the year, as she jokingly added that “if [her] kids did not eat vegetables they would starve because that is so much of what we eat”.

Ryan owns, operates, and lives at North Meadow Farm in Plainfield, VT where he has a vegetable garden, extensive stands of berry, nut, and fruit trees, chickens and a greenhouse, summing it up as a “significant homestead”. Ryan first took the lens of social permaculture when speaking about practices that he has integrated into his daily life and business. He spoke to the importance of maintaining a good relationship with his parents, who live across the street, his partner, and his daughter. His close relationships with those in the Plainfield area and their eagerness to support him, he credits as contributing to the

success of his nursery and landscape design services. His belief that “if it starts and stops with the farm- it has got to be the culture”, encompasses the effort that he puts into maintaining positive and reciprocal relations with his family and community.

In his vegetable garden and his nurseries, he utilizes compost and cardboard with little use of plastic in the fields. He has and continues to conduct soil testing throughout his land to understand its content. Ryan utilizes soil testing to inform landscape design plans when deciding what fruit, nut, or timber stands are best fit to grow in a specific area and where to place them within said area. Through these practices he believes that his inputs would meet organic standards. When he has built structures on his land he always tries to build them with permanence in mind, “building them well enough ... that it is going to work for a long time”. He has altered the ecosystems of his land by digging a pond with a wetland overflow pond and constructing many mounds throughout. Due to the wet soil of his land, which is mostly typified as “wet meadow and overgrazed horse pasture”, he has had to plant a lot of trees on mounds.

With the products that are grown on his land he reported mostly eating and sharing them. He added that a lot is stored and that he has a “freezer full of berries and poultry”. Ryan offered an example where they will often bring a basket of produce to someone’s house when they are going over. Finally, Ryan spoke of a time last year where he sold some plums to the Plainfield CO-OP, elaborating that despite the sale resulting in an insignificant income stream of only a few hundred dollars, he puts in the effort because he “knows most of the people [who] shop at the Plainfield CO-OP and they are happy to have it- it is like a treat”.

Kennedy and his wife live on and own two lots in New Haven, VT: a twelve-acre parcel and a forty-acre woodlot, where they have started an ecological woodlot management system with a forest management plan. Within this plan, they have been learning and engaging with their landscape through a small-scale sugaring operation, which Kennedy describes as a “labor of love”. As they have been establishing and working this site for just four years, Kennedy has included, but not yet incorporated, sustainable extraction of wood products into his management plan, to meet their firewood needs, etc. He has developed a black locust coppice stand with a standard stand, which he explained is a way for “managing for the sprouts” because “a lot of deciduous trees will not die if you cut them, they will just regrow from the stump”. Kennedy is a skilled wood craftsman and has spent years building furniture and other products, including his current home and a pole barn structure, also on site.

The first development that was made to the landscape upon settling there was to plant about 900 trees and shrubs along the edge of their property where it meets Route 7. This multi-species hedgerow functions as a shelterbelt, privacy screen, boundary line, source of food production, as well as an educational tool. Kennedy explained that “education is a product of his”, so this practice of planting a multi-species hedgerow allows him to potentially utilize the space for a “walking dendrology class”. He has also planted his berry trees on contour, which will enable him to show future students contour in the landscape.

He has also begun “a small, almost commercial, berry planting”, with about six, one-hundred-foot-long rows. Like Ryans’ thought process, Kennedy planted his berry trees on mounds because he has clay soils with a high-water table underneath, often

creating moisture and water at the surface, which berry trees will not tolerate. The rows are planted in swales so that each row drops 1%, or 1 foot over the 100-foot planting site, allowing it to function more as a drainage system, which the site requires. Kennedy spoke of the importance of practicing trial and error and polyculture within his berry stand, explaining that each row contains a different combination of pears, paw paws, gooseberries, currants, honeyberry, blueberries, raspberries, and blackberries, with “maybe a half dozen varieties of each”, to test which do best and should be propagated in the future.

Other developments planned for the site include an orchard. In preparation for that Kennedy has built up the soil where the trees will be planted by building rows of compost piles. They also have veggie gardens, a flock of ducks for eggs, and mushroom log production, which they look forward to expanding. With the products harvested they, like most interview participants, eat, barter, trade, and gift their abundance.

4. Evolution of Belief Sets

3.1 Environmental Worldview

For interview participants, such as longtime practitioners G.C, R.C, Alexander, and native Vermonter Ryan, their exposure to permaculture served to enhance and inform their environmental worldview, yet they did not feel a significant evolution in their belief set. Life-altering evolutions in their personal worldviews occurred for interviewees Kennedy and George.

Kennedy described his upbringing in Wisconsin to devout Catholic parents, where many of his ethical and moral foundations were formed. He then went on to speak of the ‘permaculture goggles’ he acquired after attending his PDC course, resulting in an

important worldview shift. He describes leaving his one-month PDC course in Australia and realizing that he was a different person and that he “could not quantify it or characterize it easily but it definitely changed [his] everything”. Kennedy concluded his evolution story by reflecting on his belief that the most important part of the permaculture experience and education is the ability to change one’s worldview.

Aaron George also told his story of post-PDC course and how “it changed everything really”. For him “the way that the permaculture lens and the practice shows the direct correlation between the health of the landscape, the health of humanity and the potential of us to survive and thrive into the future becomes clearer and inextricably connected”. He elaborated on the feeling of hope, which the practice and process of permaculture brings to him, by offering an example where a landscape is transformed from a “degraded dog yard to an orchard with vegetables and drowning in topsoil”. George concluded his story on his evolved belief set by stating that “we have the ability to produce in a regenerative way all of the biologically based materials to thrive as a human species- and to live happy, healthy lives”. George knows that this belief is possible and that it is not that difficult, however, it “requires... a reorganizing of our minds and priorities”.

3.2 Relationship to Natural World

In line with their response on their environmental worldview being enhanced by permaculture, R.C, G.C, Ryan, and Alexander feel as though their relationship to the natural world was strengthened by their exposure to permaculture. George and Kennedy had tangible transformations in the way they view the natural world because of their permaculture experience.

Kennedy feels that he has a more general awareness and appreciation of the natural world since practicing permaculture. Specifically, he appreciates the ubiquitous nature of cycles more and would like to ideally characterize himself as “a servant to the natural world”. He expanded on this notion when talking about his decision to buy and develop land in New Haven- “I recognize that I am coming into this place, I have got this tiny fraction of time [in] history where I am going to make an impact on it... this [house] was not here three years ago, we brought it”. Kennedy’s heightened awareness of his personal impact on the natural world, while he admits is not invariable, caused him to think about “where [his] resources come from and how it affects people in different places”. It was also this general awareness that prompted him to bring dowsing to the site to determine where to drill a well, understand the energetics of the Earth below them, and to communicate with and ask permission of the nature spirits present.

For George’s transformation he referenced the concept of ‘permaculture goggles’ that Kennedy, too, experienced wearing post-PDC course. George believes that the way he looks at natural landscapes is different and consequently landscapes come alive in a different way. From his experience, when one has practiced the process of the design enough, one can then walk into a landscape and it becomes more like reading a book. After receiving his PDC and practicing permaculture for multiple years, George believes that it has allowed him to begin to realize the implications that land management decisions have on “carbon and soil health, human health and resiliency”. It is through this strengthening of relationship to the natural world that George convincingly believes that humanity could “convert all of our farms to productive agroforestry systems- we just have to commit to changing our practices and thinking about that”.

3.3 Sense of Community (Interview Participants)

When further prompted about their post-PDC belief sets in relation to their sense of community, I received a myriad of sentiment, some overlapping and others novel. R.C immediately told me that his concept of community has expanded significantly since being involved in agriculture and permaculture. He now sees the community that he is a part of as including those non-human organisms, such as flowers, trees, bees, bugs, animals, deer, etc.

G.C stated her belief that “the village with hand tools” and involving community in food production, is the best way to practice agriculture. Permaculture has contributed to her feeling of “deeper confirmation... that the method of involving people in farming” is pivotal. She steadfastly supports social permaculture “because people have to know how to live together in order to do that and that is not so easy”. The necessity of bringing people together and integrating the community with the garden to make it work and feed people is apparent to her.

Many participants took time to speak of the importance of knowing and supporting other people in their communities who are also producing food. For Kennedy, practicing permaculture has “made [him] want to be much more direct in the relationships with where food comes from”. Ryan also puts intention into sourcing locally and reported “purchasing meat from immediate neighbors who are practicing pretty good agricultural animal raising practices”. Kennedy elaborated on this shared perspective, further attributing his personal food production for his “recognizing [the] skill, ability, perseverance, willingness, and work it takes to do that, also the economics, too”. George expressed wanting to eat as locally as possible, and although he is not

raising a lot of food, he is “connected with friends who are farming”. Finally, both George and R.C commented on buying all supplemental food from their local CO-OP’s and sourcing organically.

3.4 Sense of Community (Focus Group Participants)

Another discussion prompt in the focus group sought to understand if and how permaculture has impacted each participant’s sense of community. Freeman entered the conversation by first stating that permaculture, she believes, placed her in her concept of “what community is and where [she] fits into that because the worldview that a lot of us came into is: we have control and we control the systems”. She continued that “permaculture takes that burden ... off of our shoulders and says that we are as much dependent on the system as it is on us”, concluding that she views herself now as a “participant rather than some type of control”. McDonald continued this sentiment to discuss “the community of plants that [she] has become close friends with over these past years”. She expressed feeling “more deeply connected with plants than people... and finding a lot of joy in that community”.

Freeman responded to McDonald explaining that those natural communities can also “offer us models of how we can structure [human] community, like a beehive or an animal pack”. She concluded by stating that permaculture has “informed [her] sense of community- of what community can be and how it can exist”. Smith responded in agreement to this sentiment, that while she has felt connected to these non-human beings for a long time she now “feels like we are a part of one house, we are one community”. She offered an example of gathering blueberries and currents, that while she thoroughly

“enjoyed eating blueberries when [she] bought them from the store”, she now feels “gratitude for the bushes” and that her and the “blueberries share a home”.

Allen contributed to this conversation by adding her belief, based on her first immersive experience at MEI, that permaculture and community “cannot exist without the other”. She expanded to speak of the “amount of human power” necessary to interact with those systems. Allen believes that “part of understanding those systems becomes an understanding of each other and learning how to work together...they go hand in hand”. Smith agreed stating that “they are so much a part of each other and one of the same in some ways” that permaculture could almost be “retitled: community farming”.

3.3.a Community Participation and Contributions

To dig deeper into the ways permaculture integration has impacted my interviewees sense of community, I also inquired about if and how it has given them specific ways to participate in or contribute to their communities.

For Kennedy, his specific interests and skills within agriculture have led him to find niche communities to share his knowledge with others through talks, workshops, etc. He expanded on one of his niches, coppicing, that there is “not a lot of knowledge about coppicing or a lot going on here” and so his writing a book on it is one way of contributing to his community. Other niches that he specializes in and shares with his community are the practices of keyline planning, woodcrafts and building, agroforestry and forest gardening.

G.C identified a main contribution to her community as involving those that come to MEI “as guests, as residents, as learners, together to guide in food production”. This can be seen and was articulated by R.C as their service to the community through

programming and involving people in farming. By creating and maintaining an intentional and educational community at MEI, they are involved in both their immediate community and the community at large by facilitating connection among all who are interested. She adds perspective to her contribution when acknowledging that her ability to explore and experiment with a “holistic model on the edge” is made easier in some ways because they are in rural Vermont and not “in the middle of it all”. George also expressed similar sentiment in his answer to this question when reflecting that his experience with permaculture has helped him “participate in some of the more difficult aspects of politics, economic and social oppression, and all of the injustices that are happening”.

George went on to speak of his contribution of feeding and nourishing a lot of people within his immediate community. He and U.R researched the total amount of beef consumed in Vermont and calculated the percentage of which they are contributing. Although he says it is miniscule it is still there and a part of that statistic. George utilizes his permaculture background in his landscape design work to plant edible landscapes and design installations for clients. George also gives talks or educational programming in line with his permaculture knowledge. George offered perspective on his belief that practicing landscape design with a permaculture focus as his livelihood “connects him with the regional, national, and global network of folks” also working within related fields. He elaborated further, explaining that within those opportunities for networking, the practice of permaculture also brings a different way of interacting with the community and being present with those folks. He summarized his feelings about his personal contributions stating that: “facilitating and participating in the process of

watching the beginning or the continuation of someone's psyche reorienting and thinking about the world from a permaculture lens" is one of the most amazing things that a human can participate in.

Alexander stated the importance of viewing the farm as an ecosystem and to respect its components working together. Through the process of immersing herself in learning from the plants, and offering herself to them in gratitude, she cultivates a connection to Earth in herself that she then extends to others. She has made her land and herself a resource to the local school by "offering workshops on plant families, [etc.]" or bringing classes to the farm on field trips". Through the knowledge she has acquired throughout years of experience and her personal passion for creating "opportunities for youth to care for the land, grow food, grow medicine, learn skills, and eat well" she is often found giving talks at the local health center or teaching classrooms of elementary aged children about brassicas.

Both Alexander and Ryan expressed ways that their niche livelihoods have become a defining characteristic of how they interact within their communities. Ryan explained that "the way [my community] engages with me is asking about their trees" and notes that although he is limited in focus, he is rich in expertise. Alexander spoke similarly of her role in her local community as she noted her "reputation for being a plant person". She added that what she does with plants "is the way that she connects with other people and it is how her community relates to her".

As a tree specialist, Ryan offers his knowledge, tools, and plant materials as resources to help people, farmers and others, with food production. Through his observation and interaction with his own land to find out what grows best, he learns more

about the plants and can extend his knowledge through education and “creating opportunities for people to be connected to their places”. He will sell trees from his nursery to farmers or people will ask him to plant certain plants for them on their land. These services and the practices he uses to make them successful, allow him to make a living, while healing landscapes and ecosystems. Ryan also shared that while he has not been travelling much lately, his livelihood offers him opportunities for engagement anywhere he does go because “agriculture, landscape forest ecology, or farm ecology” are exciting to him and can be explored anywhere. He elaborated on the influence his passions have had on him, stating that they have “become [his] lens for engaging [with] and viewing the world”. This lens has an influence on the way he chooses to travel and spend time while travelling, stating that he would rather stay on a farm and work in a foreign country than see tourist destinations.

3.3.b Community Utilization of Permaculture Principles

The final question about community asked each person to offer ways that their communities could better utilize the principles of permaculture. Kennedy spoke specifically about his role on New Haven’s Conservation Commission and that the permaculture principles could possibly be used to inform the town plan, specifically in relation to energy and development issues. He also spoke of a potential future endeavor of his to “infiltrate the school system in a positive way with some programming that would start to bring permaculture to the younger generations”.

Ryan first acknowledged a general worldview of manifest destiny that he senses in the U.S, where the perspective is “very much I can pick up and go somewhere else and we can”. His suggestion for persons adhering to this worldview is “to be present and

invest in the community” despite it often being difficult. He questions efforts such as “permaculture blitz[s]” where individuals or groups go into an area, set up a permaculture project and leave once it has been set up. He posits these questions to those adhering to this perspective: “Where’s the culture? How can we have a ‘permaculture’ where we are moving every two years or we are not able to commit to a place or a community?”. Ryan stresses the importance of investing in ecology and understanding stable systems through studying and experiencing a community. He summarized his suggestion by reflecting on his own experience working in agriculture where he cannot imagine doing it without his support structures, which forms his belief that it is imperative for permanent cultures to form and support the movement.

In his response to this question, George pointed toward the permaculture principle of functional interconnection as lacking in the current design of our systems. He explains the necessity of utilizing functional interconnection “for resources to be shared and for the product of one system to not be a waste product but to be a yield utilized by another system and have those flows going back and forth”. He has consequently determined that, when successful, this principle “strengthens people’s relationships with one another in the exchange of goods and services”. George concludes his suggestion with a call for a radical redesign of our landscapes and a shift in relationships, one that “demands a flavor or a type of human connection”. The quality of this flavor, he believes, can “strengthen relationships with one another”, resulting in “the feeling of our lives and world nourishing us”, which in his mind is “a totally different set of ways of operating than currently”.

5. Mechanisms for Resiliency

The final question of the semi-directed interviews focused on the participant's individual ability to cope with stress. I asked each interviewee to detail a time, specific or general, where they felt better equipped to deal with a stressor because of their exposure to permaculture. For Ryan, G.C, and Alexander, their abilities to easily access the fields, nature, and gardens, respectively, begin to assist in their stress management processes. Alexander expanded on how access to her gardens provides stress relief, confidently stating that she "know[s] how to produce food" and that she can feed her children well from growing her own food. She does not "worry about being hungry" or "running out of money for food", despite not making much money and having a lot of kids to feed, because of the "tools at her fingertips".

G.C elaborated on her ability to connect to nature and simplicity as a source of stress relief because of its correlation to her overall resilience- "ability to be food, energy, self-sufficient". She offered a specific example where her resilience was tested during Hurricane Irene and the power was out for three days. She spoke of the event nonchalantly, explaining that you get the water pump and cook stove going, pull out the candles, and "just redo the system a little bit and we are dandy".

In relation to his permaculture experience, R.C mentioned looking towards the first principle, observe and interact, for assistance with stress management. He explained that through this principle he can "look at a situation in the natural world and glean some inspiration for his own life". R.C continued to offer a relevant example:

"When a system is in balance there usually is not a problem with disease or pest or a lack of strength in the plant or the ecology of that particular area and it is more often that when we see infestation of pests or disease it is also the plants that are the weakest. We can look to see that the role of health and balance is key.

That is a big gleaning or learning from the natural world- to see that it is important to pay attention to the health of our own bodies and our experience as we go about our lives. To pay attention to what foods we eat, what amount of exercise, what amount of sleep, what amount of social time versus solitude. All of those things that support health and a sense of balance, and then to the extent that balance is achieved there tends to not be much illness, grumpiness, angst, or anxiety because [life] is a little more steady”.

Kennedy explained that the design principles of “start small and slow” as well as “the problem is the solution” are two specific places that he looks toward from his permaculture experience for stress management. To more thoroughly answer this question, he detailed the iterative design that gradually evolved for the water system at his current home. He explained the entire process, beginning with:

“Our neighbors drilled a well, and their well, and a number of wells around here, are flowing artisan wells, so basically water in the aquifer is under pressure so that it will come out of the ground, but it would be under pressure in the well-casing so [our neighbors] had to send it somewhere. [The pipe] got pointed onto our lot, on the other side of a creek drainage, that was a huge boon because we did not have a well, but it meant that we had well water pouring out of the pipe coming out of the ground. We started by digging a little [hole] and I would go and fill up five gallon buckets and then carry them down to our house, that would last us a few days, we would filter our drinking water... [The hole] got a little bigger and bigger, I dug out a decent size pond, not huge or anything maybe a few thousand gallons, and then ran a water line five feet deep along that edge of the property so that we had gravity water through frost-free hydrants, which made the walk shorter and we had a little reservoir. Then we ended up putting in a cistern uphill of that little pond so the water flows into that, then comes around, up, and into the house, because we had already started building the house (this was just a concrete slab [referring to the dining room we were sitting in]) there was only one spot where the water could come up at that point”.

He concluded this story by reflecting that “not having water is a stressful thing” but having design principles, such as “start small and slow” or “the problem is the

solution” to go to are helpful. Kennedy believes that patience and manifesting what you want are implicit within permaculture because it is “positivist [in design] where one is working towards the future one wants rather than fighting what you do not want”.

George answered by speaking about his preference for process oriented learning experiences, which he was offered at Naropa University. He explained that “at Naropa it was thought that you learn by doing and participating in the process. Then feeling the impact of [that process] on your body-mind and learning from that personal reflection and narrative were an integral part of the study of anything”. He offered an example of this form of learning at work during an eco-psychology course. During an exercise around understanding the global impact of the Anthropocene he was then prompted to “let in the emotion of the discontinuation of the human existence and the potential extinction of our species based on our own hubris”. George reflected that “at that point in my life that emotion pretty much destroyed me and made me want to crawl into a hole, alter my consciousness and then die”. Later he found permaculture, which “can be very complicated theoretically and intellectually...but each component of the process is simple”. He summarizes this understanding by stating that “[permaculture] has this cascade effect of how it can help to transform the world”.

5.3 Sense of Self-Resiliency

Focus group participants were also prompted to discuss if and how their future abilities for self-resiliency have been impacted since integrating permaculture into their lives. This conversation began by analyzing and understanding the word ‘self’ within self-resiliency. Lynch introduced the concept of ‘ecological self’, which expands the understanding of ‘self’ past “just me and my body” to include “the trees, the plants, the

humans, those that I am in contact with and even those that I am not”. This discussion continued as McDonald analyzed the merits of ‘self’-resiliency’. In her understanding, “permaculture is a system based approach and it is important that the whole system is okay, not just [her] own resiliency”. Allen concurred explaining that the concept of ‘self’-resiliency was also “holding her up” because permaculture has shaped her “perspective of the self- that [she] is not just this body- [she] is the trees, the dirt, the air, and it is all one thing”. “For [Allen] permaculture empowers [her] to feel resilient in the way of being aware of those relationships, [having] understanding of those relationships, and learning to communicate with the Earth through those relationships”. Freeman then added to the discussion, that for her, the permaculture perspective “brought out a deeper understanding... that [she] is far from [being] self-reliant. [She] is so dependent on everything, like the Earth and its cycles, other people, and systems that when we are tripping up it is usually not us but a system”. She concluded her sentiment by explaining that she “feels very dependent on the Earth, people around [her], and systems, but [she] do[es] feel more resilient against the vacillations of our culture”.

Also within this discussion, Smith and Norton spoke back and forth about the focus permaculture puts on “observing and responding... to what is in front of you... and cultivating that skill”. Norton contributed her belief that “it is all systematic and connected within each other but [she] personally feel[s] more resilient about how things are whenever [she is] in places that are tapped into being observant and connecting in that way”. She also feels “more in tune and in touch with these larger systems that we try to control, but ultimately- if you are referring to nature- we can manipulate but we cannot control”. Lynch concurred, stating the importance of “taking away that control” and

replacing it with “relating to” because she feels that “a lot of other agriculture can be trying to control”. Smith responded to Norton and Lynch, agreeing that her feeling of self-resiliency is born out of her “being more skilled in relationship”.

5.5 Larger Purpose or Direction

To conclude the focus group discussion participants were asked if the integration of permaculture has impacted their sense of larger purpose or direction. While all six participants exclaimed- “yes!”- some had more elaboration to offer as to why or how. Smith and Lynch both expressed similar sentiment that they would like to be a part of the food system and the permaculture lifestyle, specifically, for the rest of their lives. And for Smith “what felt like a distant vision now feels more of a realistic and quite healthy option that [she] feels inspired to carry out”.

McDonald entered the conversation to speak towards her belief that she will never look at food justice the same nor will she “unconsciously eat anymore”. She referred to these changes as switches she can no longer turn off, after having practiced mindful eating exercises, such as “looking deeper” many times at MEI. This practice seeks to “inquire- where is this from? And who touched this? And what are the colors of their eyes? And their teeth? And their hands? And what did their nail beds look like? And what did it travel on?”. She explained that she will never “look at a plate that [she] eat[s] the same. It does not mean that what is on [her] plate will not be the same or that [she] will stop drinking coffee say, but the context that [she] views that from- [she] cannot turn that off anymore”.

Norton offered similar sentiment describing her experience in sustainable living and permaculture, both at MEI as well as time she spent abroad at Findhorn Ecovillage in

Scotland¹¹. She compares those experiences of immersive living to then “having the shift go back to [the] ‘normal’ of every day mainstream society”. She describes having to “reinvit[e] that shift in perspective to come back and found it very difficult to shut off again”. Norton concluded that she “does not want it to shut off again so moving forward, [permaculture and sustainable living are] just going to be a part of [her]”.

¹¹ <http://www.ecovillagefindhorn.com/index.php>

Discussion

To gain further understanding and reflection on a personal experience, this thesis attempts to locate it within the larger historical and environmental context (See Literature Review), as well as the local community context (See Results) by addressing the following questions:

- 1) How can the acquisition of a permaculture k-p-b complex impact a practitioner's environmental worldview, sense of community and overall resiliency towards daily stressors? If and how permaculture allows for "a direct relationship among the individual, the community, and the natural world [to] be established and maintained" is analyzed (Cajete, 1994, pp. 74).

After conducting six individual interviews and a focus group of permaculturalist's in Vermont and internalizing those findings into my own personal experience I have gathered the following conclusions: the agricultural system of permaculture contains attributes of traditional ecological systems because 1) it requires a process that instills a k-p-b complex within the student and 2) personal definitions of permaculture provided in this study resemble that of TEK.

Before exploring the similarities between the k-p-b processes of TEK and permaculture it must be made explicit that although the term has been newly coined the principles and ethics that make up permaculture have been informed by and borrowed from the intergenerational knowledge and wisdom that has been continuously developed, refined, and passed down from indigenous cultures throughout the world (Bowers, 2012). As previously discussed (See Introduction), academics across fields of study believe in the abilities of Western science and technological advancements to address and solve the environmental crises of the Anthropocene (Bowers, 2012; Monboit, 2015). Bowers

(2012) challenges the logic of this futuristic optimism referring to its basis as an “assum[ption]: that the same science that got us into our current predicament will offer us ways to set things back in balance”. Berkes (2012) specifically looks to the downfalls of scientific ecology as lacking personal and spiritual elements. The school of thought known as ‘degrowth’ looks toward a more holistic understanding of ecology that places “focus on connecting humans with one another and with the non-human world” (Kallis, 2015). The approach of ‘degrowth’ does not seek to offer a single strategy to restructure our current systems yet its main objective intentionally “open[s] up a conceptual space for imagining and enacting diverse alternative futures that share the aims of downscaling affluent economies and their material flows in a just and equitable manner” (Kallis, 2015). While ‘degrowth’ scholars are not “promot[ing] a return to primitive life or third world conditions” they are raising “awareness of many possible modes of human existence [that inevitably] widens horizons for building unprecedented futures” (Laughton, 2016). Permaculture, as an alternative agricultural design system is one degrowth tactic that, I believe, that acknowledges the intergenerational knowledge and wealth that has been maintained within traditional social-ecological systems cross-culturally, for time immemorial. I will now continue to explore the ways in which I have seen the adoption of the TEK k-p-b complex in relation to the modern application of permaculture.

Every interview participant detailed an extensive background in agriculture, and related subjects, which they received through different forms of education. Interview subjects expressed sources of contextual knowledge, similar to those I speak about from my education at UVM. In addition, interview subjects spoke of sources of empirical

knowledge, such as opportunities for experiential learning. Traditionally, TEK consists solely of local and empirical sources of knowledge including an understanding of environmental phenomena, species identification and classification, ecological processes, and relationship with the environment (Berkes, 2012). Permaculture knowledge acquisition differs from that of TEK because it exists in modern contexts and is a product of modern understanding of traditional agricultural systems. Berkes (2012) refers to these differences in knowledge acquisition as traditional ecological systems supporting knowledge as process versus modern education systems supporting knowledge as content and I have found that permaculture seeks to marry and support both forms. The participants of this study have all combined their extensive contextual knowledge from their places of higher education with their sources of experiential learning and ecological knowledge.

Within the process of k-p-b formation for TEK it is understood that knowledge acquisition influences an individual's practices, or the way they carry out livelihood activities (Berkes, 2012). This aspect of the process is most aptly described within the context of this study when Kennedy responded to the question 'Why did you begin to integrate permaculture at your home?' with: "I feel like once you know it, you cannot not, you cannot ignore it totally". Berkes (2012) continues his discussion of the k-p-b complex within traditional ecological systems as ecological knowledge acquisition begins to inform the social and spiritual aspects of TEK. The personal stories and reflections offered to me by my study participants provided me with a deeper understanding of how this phenomenon exists in the individual lives of permaculture practitioner's in Vermont. Simply put, I believe this segment of the k-p-b complex was embodied by both George

and Kennedy referring to the ‘permaculture googles’ they were given to view the world with as well as sentiment from G.C that permaculture provides “a community to align oneself” that she resonates with.

The two definitions of TEK chosen for this framework are:

- 1) “cumulative and dynamic, building upon the experience of earlier generations and adapting to the new technological and socioeconomic changes of the present” (Johnson, 1992, pp. 4; Berkes, 2012, pp. 4).
- 2) “a body of knowledge built up by a group of people through generations of living in close contact with nature” (1992, pp. 3).

As individual interview and focus group participants engaged with me, many offered their own personal definitions and understandings of permaculture. Isolated areas of similar sentiment are:

- 1) a dynamic relationship to the earth and a dynamic relationship to the people and to the animals and to the plants, that can be sustained not just for this generation but generations back, generations forward.
- 2) a mindset and guidelines for relating to the Earth, that are informed by the Earth
- 3) a thing that you do, but it is also a way that you try to be

The significance of this overlap is that although the new system of permaculture is not time-tested nor intergenerational it does align with the goal of traditional social-ecological systems that states: “dynamic contributions of any community to problem-solving, based on their own perceptions and conceptions, and the ways that they are identified, categorized and classified phenomena important to them” (Berkes, 2012, pp.

4). The current problems are human-induced environmental crises and the permaculturalist’s included in this study are each making dynamic contributions by creating reciprocal forms of producing localized goods, services and exchanges. Each study participant, regardless of personal land tenure, detailed to me their relationship to

their environments and the actions that are individually, as in Ryan's niche expertise in fruit and nut tree care, or communally, as in their collective will to share abundance, important to them.

Another conclusion gleaned is that yes, acquiring a permaculture k-p-b complex will impact a practitioner's environmental worldview and relationship to the natural world. The extent of this impact, however, is dependent on the previous life experience of the practitioners. All six focus group participants, who are under the age of 25 and new to the practice of permaculture experienced in impact in these arenas because it is the first strategy for response they have been equipped with. Other life-long practitioners such as Gillian and Russell Carlson did not experience such a high-level impact because they have experienced and participated in other movements in the past. This insight can be understood through sentiment expressed by G.C: "[permaculture] has shown itself in other places and ways: the organic farming movement, the back to the land movement, Woodstock, 'got to get ourselves back to the garden', coming out of the Industrial Revolution and saying 'hold it, wait a minute'". Permaculture is one school of thought that has emerged in this 'hinge of history' where people are "search[ing] for new ways of relating to nature" (Berkes, 2012, pp. 2), but it is not the only one and is often practiced alongside others.

On the other hand, I also surmise that the ethics of permaculture, Earth Care, People Care, and Obtain a Yield that guide the twelve design principles, place focus and intention on an individual's role within the local and global/ biotic and abiotic context instilling an innate ability to impact a person's sense of community (Holmgren, 2002). Permaculture enables individuals to take personal actions towards creating a more

sustainable future, while also “care[ing] for the community of people [they] are embedded in” (Holmgren, 2002; Hemenway, 2015, pp. 181). Scholars of social permaculture suggest utilizing the design principles in all aspects of life to create and maintain “deeper, more direct connections to family, friends, neighbors, plants, animals, and the rest of the living world” for individuals to effectively attain the necessary goods, services, and exchanges for daily life (2015, pp. 192). I received strong sentiment from all interview and focus group participants affirming that the core of permaculture is community networks. Many went so far as to question the ability for a permaculture system to be successful without the presence of positive and reciprocal relationships, as Allen suggested it be renamed “community agriculture”.

Finally, I extrapolate from these findings, and personal experience, that the practice of personal food production impacts an individual’s psychology surrounding resilience. Scholars suggest that the monetization of goods, services, and exchanges has altered the daily life of individuals in the U.S, and contributes to a lack of community within food production and consumption (De Young & Princen, 2012; Hemenway, 2015). Personally, by choice or outside force (as in the case of Cuba), people are increasingly looking towards methods of personal food production to gain autonomy, demonetize, as well as create and strengthen the community in one’s life (Hemenway, 2015). Deppe offers examples where the abundance from personally produced food is canned or stored, enabling the individual with a response to a “personal or regional emergency” (2010, pp. 54). All interview participants shared their practices of preserving and sharing their abundance, providing specific examples. Alexander participates in a demonetized form of exchange when she gifts kale for acupuncture. Ryan creates and

strengthens community when he brings plums to the Plainfield CO-OP, despite not making a profit. All personal food producers gain autonomy when they take ownership of their diet back from the globalized food system. Some of my study participants expressed practicing things such as yoga and meditation alongside permaculture to optimize stress management, but all spoke of the skills and tools for working and thinking provided by permaculture as contributors to self-resiliency.

1. Recommendations

The research I have conducted provides insight to a small group of people within the state of Vermont utilizing the practices of permaculture. Further research must be conducted to understand if and how ‘culture’ exists amongst permaculturalists regionally, nationally, and globally. Relevant and related fields that I did not include but should be explored, in no particular order, are: food systems, environmental ethics, philosophy of nature, conservation, sustainable development, decolonialization, political feminist ecology, environmental justice, Taoism, Buddhism, yoga, radical environmentalism, ‘American’ environmentalism, intentional communities, biopiracy, non-violent communication, and much more.

The results and conclusions of this study are important because they provide tangible and organized sentiment about the experiences that people have had acquiring the k-p-b complex of permaculture. Permaculture can impact the belief sets and resiliency of an individual, consequently allowing for that individual to build and strengthen community. People of all walks of life can turn to this study to inform their motivations for and decision to participate in a PDC course.

Conclusion

1.1 Statement of Interest

When faced with the seemingly overwhelming task of designing an Honors College thesis I sought guidance from two transformative experiential learning opportunities I had embarked upon in the months prior. The first experience is described in detail to you in the form of Personal Narrative (See page 6). Reeling from that monumental summer of continuous exposure, learning, and growth, I then set off in the fall of my junior year to study abroad with the School for Field Studies in the Ethics, Conservation, and Environmental Change program located in Siem Reap, Cambodia. The gleanings accrued from my summer at MWF influenced and informed my academic interests and personal explorations while I was away.

This influence is most tangibly seen through the Directed Research project I designed, conducted, wrote, and presented titled: *Shifts in Agricultural Landscapes in Two Villages in Phnom Kulen National Park: Perceptions and Drivers of Change*, alongside my professor Dr. Lisa Arensen (2015). My summer working at MWF expanded my agricultural knowledge, which motivated me to conduct agricultural research and that process exposed me to a methodology and academic field of study that I align with.

I began this journey as I returned to UVM for my spring semester junior year and enrolled in *Traditional Ecological Knowledge, ENVS 154*, a course that would prove influential. This course informed me of concepts, terminology, and case studies that served to organize and marry my larger gleanings from those two previous transformative experiences. Readings and class discussions affirmed my interest to further explore topics within the food system using methodology from ethnography. And that, is the story of

how I got to where I am today: a summer job that informed a project while I was abroad, and two courses that helped make sense of it all.

In attempt to understand my personal experience of a summer job inspiring my academic interests and future career path I sought to examine the presence, or lack of, this phenomenon elsewhere. Within the agricultural field I chose to explore the study of permaculture because it is a relatively new movement present within the UVM community. I decided to engage with that study by conducting semi-directed interviews and a focus group, (n=12), with people practicing permaculture in the state of Vermont. During these interviews, I focused on unearthing the process of k-p-b complex in relation to their adherence to permaculture. The hypothesis of this project is hinged upon the idea that certain compounding educational experiences, upon knowledge acquisition and practice implementation, could serve to alter one's set of beliefs.

1.2 Larger Gleanings

Many themes emerged through this study. Insights that I will explore further are:

- 1) the principle of observe and interact is an inherent tenet of agricultural production,
- 2) functional support structures must be created and maintained for agricultural production, generally, and especially for permaculture systems,
- 3) 'culture' exists amongst my participants, which they are collectively in the business of sharing.

Regardless of years spent studying and applying agriculture or individual access to land, each interview participant spoke of the importance of utilizing the first principle of permaculture: observe and interact. I posit that this principle, while coined by the founders of permaculture, is not a new concept to anyone that has practiced agricultural production since the domestication of plants and animals occurred during the Neolithic

era (Rhoades, 2016). When entering a new place, with the intention of producing food, it is imperative for an agriculturalist to first observe, with the intention of understanding, the mosaic of ecosystems at work and the many organisms being supported by and living in the natural communities there. It is at this stage where my interviewees expressed engaging in “trial and error” experiments of food production. I am affirmed from personal experience working in agriculture and the multiple examples I accrued through this research that this principle is one that even the most experienced agriculturalist never stops pursuing. In summation of this theme that emerged in this study I will leave two quotes from two infinitely wise men, Masanobu Fukuoka (2009) and Lao Tzu (2015), respectively: “The ultimate goal of farming is not the growing of crops but the cultivation and perfection of human beings” and

“In the pursuit of Knowledge,
 every day something is added.
 In the practice of the Way,
 every day something is dropped.
 Less and less do you need to force things,
 until finally you arrive at non-action.
 When nothing is done,
 nothing is left undone.

Another insight drawn from this study is: the maintenance, care, and overall health of social structures operating within an agricultural endeavor, especially one that is influenced by permaculture, are valuable and vital to the maintenance, care, and overall health of the agricultural system at work. The formation of these social structures, I conclude, oftentimes result from the abundance produced. All six of my participants joyfully expressed their wish, want, and need to share the fruits of their labor, as well as

their expertise, with those they care, interact and work for. Participants, literature, and personal experience reflect a value placed on sharing, gifting, and bartering resources of abundance within one's community. Hemenway (2015) posits demonetization as one solution to bring more community into one's life; I posit that permaculture is one process towards demonetization.

This diagram represents my understanding of how a 'culture' within and amongst permaculturalists in Vermont is born: out of abundance and resulting in a positive feedback loop, supported by infectious and reciprocal forms of exchange.

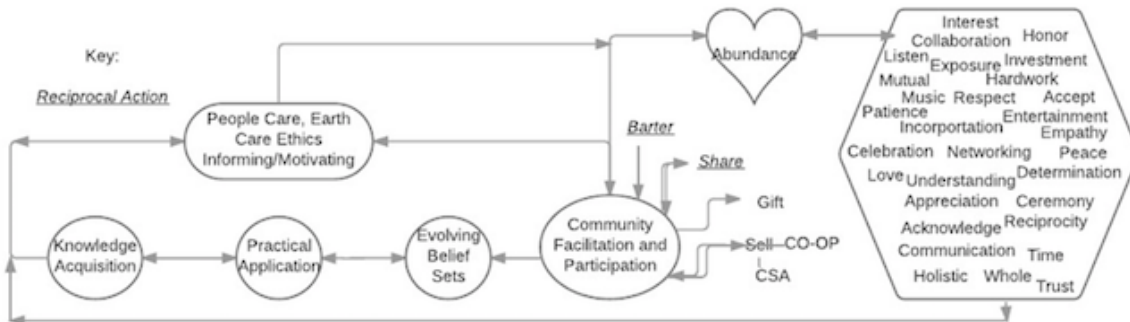


Figure 1. My assessment of the formation and existence of 'culture' within permaculture/ists.

The conclusions formed through this study link sources of knowledge acquisition and processes of application alongside an evolving and informed ethical foundation as formative to a system's thinking attitude. The community networks I have been exposed to through working and exploring agriculture, and here permaculture specifically, creates seemingly infinite forms of abundance that those keepers of k-p-b complexes wish to share with their communities of scale.

'Culture' exists across disciplines of agriculture because it accrues throughout generations, instills a set of values, facilitates connection, and yields an abundance. More specifically the agricultural methods of permaculture, guided by an ethical tenet to consider the individual, communal, regional, and planetary communities, empowers

people to begin creating “deeper, more direct connections to family, friends, neighbors, plants, animals, and the rest of the living world” (Hemenway, 2015, pp. 192). Twelve study participants representing two genders, an age range of forty years, a variety of experience and expertise, all providing me with commonality and community within the perma-‘culture’ they strive to work toward.

Appendix A

Interview Subjects:

- Kristin Alexander
- Gillian Carlson
- Russell Carlson
- Aaron George
- Nicko Ryan
- Mark Kennedy

Semi-Directed Interview Questions:

1. When did you find an interest in/begin farming?
2. Do you have your permaculture design certification?
3. Where did you receive your permaculture design certification?
4. Who have your mentors been in your personal agricultural evolution?

5. What permaculture activities do you practice daily and long-term at your home?
6. When did you begin to integrate permaculture at your home?
7. Why did you begin to integrate permaculture at your home?
8. What happens with the food you grow? Do you sell it? Do you trade it?

9. Has your personal environmental worldview evolved since you began practicing permaculture?
10. Has your relationship with the natural world been affected since integrating permaculture into your daily life?

11. How has your agricultural knowledge impacted your sense of community?
 - a. Do you interact with the larger farming community in Vermont?
 - b. Do you exchange with other local farmers regularly?
 - c. Do you go to the farmer's market and interact with people there?
12. Has practicing permaculture provided you with specific ways to contribute/participate in your community?
13. Does personal food production impact your relationships with the larger community outside of your home?
14. How can your community better utilize the principles of permaculture to strengthen people's relationships with one other?

15. Do you have an example of a time where you were better equip to deal with a stressful situation because of your permaculture knowledge?

Appendix B

Focus Group Subjects:

- Andrea Allen
- Erica Freeman
- Madeleine Lynch
- Julie McDonald
- Ashley Norton
- Brooke Smith

Focus Group Topic:

1. Young/ and or new students of permaculture. The goal of this focus group will be to bring people who have just received their PDC together for a facilitated conversation about their future now that they have a permaculture background. This will bring in a different perspective to my study to evaluate the goals and motivations of new permaculturalists in utilizing their knowledge base for lifestyle integration and community building.

First could you please describe permaculture in your own words?

Do you feel that the integration of permaculture in your life has impacted your sense of self-resiliency?

Do you feel that the integration of permaculture in your life has impacted your sense of community?

Do you feel that the integration of permaculture in your life has impacted your sense of purpose/ direction?

REFERENCES

- Asafu-Adjaye, J., et al. (2015, April). An Ecomodernist Manifesto. Retrieved May 01, 2017, from <http://www.ecomodernism.org/>
- Berkes F, 2012, *Sacred Ecology*, Taylor & Francis.
- Blomqvist, L., Nordhaus, T., & Shellenberger, M. (2015). Nature Unbound: Decoupling for Conservation. *The Breakthrough Institute*, 1-106. Retrieved from https://thebreakthrough.org/images/pdfs/Nature_Unbound.pdf
- Bochner, A., & Ellis, C. (2016). *Evocative Autoethnography: Writing Lives and Telling Stories* (Writing lives). New York, NY: Taylor & Francis.
- Bowers, K. (2012). Biohabitats Inc. Retrieved May 10, 2017, from http://www.biohabitats.com/newsletters/traditional_ecological_knowledge/
- Cajete, G. (1994). *Look to the Mountain: An Ecology of Indigenous Education*. Durango, CO: Kivaki Press.
- Caradonna, J., et al. (2015). A Call to Look Past An Ecomodernist Manifesto: A Degrowth Critique. Retrieved from http://www.resilience.org/wp-content/uploads/articles/General/2015/05_May/A-Degrowth-Response-to-An-Ecomodernist-Manifesto.pdf
- D'Alisa, G., Demaria, F., & Kallis, G. (Eds.). (2015). *Degrowth: A Vocabulary for a New Era*. New York: Routledge.
- Denscombe, M. (2011). *The Good Research Guide: For small-scale social research projects* (4th ed.). Buckingham, Philadelphia: Open University Press.
- Deppe, C. (2010). *The Resilient Gardener: Food Production and Self-Reliance in Uncertain Times*. White River Junction, VT: Chelsea Green Pub.
- Fukuoka, M. (2009). *The One-Straw Revolution: An Introduction to Natural Farming*. New York: New York Review Books.
- Guha, R. (1998). Radical American Environmentalism and Wilderness Preservation: A Third World Critique. In J. B. Callicott & M. P. Nelson (Eds.), *The Great New Wilderness Debate* (pp. 234-241). Athens, GA: The University of Georgia Press.
- Hammersley, M., & Atkinson, P. (2007). *Ethnography: Principles in Practice*. London: Routledge.
- Hay, I. (2005). *Qualitative research methods in human geography* (2nd ed.). South Melbourne, Vic.: Oxford University Press.

Hemenway, T. (2015). *The Permaculture City: Regenerative Design for Urban, Suburban, and Town Resilience*. White River Junction, VT: Chelsea Green Publishing.

Henry, T. (2006, Apr). Perma-what? *Pacific Sun* Retrieved from <http://search.proquest.com/docview/363208541?accountid=14679>

Holmgren, D. (2002). *Permaculture: Principles & Pathways Beyond Sustainability*. Hepburn, Vic.: Holmgren Design Services.

Hubbert, M. K. (1956). *Nuclear energy and the fossil fuels. Presented before the spring meeting of the Southern District, Division of Production, American Petroleum Institute, San Antonio, Texas, March 7-8-9, 1956*. Houston, TX.

Johnson, M. (1992). *LORE: Capturing Traditional Environmental Knowledge*. 62. Retrieved April 3, 2017, Fort Hay: Dene Cultural Inst. u.a.

Kallis, G. (2015, February). The Degrowth Alternative. Retrieved May 10, 2017, from <http://www.greattransition.org/publication/the-degrowth-alternative>

Kaufmann, J., Holbrook, T., & Seely Flint, A. (2014). Autoethnography: PS I Love You. In P. Albers (Ed.), *New Methods of Literacy Research* (pp. 101-114). New York, NY: Routledge.

King, C. A. (2008). Community Resilience and Contemporary Agri-Ecological Systems: Reconnecting People and Food, and People with People. *Systems Research and Behavioral Science*, 25(1), 111-124. doi:10.1002/sres.854

Lao, T., & Mitchell, S. (2015). *Tao te ching*. London: Frances Lincoln Ltd.

Lewis, H. T. (1993). *Traditional Ecological Knowledge: Wisdom for Sustainable Development* (N. M. Williams & G. Baines, Eds.). Canberra: Centre for Resource and Environmental Studies, Australian National University.

Manabe, S., & Wetherald, R. T. (1975). The Effects of Doubling the CO₂ Concentration on the climate of a General Circulation Model [Abstract]. *American Meteorological Society*, 32, 1-13. [http://dx.doi.org/10.1175/1520-0469\(1975\)032<0003:TEODTC>2.0.CO;2](http://dx.doi.org/10.1175/1520-0469(1975)032<0003:TEODTC>2.0.CO;2)

Monbiot, G. (2015, September 24). Meet the ecomodernists: ignorant of history and paradoxically old-fashioned. Retrieved May 01, 2017, from <https://www.theguardian.com/environment/georgemonbiot/2015/sep/24/meet-the-ecomodernists-ignorant-of-history-and-paradoxically-old-fashioned>

Morris, F. (2012). When science goes feral. *NJAS - Wageningen Journal of Life Sciences*, 59(1-2), 7-9. doi:10.1016/j.njas.2012.01.003

Paulson, S. (2017, February 13). Capitalism and (De)Growth. Retrieved May 10, 2017, from <http://www.resilience.org/stories/2016-09-23/capitalism-and-de-growth/>

Permaculture Association. (n.d.). Retrieved April 12, 2016, from <https://www.permaculture.org.uk/education/courses>

Plieninger, T., & Bieling, C. (2012). *Resilience and The Cultural Landscape: Understanding and Managing Change in Human-Shaped Environments*. Cambridge: Cambridge University Press.

Princen, T. (2005). *The Logic of Sufficiency*. Cambridge, MA: MIT Press.

Rhoades, T. (2016, November 01). When Did People Domesticate Animals and Plants? Retrieved April 24, 2017, from <https://owlcation.com/humanities/When-did-Humans-domesticate-animals-and-plants>

Roach, S. (2016, October 6). An interview with Nicky, a Permaculture Design Course participant. Retrieved April 20, 2017, from <http://www.sociallandscapes.co.uk/blog/2016/10/6/an-interview-with-nicky>

Roach, S. (2016, September 29). Louise s experience of the Permaculture Design Course. Retrieved April 20, 2017, from <http://www.sociallandscapes.co.uk/blog/2016/9/28/louises-experience-of-the-permaculture-design-course>

Ruddiman, W. F. (2013). The Anthropocene. *Annual Review of Earth and Planetary Sciences*, 41, 45-68. doi:DOI: 10.1146/annurev-earth-050212-123944

Sale, K., & Princen, T. (2012). The Decentralist Tradition. In R. De Young (Ed.), *The Localization Reader: Adapting to the Coming Downshift* (pp. 141-156). Cambridge, MA: MIT Press.

Snyder, H. A. (1995). *EarthCurrents: The Struggle for the World's Soul*. Nashville: Abingdon Press.

Smith, Caroline. "The Getting Of Hope: Personal Empowerment Through Permaculture." *The Getting Of Hope: Personal Empowerment Through Permaculture*. N.p., 1997. Web. 25 July 2016.

Telford, R. (2016). Permaculture Principles - Thinking Tools for an Era of Change. Retrieved May 08, 2016, from <https://permacultureprinciples.com/>

The World Bank. (2001). Retrieved April 21, 2017, from <http://www1.worldbank.org/publicsector/decentralization/political.htm>

Toffler, A. (1990). *Powershift: Knowledge, Wealth, and Violence at the Edge of the 21st Century*. New York: Bantam Books.

Tombro, M. (2016). *Teaching Autoethnography: Personal Writing in the Classroom*. Geneseo, NY: Open SUNY Textbooks.

Vogel, S. (2015). *Thinking like a Mall: Environmental Philosophy After the End of Nature*. Cambridge, MA: MIT Press.

Van Der Stege, C., Vogl-Lukasser, B., & Vogl, C. R. (2012). Managing landscapes for resilience: The role of home gardens in strengthening social-ecological resilience: Case studies from Cuba and Austria (C. Bieling, Ed.). In T. Plieninger (Ed.), *Resilience and The Cultural Landscape: Understanding and Managing Change in Human-Shaped Environments* (pp. 261-282). Cambridge, MA: Cambridge University Press.

Warwick, H. (2001). Cuba's Organic Revolution. *Forum for Applied Research and Public Policy*, 16(2), 54. Retrieved from http://go.galegroup.com.ezproxy.uvm.edu/ps/i.do?p=AONE&sw=w&u=vol_b92b&v=2.1&it=r&id=GALE%7CA78737867&asid=6b4f6454427cf6bbd70125304ba0db5b

“What’s permaculture’?” *Countryside & Small Stock Journal* May-June 2002: 80. *General OneFile*. Web. 5 Apr. 2016.

Witt, N., & Hookimaw-Witt, J. (2003). Pinpinayhaytosowin [the way we do things]: a definition of the traditional ecological knowledge (TEK) in the context of mining development on lands of the Attawapiskat First Nation and its effects on the design of research for a TEK study. *Canadian Journal of Native Studies*, (23), 361-390. Retrieved March 6, 2017, from http://www3.brandonu.ca/cjns/23.2/cjnsv23no2_pg361-390.pdf

Young, R. D., & Princen, T. (2012). *The Localization Reader: Adapting to the Coming Downshift*. Cambridge, MA: MIT Press.