TOWARD SUSTAINABLE COMMUNITY: ASSESSING PROGRESS AT DANCING RABBIT ECOVILLAGE

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Dancing Rabbit Ecovillage, an intentional community of roughly 70 members in Northeastern Missouri, is working to create societal change through radical sustainable living practices and creation of a culture of eco-friendly and feminist norms. Members agree to abide by a set of ecological covenants and sustainability guidelines, committing to practices such as using only sustainably generated electricity, and no use or storage of personally owned vehicles on community property. Situated within the context of a sustainability study, this thesis explores how Dancing Rabbit is creating a more socially and ecologically just culture and how this lifestyle affects happiness and well-being.

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ABBREVIATIONS LIST

CAFO – Concentrated animal feeding operation

DRVC – Dancing Rabbit Vehicle Cooperative

EARL – Eco-Audit Research Liaison

EF – Ecological footprint

EPA – Environmental Protection Agency

EWG – Environmental working group

GEM – Global ecovillage movement

GMO – Genetically modified organism

Humey – Humanure

ILFI – International Living Future Institute

LEED – Leadership in energy and environmental design

MESMIS – Spanish acronym for Natural Resource Management

NVC – Nonviolent communication

PAR – Participatory action research

QOL – Quality of life

SI – Sustainability Indicator

SSA – Systemic sustainability analysis

UNFI – United Natural Foods, Inc.

USGBC – United States Green Building Council

VC – Village council

WCED – World Commission on Environmental Development

Wexer – Work Exchanger

WIP – Week in preview

CHAPTER 1

CONTEXT OF RESEARCH: LITERATURE REVIEW

> *Anthropologists have broadened our understanding of the core concepts of climate change – adaptation, resilience, vulnerability, and sustainability. For environmental anthropologists, sustainability means social and cultural sustainability, not solely biological sustainability. The anthropological component of sustainability means that people are able to continue to maintain livelihood from the land and sea, and maintain the integrity of social institutions that support their customary ways.*
>
> Fisk

1.1 Introduction

In the face of global warming, peak oil and climate change, conversations are swirling around our current social and environmental situation. Climate science is advancing rapidly and accepted almost unanimously within the scientific community and the human factor in climate change is also becoming increasingly evident (Intergovernmental Panel on Climate Change, 2014). The Intergovernmental Panel on Climate Change (IPCC) states in the latest report that "human influence on the climate system is clear. This is evident from the increasing greenhouse gas concentrations in the atmosphere, positive radiative forcing, observed warming, and understanding of the climate system" (Stocker et al., 2013, p. 15). How did we get in this situation? How do we get out of it? Heated debates and contention over these issues are of burgeoning importance in the political arena.

"Green," "organic," "local," "GMO free," and other such buzzwords are gaining popularity as "eco" becomes more mainstream in American culture. People are realizing that human dimensions of climate change are an important component of increasing consumption and globalization. Western culture and globalization have brought with them some unsightly

consequences, including but not limited to the breakdown of families, degradation of ecological systems, accelerated extinction of species, growing economic gaps between the rich and poor, declining clean water supplies, and social alienation and inequality. Shirley Fiske explains, "global forces have economic, social, and ecological ramifications that cascade down the streambed to bury and cripple local communities" (2012, p. 149). A paradigm shift toward more sustainable living practices, especially in Western society, is necessary in order to reverse these trends and slow the rate of the potential impending climate disaster and mitigate its effects.

Intentional communities are pioneers in creating alternative, more sustainable lifestyles. Intentional communities "include ecovillages, cohousing, residential land trusts, income-sharing communes, student co-ops, spiritual communities, and other projects where people live together on the basis of explicit common values" (Fellowship for Intentional Community, 2014, Homepage). Ecovillages are a form of intentional community which "use integrative design, local economic networking, cooperative and common property structures, and participatory decision making to minimize members' ecological footprint and provide as many of life's basic needs as possible in a sustainable manner" (Lockyer and Veteto, 2012, p. 92). This thesis analyzes how the Ecovillage movement, in accordance with the sustainability movement, is creating a counterculture response to mainstream trends through a sustainability assessment at Dancing Rabbit Ecovillage.

My research at Dancing Rabbit aimed to build a list of sustainability indicators, in collaboration with the community, to help them monitor progress toward sustainability goals

and provide a tool by which to compare themselves to other communities and ecovillages. The research process was guided by several research questions:

1) What are Dancing Rabbit's community values and sustainability goals?
2) What sustainability indicators can be developed and measured to monitor progress toward these goals and compare Dancing Rabbit to other communities?
3) Is Dancing Rabbit making progress toward their sustainability covenants?
4) How does Dancing Rabbit's alternative lifestyle affect overall quality of life and happiness in the ecovillage?

I hypothesized that Dancing Rabbit significantly reduces resource consumption and negative environmental impact compared to average US communities while maintaining community member's quality of life, equal to or exceeding average US communities.

Chapter 1 of this thesis reviews existing literature encompassing ecovillage and sustainability studies, theoretical background for my thesis research at Dancing Rabbit Ecovillage, and the application of anthropology within these studies. Chapter 2 describes my thesis project—including an overview of Dancing Rabbit Ecovillage, research design, methodology, challenges and limitations. Chapter 3 explores the indicator themes in detail and explains results of the research. Indicators were measured and grouped into overarching themes including solid waste and recycling, transportation, fuel consumption, energy consumption, water consumption, perceived quality of life, and food consumption. Indicator themes are capitalized when I reference them to distinguish between themes and indicators. Each indicator theme includes various indicators within it, and each theme section includes theme and indicator descriptions, rationale, individual indicators, measures, results, and suggestions for further research within the indicators. Chapter 4 makes further suggestions for

development of the indicator list, chronicle my personal experience, and draw conclusions from the research.

Table 1

Indicator Theme Overview

Theme	Indicators	Subindicators	Status
Solid Waste and Recycling	Solid Waste Recycling		Complete
Transportation	Number of Vehicles Local Travel Miles		Complete
Fuel Consumption	Vehicle Fuel Consumption Other Fossil Fuel		Complete
Energy Consumption	Electricity Consumption		Completed
Water Consumption	County Water Consumption Rainwater Estimate Total Daily Water Flow		Completed
Perceived Quality of Life	Happiness Well-being		Complete
Food Consumption	Food Miles Organic Food Processed Food Meat Consumption	Frequency (Meat) Amount (Meat) Type (Meat)	Incomplete
Consumer Goods Consumption			Tabled
Building Structures			Tabled
Toxicity			Tabled

1.2 The Sustainability Movement

Sustainability is a concept which has been gaining popularity since the 1970s and has become a very dominant theme in Western discourse; it is a word much more recognizable by the American public than “intentional community” or “ecovillage.” The sustainability movement has been influential in moving people towards reducing consumption and bringing more attention to humans’ relationship with the environment. Sustainability is important to understand in the context of ecovillages as it is a significant component of ecovillage design and

lifestyles. Fredericks (2013) and Bell and Morse (2008) do an effective job of laying out the history and concept of sustainability. This section explores their works, along with several other documents instrumental in the sustainability movement, to gain an understanding of the concept of sustainability, its history and implications.

The sustainability movement, as defined by Fredericks (2013), is based around the commonly-held notions that we live on a planet with finite resources and that we need to care for future generations. Therefore, we must use only what is needed while leaving enough for future generations to meet their needs. Bell and Morse (2008, p. 5) explain the concept is often phrased as "don't cheat on your kids." What does this mean exactly? The concept lacks consensus:

> "As a destination, sustainability is like truth and justice – concepts not readily captured in concise definitions." We all want truth and justice; but what these mean can also vary greatly from individual to individual and between societies. My justice may be your exploitation, and my truth may be your lies! (Bell and Morse, 2008, p. 11)

The most generally accepted definition of sustainability, although arguably ambiguous, is to "meet the needs of the present without compromising the ability of future generations to meet their own needs," from the well-known Brundtland report as explained by Fredericks (2013, p. 21). The vagueness of this definition, and lack of consensus on what sustainability means in general, leave much open for debate. Some scholars argue the need for a concise definition and others argue that the flexibility is part of the reason the concept has gained in popularity as it has (Bell and Morse, 2008). I would argue that adaptability is crucial for sustainability as each situation is unique, and the concept needs to be looked at through the cultural lens of the population seeking to accomplish it.

The Brundtland report also promotes the principle of adaptability, as each situation involves a different group of people with different norms, ideas of sustainability, worldviews, values, environmental conditions and resources (Fredericks, 2013). Sustainability is both a technical concept as well as one based on values. Technical knowledge of sustainability has been mutually interacting with people's priorities for themselves, societies, and the rest of the world (normative aspects) for much of human history (Fredericks, 2013). This technical and normative interaction is both necessary and inevitable as Fredericks (2013) notes, "technically possible means of moving toward sustainability will not be fully implemented unless acceptable to society; normative visions of sustainability that are not technically possible will not be achieved" (p. 16). People will only attempt to live more sustainable lives to the extent that it fits within their moral values system.

Fredericks (2013) notes that although some ideas of sustainability originated in ancient times, most histories begin around the 1970s and into the 20th century. Fredericks further cites several books and documents influential in the sustainability movement; including *Our Common Future* (the Brundtland Report) from the World Commission on Environmental Development (WCED) in 1987, *For the Common Good* by Daly and Cobb in 1989, and Agenda 21 from the United Nations Sustainable Development, *Rio Earth Summit* in 1992 (Fredericks, 2013, p. 16-30). The Brundtland report encourages international collaboration on sustainability in three key areas: "1) to report on the status of the environment and pollutants, 2) to share scientific and technical information about the environment and economy, and 3) to develop laws" (Fredericks, 2013, p. 21).

The subtitle to *For the Common Good* explains its main focus; redirecting the economy toward community, the environment, and a sustainable future. This book focuses on the flaws of the discipline of economics and acknowledges several facts which "constitute an assault on unthinking economic dogma," including:

1) There is a hole in the earth's protective shield of ozone
2) There is evidence that the CO_2-induced greenhouse effect has already caused perceptible warming of the globe
3) Biodiversity is declining as rates of species extinction increase due to takeover of habitat, especially of the tropical rainforests, which support half of the world's species on only 7% of its land area

All of these facts demonstrate that the scale of human activity has exceeded the carrying capacity of the biosphere (Daly and Cobb, 1989). Daly and Cobb admit that their book is an "attack on the current discipline" of economics (1998, p. 18) which fails to acknowledge the physical limits of our planet. Baker concurs, stating "many are beginning to make explicit connections between the degradation of the biosphere and the expansion of the global capitalist economy, coming to the conclusion that 'It's capitalism or a habitable planet—you can't have both'" (2013, p. 414).

Daly and Cobb explain that many false assumptions have been made by economics, especially when using GDP as an indicator of true well-being or welfare. Economists, trying to be increasingly scientific, have often ignored human dimensions and the manner in which the economic system fits into the "whole of human activity" (1989, p. 32). To counter these trends they explain the need for revising capitalist practices and ceasing the destruction of community. "For the sake of human beings and the biosphere" (p. 361), Daly and Cobb call for revision of the discipline of economics with the following possible steps: university reform, building

communities, changing trade policies, establishing optimum scale, measuring economic progress, and attitudinal changes. Daly and Cobb do a great job of explaining the fallacies of modern economics and how, due to the 'fallacy of misplaced correctness,' the discipline has made many false assumptions (especially regarding well-being) which have led us into the unsustainable situation of today. Agenda 21 (United Nations Sustainable Development, 1992) called for the international community to act in response to the increasing disparities within and between nations as a result of this unsustainable situation.

One of the most important documents in the sustainability movement is Agenda 21; which was at the time considered "'the world's most important soft law document,' a class of documents that recommend but do not require governmental action" (Fredericks, 2013, p. 26). In the preamble, Agenda 21 states its position that,

> Humanity stands at a defining moment in history. We are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being. However, integration of environment and development concerns and greater attention to them will lead to the fulfillment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. No nation can achieve this on its own; but together we can - in a global partnership for sustainable development. (United Nations Sustainable Development, 1992, para. 1.1)

Agenda 21 focuses on poverty, access to and protection of resources for marginalized and oppressed populations; including women, minorities, children, poor, disabled and indigenous groups (Fredericks, 2013), which is consistent with agendas in much of environmental anthropology. Anthropologists have been critical of globalization and Western consumer culture, often citing the environmental and social consequences, laying emphasis on the disproportionate effect on disadvantaged populations (Lockyer and Veteto, 2013).

Anthropologists frequently study and seek to understand the local politics and social dynamics that negatively affect marginalized populations, acting as advocates for their needs and rights in instances where they need an academic voice which would have more influence with policy makers. Further, anthropologists seek to understand the global policies and structures which keep them in an unequal position compared to the rest of the population and methods of improving the situation. Agenda 21's call for 'global partnership to increase sustainable development' (United Nations Sustainable Development, 1992) and focus on poverty and marginalized peoples acknowledges the unequal effects climate change could have on these populations.

Due to criticism by environmentalists and ethicists alike, based on the lack of acknowledgement of the intrinsic value of nature and "inadequate attention to disparities in access to environmental goods and services among demographic groups", Agenda 21 was revised and a new document and The Earth Charter was created in 1994 (Fredericks, 2013). The Earth Charter distances itself from consumerism and materialism, maintaining that "when basic needs are met, human development is primarily about being more, not having more" (Fredericks, 2013, p. 27). The Earth Charter's multifaceted ethical approach includes principles of accurate research and data, adaptability, cooperation, efficient allocation and use of natural resources and information, responsibility, equality, and social and environmental justice according to Fredericks (2013, p. 28-28). Social and environmental justices are also themes found in many ecovillages in their relation to sustainability. Therefore, ecovillages are viable arenas in which to address sustainability and analyze progress.

As I have demonstrated, we are in need of a shift toward more sustainable culture. Additionally, it demonstrates that sustainability is an adaptable concept which can be adjusted to serve different situations and cultural value systems. Like ecovillages, which are not perfectly developed sustainable communities, but rather works-in-progress and experiments in change (Lockyer and Veteto, 2013), the concept of sustainability is also not a perfectly developed construct. Ecovillages take the sustainability movement's desire for societal change and put it into action, attempting to build the necessary alternative lifestyles which will significantly reduce modern people's negative impact on the environment.

1.3 The Ecovillage Movement

The sustainability movement acknowledges the need for a paradigm shift in Western society in order to mitigate the effects of climate change. This section explores existing literature regarding ecovillage communities to demonstrate how ecovillages, aligned with the sustainability movement, are trying to construct more sustainable culture in community.

What is an ecovillage? The word often conjures up images of 1960s-era hippie communes full of flower children with ideas of peace, love and the youth's rejection of mainstream culture. Jonathan Dawson (2013), a sustainability educator, author, and activist, explains that while sharing some similar ideas, ecovillages are different in their motives, creating living experiments in alternative lifestyles with a more specific focus on living in an ecologically sustainable manner. Robert Gillman's definition of an ecovillage is a "human-scale, full featured settlement, in which human activities are harmlessly integrated into the natural world in a way that is supportive of healthy human development, and can be successfully

continued into the indefinite future," later qualified to include "multiple centers of initiative," including governance, autonomous enterprises, associations, and projects of its residents (Dawson, 2013, p. 323).

Aligned with the sustainability movement and the slowly emerging paradigm shift in the West toward a more holistic worldview and localization of foods and services, ecovillages build new alternative societies from the ground up based on ecological values, living experiments of alternative life ways, and sustainable culture. The Ecovillage movement holds several key values as described by Gaia Education, an online ecovillage design education course (2012):

> honoring unity through diversity; celebrating diverse cultures and creeds; practicing racial, cultural and gender quality; promoting social justice and environmental awareness; striving for peace and local self-determination; empowering individuals and local actors; raising consciousness and human potential; and, generally, respecting the living Earth as our planetary home. (p. 3)

Growing recognition of climate change and global warming has led to more general acknowledgement of the need for the transformation of values in Western society if the environmental impact of modern cultures is to be reduced. Ecovillages are directly involved in the transformation of values in four key ways: "delinking growth from well-being; reconnecting people with the place where they live; affirming indigenous values and practices, and offering a holistic and experiential educational ethic" (Dawson, 2010, p. 186). This educational experience could be the Ecovillage movement's best chance at influencing wider culture. Ecovillages, including Dancing Rabbit, often incorporate outreach programs into their culture in order to disseminate knowledge gained through experimental community development processes and educate other communities in methods of sustainable living (Dawson, 2013). Ecovillages are at the intersection of theory and practice as Kasper illustrates, "by creating a certain way of

experiencing the world, in addition to promoting an intellectual understanding of the reasons for living this way" (2008, p. 20).

Kasper further explains (2008) that many challenges in ecovillage development (as well as in the rest of the developing world) result from the values and beliefs of dominant Western culture such as individualism, human exceptionalism, and absolute dedication to economic growth. Along the same lines, Baker (2013) discusses the difficulties of attempting to create sustainable communities (Ecovillages) within an unsustainable context (capitalism). Capitalism is inherently unsustainable because it requires perpetual growth within a system of finite resources (Baker, 2013). Ecovillages in the West are created within and surrounded by capitalist culture and do not usually gain support or funding from larger society (Dawson, 2006). Rules and regulations, such as building codes and waste water treatment, requirements often prevent ecovillagers from living as sustainably as they would like. Capitalism generates competition and conflict whereas ecovillagers generally seek peace, harmony and cooperation. Capitalism and ecovillages directly clash on various levels, making it difficult for ecovillages to create the sustainable lifestyles they seek to the extent they desire due to factors outside of their control.

On the other hand, ecovillages allow people to regain some control over their lives in a system many are losing faith in. Ecovillages provide members freedoms they might not experience outside of this context by removing them from wider society's immediate influence and control. Ecovillagers have the ability to create the kind of culture and lifestyle they desire within their community. Constructing a culture of nonviolence (including nonviolent communication), feminism, healthy conflict and effective conflict resolution, freedom of

expression, and resource sharing is not generally feasible in wider capitalist society which directly counters all of these norms. Growing your own food or purchasing it from local producers, collecting rainwater, or providing your own electricity through solar panels, wind or hydropower—all provide a level of independence also not always possible in mainstream America. Perhaps the important message we should receive from ecovillages and intentional communities is that "while they may not be explicitly anti-capitalist (although some are)—their assertion of self-determination, however limited and contradictory, however easy to ridicule and dismiss, represents a refusal of determination by others, and thus a refusal of the culture of capitalism" Baker (2013) points out.

Ecovillages are powerful examples of the paradigm shift that is in process and are instrumental to the future of the sustainability movement. Allowing people to experience alternative lifestyles first hand, and demonstrate how fulfilling and abundant a sustainable life can be through visits to existing ecovillage communities, can be important in influencing a paradigm shift in the west.

1.4 Criticisms of Sustainability and Ecovillages

The sustainability and Ecovillage movements are not without their critics. Flexibility and ambiguity within the concept of sustainability, including the lack of specific and definitive criteria regarding what exactly is and is not sustainable, is particularly problematic for some scholars. Also up for debate is the actual potential for ecovillages to influence larger society and incite cultural change. Debates surrounding the significance of both of these movements are discussed below.

Beckerman (1994) questions the usefulness of the sustainability concept. He maintains that maximization of welfare should be the ultimate goal over sustainability since, "'sustainable development' has been defined in such a way to make it either morally repugnant or logically redundant" (Beckerman, 1994, p. 192). Beckerman argues that 'strong' sustainability is morally repugnant because it places sustainability above all other factors when maximization of welfare should be the ultimate goal. Further, he argues that the idea of 'needs' is a subjective concept and therefore the concept of sustainability, by most definitions, is useless. Similarly, he explains that 'weak' sustainability, where compensation is provided for resources used, offers nothing more than the maximization of welfare presented in traditional economics (Beckerman, 1994).

Beckerman agrees that environmental issues need to have a place in policy but disputes the idea that sustainability should be the main concern (1994). His view is at odds with Fredericks' idea of integrating technical and normative aspects, as he argues that "'sustainability' should be interpreted purely as a technical characteristic of any project" (p. 205). He discounts normative aspects explaining that whether or not the principles of sustainability *should* be followed is an entirely separate matter (Beckerman, 1994). Beckerman (1994) also suggests that the definition of sustainable development, as put forth by the Brundtland Report, does not offer any guidance regarding what exactly should be preserved in order for future generations to meet their needs. He further asserts that we could not possibly know what those needs would be and argues there must be measurable criteria of sustainability (Beckerman, 1994).

I agree that understanding what should and should not be preserved is difficult; where do we draw the line and at what cost? We cannot predetermine all of the needs of future generations; however I would argue that basic physiological needs such as food, water, clean air, and shelter are indisputable and other basic needs such as safety, self-actualization, human relationships and socialization, as noted in Maslow's Hierarchy (1943), are generally accepted as well. Beckerman seems to dispute the idea that sustainability can be an adaptive concept. However, if everyone aspires to live in a sustainable manner given their own resources and worldview we could be doing better than we are now. Sustainability does not have to be a concrete ideal with specific measurements that fit every scenario; a perfect model of sustainability does not exist. Future generations can adapt sustainability concepts to fit their own needs at the time. Humans are constantly learning more about our impact on climate change. Climate science will continue to advance, new discoveries will be made, and new technologies likely invented, therefore adaptability is crucial.

Yet, Beckerman argues against the need for sustainability, denying that loss of species or environmental resources truly affects humans, suggesting, "98% of all of the species that have ever existed are believed to have become extinct and people do not feel any great loss as a result. How many people lose sleep because it is no longer possible to see a live Dinosaur?" (1994, p. 194). The relevance of the argument seems lost because; a) people never coexisted with dinosaurs to begin with in order to feel any sense of loss; b) dinosaurs never served as a resource for human survival; c) preventing future generations from feeling a sense of loss is not the objective of sustainability as I understand it, allowing them to have resources to meet their needs is, and; d) the extinction of dinosaurs was an event separate of human interaction, a

natural part of Earth's evolution. Humans did not speed up these events, nor could we have done anything to stop it. Beckerman seems to miss the point of sustainability, asking if we should "ensure the survival of every known and unknown species on the ground that it might give pleasure to future generations" (1994, p. 194). However, as I stated above, I do not believe bringing humans pleasure or stopping them from feeling a sense of loss in the future is what most proponents of sustainability are concerned with. Avoiding the destruction of species of unknown value and allowing future generation's access to enough natural resources to sustain are more prominent concerns.

We may not understand the full value of a species today and its function within the ecosystem. What if we eliminate a species upon which all other organisms in that ecosystem depend and cause a domino effect of extinction? Likewise, what if we eliminate a species that is later shown to cure some endemic disease? New classes of organisms are still being discovered and with so many still unstudied we cannot fully understand the value of every organism at this time. Beckerman (1994) further argues for substitutions and alternative sources. However, in the event of societal and/or technological failure, people could be forced to survive only on things naturally available to them within their environment making man-made substitutions unavailable and obsolete.

Significant debate also surrounds ability of the Ecovillage movement to incite broad societal change. This discord is clearly evidenced in the dialogue between Ted Trainer and Takis Fotopoulos in the journal *Democracy & Nature* (2000-2002). The crux of the argument centers on how societal change should occur. Trainer believes a shift in values must come first, and the global Ecovillage movement (GEM) is a way to start building the new alternative societies we

are seeking. Trainer does not claim the GEM is the best way, but rather the best option available to us at this time. Through their living examples of alternative lifestyles and creation of alternative culture, ecovillages "can build the consciousness that is crucial if at some distant point in time structural change is to be achieved" (Trainer, 2002, p. 144). Ecovillages change underlying societal values within their own community and then, through outreach and education efforts, spawn those values outward in hopes of changing those of the larger social structures surrounding them. Fotopoulos, on the other hand, has a much more confrontational approach, arguing that a shift in structures comes before, or at least simultaneously with, a shift in values. Fotopoulos, in effect, believes we must confront and overthrow the current system in order to successfully form a new one, disputing the value of ecovillages in this process (Fotopoulos, 2002).

Acknowledging the GEM is theory-less, a-political, and does not perform adequately, Trainer still believes it to be our most promising option (2000). Fotopoulos argues the GEM is not a movement at all, which Trainer agrees with, explaining that it could be the source of one (2002). Admittedly pessimistic, Trainer still argues that what matters is that within the GEM are 'groups working for right way,' and the best way to get systemic change in motion is to provide thriving examples through successful ecovillages. "The strategy is about starting to build the required new socio-economic systems right now," Trainer argues (2002, p. 148). Ecovillages are experiments in completely radical lifestyles including novel social, economic, structural, and value systems. Developing these pioneer societies and working through the kinks cannot occur overnight, nor can they be evaluated in short time periods. Additionally, it is important to have an idea how these new socio-economic systems might work, what problems might be

encountered, how to try and work through the issues, etc. before we jump directly into implementation. It would be disastrous to 'overthrow' the current system without a good idea of feasible options to replace it. How can this be done without first experimenting with different situations and working through the solutions?

From my experience, not enough people buy into the need for drastic societal change in order for the type of overthrow Fotopoulos calls for to be effective. Therefore, it is important for ecovillages to be established sustainably and provide a high quality of life if these ideas are to be translated to wider society. People will not be interested in any lifestyle which does not make them happy. Ecovillage communities have to be desirable in order to have any significance at all. Additionally, ecovillages must be stable systems in order to resist the pushback and domination from capitalist elites. Regardless what route is taken toward change, there will be considerable objection on the part of those who believe in the current capitalist system, which a lot of people do or it would not be surviving. Trainer concurs, explaining that before ecovillages become a threat to capitalism it will try to crush them under its feet (Trainer 2000). This could be problematic for ecovillages which often struggle to survive within the dominant capitalist system already. Having strong, successful, sustainable communities in existence is important if they are to thrive. The stronger and more independent a community is, the more capable it may be to resist outside forces.

Ecovillages face intense challenges in their development and their goal of influencing wider culture, including that of existing within a capitalist consumer culture. Although the critics of ecovillages often make valid points, their value cannot be completely discounted. Ecovillages, along with other intentional communities, are the some of the only existing

communities that are vigorously attempting to create more sustainable lifestyles. The knowledge we stand to gain from them is invaluable.

1.5 Indicator Theory

It is important to understand the theory and other considerations necessary in order to develop an effective indicator list for any community. This section explores literature regarding indicators and indexes. I discuss frameworks for understanding indicators, important things to consider when developing an indicator list, the importance of community participation, as well as explain the use of indicators in relation to the Dancing Rabbit Project.

Although the terms indicator and index are sometimes used interchangeably, an indicator usually refers to a particular piece of data where an index can be one single indicator, or the result of a mathematical calculation to combine indicators (Fredericks, 2013). Aggregation of measures into a single indicator or index takes extensive time, scientific knowledge, and consideration of how to weigh different factors and measures. A list of indicators is more appropriate for the Dancing Rabbit project at this stage, due to budget, resource, and time constraints. Additionally, Valentin and Spangenberg (2000) argue against the aggregation of data because it undermines their criteria of transparency, which is an important norm in the Dancing Rabbit community. Clarity and transparency are also critical to the list of indicators in order to ensure long-term functionality and efficacy for the community.

Indexes can be complicated in their development, but the end result strives to be a simple representation of a complex system of information to help inform decision-making (Fredericks, 2013). For example, an indicator for healthy water streams can be the number of

healthy and reproducing fish in that stream. Indicators can serve a multitude of purposes; however, this thesis focuses on indicators that monitor progress toward a specific goal such as reducing environmental impact in the face of climate change. To aid in the interpretation of data, frameworks put indicators into similar categories (e.g. land, water, air, and biota; or transportation, industry, urbanization, and agriculture) and aim to ensure that all relevant information is considered and included (Fredericks, 2013). Fredericks (2013) reports two frameworks (division of indicators into economic, ecological, and social and the pressure-state-response framework) for sustainability indexes or indicators, each with its own advantages and limitations.

The first framework involves dividing sustainability into economic, ecological, and social dimensions which allows the inclusion of all important elements into the assessment (Fredericks, 2013). The second framework, pressure-state-response, "classifies subindicators by the function they monitor" (Fredericks, 2013, p. 54). Pressure indicators are "human activities, processes and patterns" (2013, p. 54), state indicators asses the state of a component of a system such as concentration of an air pollutant, and response indicators include actions proposed or undertaken such as laws enacted. The two frameworks can be combined to "identify indicators that fulfill all nine possible combinations of the two frameworks" (Fredericks, 2013, p. 55). Regardless of which framework is chosen, it is important to be thorough and assess all components of a system, and their overall characteristics and the relationships between them (Fredericks, 2013) in order to avoid making false assumptions when analyzing results. The indicator list for Dancing Rabbit is still in the developmental stage and does not fit either of these frameworks fully at this time; although the indicators, as

explained in Chapter 3, are categorized into theme areas such as transportation, water, and perceived quality of life, similar to the first framework (dividing sustainability into economic, ecological, and social dimensions) presented here. It will be beneficial for Dancing Rabbit to eventually have a list of indicators divided between the overarching categories of economic, ecological, and social dimensions. Fully developing these three sections (economic, ecological, and social) of indicators would give a more complete picture of sustainability at Dancing Rabbit.

Fredericks mentions several additional important factors in indicator development; including the need to be accessible, understandable, easy and cheap to figure, and scientifically sound in order to be "meaningfully implementable" (Fredericks, 2013, p. 55). Funding and time at Dancing Rabbit were limited so "easy and cheap" were very important factors in indicator development. Also, given Dancing Rabbit's outreach efforts, it was important that both community members and those outside the community are able to clearly understand the indicators and implications if it is to be used for educational purposes. In order to ensure the methodology was scientifically sound and comparable to other communities, I tried to develop the indicator measurement methods in line with existing local level indicator examples, such as The Neighborhood Sustainability Indicators Guidebook (Meter, 1999), Sustainable Seattle's Indicators of Sustainable Community 1998 (Palmer, 2004), and the City of Hamilton, Ontario, Canada's Vision 2020 Sustainability Indicators Report 2008 (McCabe). These three local level sustainability assessments included indicators similar to those which were developed for Dancing Rabbit. Comparisons to indicators within these reports are made within indicator results section in Chapter 3 when applicable. This serves to demonstrate how Dancing Rabbit performs in relation to other local community models, as well as the average American.

In addition to comparability, participation is an important factor in community level projects. Anthropological studies emphasize the importance of community participation in assessments to ensure community satisfaction, empowerment, relativity, and well-being in any project. Community participation is important in indicator development for similar reasons; Fraser, Dougill, Mabee, Reed, and McAlpine (2006) discuss how community participation in indicator development provides opportunities for community empowerment. As Fredericks (2013) highlights, this should also be instrumental in building an index to make sure it focuses on community values and ethics and to get the results the community desires. As previously explained, indicators and sustainability are both technical and normative endeavors. The community's norms and values play a large role in the development of indexes as they inform: "1) sustainability definitions which influence indexes, 2) the decision to develop an index, 3) the selection of methods of index development, 4) the actual process of index development, and 5) the use of indexes" (Fredericks, 2013, p. 58). Anthropologists, through participant observation, participatory action research, and using tools such as cultural relativity, embracing the community's worldview and looking at the situation through the community's cultural lens, can play a vital role in forming an index that is meaningful, implementable, comparable and functional within a community's values system.

Fredericks also notes the importance of exploring relationships between indicators thoroughly in order to avoid false assumptions, misinterpretation and misuse of data (2013). The "fallacy of misplaced correctness" common in economics, as discussed in Section 1.2, could easily present itself in indicator and index analysis if connections between areas are not explored. In an attempt to avoid this fallacy I have included a section within each indicator

theme area which briefly (not completely) explores the possible interconnections between these indicators in Chapter 3.

In the development of the initial list of indicators for the Dancing Rabbit project I have attempted to make sure the list is "meaningfully implementable," easy and cheap to figure, easily understandable, and scientifically sound or comparable to other local level index models. Community participation was encouraged throughout each step of the process and ensured through methodological choices as is further explained in Section 1.6 and again in Chapter 3. Additionally, I have attempted to explore some of the interconnections between indicators to prevent false assumptions and conclusions.

1.6 Methods of Building Indicators

Various philosophies, frameworks, and methods exist for building indicators and indexes. This section explores several of the approaches presented in the literature and explains them in relation to the choices made for this project.

Bell and Morse (2008) identify different approaches to sustainability analysis and sustainability indicator (SI) development, discuss problems with many "top down" methods used, break down the process of selecting valid indicators, and offer the imagine approach as an alternative example of systemic sustainability analysis (SSA). Some major problems with sustainability evaluation are lack of consensus regarding what sustainability really means, the need for a systems (or more holistic) approach to building indicators, and the lack of participation by stakeholders (Bell and Morse, 2008). Bell and Morse further testify to the need for a paradigm shift toward a more systemic approach to sustainability analysis. The SSA

philosophy put forth by the authors attempts to solve these problems and others. SSA is defined as, "the participatory deconstruction and negotiation of what sustainability means to a group of people, along with the identification and method of assessment of indicators to assess that vision of sustainability" (Bell and Morse, 2008, p. 147). Therefore inherent subjectivity of SSA is important to keep in mind.

The Imagine tries to rectify some of the many problems currently found within sustainability analysis. The Imagine approach involves several steps: 1) understand the context; 2) agree upon SIs and bands of equilibrium (or target range); 3) develop the AMOEBA approach and scenario-making; 4) conduct a review and engage meta-scenario-making; and 5) publicize and market the message (Bell and Morse, 2008). Step 1 involves gaining a complete understanding of the system to be evaluated including all components comprising that system. The authors suggest drawing a 'rich picture,' or cartoon-like representation of all components of the system and how they work together in order to accomplish this (Bell and Morse, 2008). The next step in the Imagine approach is to identify the main indicators and the band of equilibrium. This can be an overwhelming task but is incredibly important to the overall development of the index. Reaching consensus among various stakeholders throughout this process is the ultimate goal and it takes a series of steps to reach such agreement. This process involves several phases of indicator development starting with a rough draft of all SIs proposed by all groups, convening groups to reach a consensus on valid indicators, condensing the comprehensive list of SIs down to the twenty or thirty most important and ranking them in hierarchical order, and then unpacking and detailing each of the agreed upon SIs and their drivers (Bell and Morse, 2008). Considered the ideal state toward which the project desires to

move, the 'band of equilibrium' provides an end goal that is relevant to the local community. Bell and Morse (2008) further explain that identifying the 'band of equilibrium,' or the reference condition, is critically important because it influences the rest of the analysis.

Step 3 in the Imagine approach involves development of the aptly named AMOEBA diagram as a visual aid of the current state of sustainability and scenario-making to ensure as many future situations are considered as possible (Bell and Morse, 2008). The AMOEBA diagram, looking much like its namesake, places SIs within three general bands: not sustainable due to shortfall; within the target range; or not sustainable due to overabundance. Accordingly, the target state is clearly visible. The more an AMOEBA represents a perfect circle the closer the system is to a state of desired sustainability (Bell and Morse, 2008). Moreover, through this visual representation the reductionist individual SIs as well as the picture of the entire system is presented simultaneously. This 'snapshot' can be taken at different time periods for easy visual comparison of the system across time and assess progress made toward sustainability goals (Bell and Morse, 2008).

Step 4 involves scenario-making, review and meta-scenario-making; all of which which aim to consider options for the future, implications of the current state as expressed in the AMOEBA diagram, and application and goals of further sustainability efforts (Bell and Morse, 2008). Step five—publicizing and marketing the message—aims to influence policy (Bell and Morse, 2008). Although the goal of the current stage of the Dancing Rabbit project is to gather baseline data for the community, the results of indicator development and assessment could be used to influence future internal community policies to bring them more in line with their

sustainability goals and/or to communicate the results of their ecovillage experiment to the public.

Another approach to indicator development, the MESMIS framework as proposed by López-Ridaura, Masera, and Astier (2002) involves a six step cycle. MESMIS is the acronym for natural resource management systems in Spanish. The six step process is as follows: (1) definition of the evaluation object; (2) determination of the system's critical features; (3) selection of strategic indicators; (4) indicator measurement and monitoring; (5) synthesis and integration of results; and (6) conclusions and recommendations (López-Ridaura et al., 2002). This system is very similar to the Imagine approach and also useful for the Dancing Rabbit project. The main element lacking in the MESMIS approach is a focus on understanding the context of the system and stakeholders, a feature that is central in the Imagine approach put forth by Bell and Morse (2008). Context is very important to understand, keeping indicators in line with the context of the situation, and can help assure the index is relevant to the community. MESMIS is a more top-down in structure than the Imagine approach.

Reed et al. argue for another approach which involves integrating methodologies to capture both the knowledge of experts and the knowledge of the community, or both top-down and bottom-up frameworks, through their adaptive learning process. Reed, Fraser, and Dougill (2006) proposed an adaptive learning process to integrate both top-down and bottom-up approaches to sustainability evaluation, noting that a solely top-down focus could completely fail to recognize major local issues and values. Such top-down approaches can make an index completely useless to the community for which it is being developed. On the contrary, Reed et al. (2006, p. 407) mentions that participatory approaches also have their

failings as “community control in and of itself is irrelevant to sustainability if local people fall prey to the same beliefs and values that have led to current unsustainable positions” and advocates for an integration of these approaches. For this reason, an outside researcher is beneficial for this type of self-evaluative assessment.

Participatory methods are prominent in anthropology and participation is also important to the community. Additionally, the combination of community participation with scientific research is a desire of Dancing Rabbit as is evident by their request for our help with this project. They want to ensure they are sustainable not only by their own measures but according to science as well. For the Dancing Rabbit project, in line with Reed et. al.’s method, I combined the more bottom-up process of Imagine, with the more top-down process of MESMIS to create a process that was both participatory and research driven. Combining these two methodologies seemed most appropriate to guide indicator development at Dancing Rabbit. I used the components of each framework I felt were most effective for developing a participatory process to create a list of indicators relevant to the community as well (see Chapter 2).

1.7 Quality of Life as an Indicator

Most people understand the value in quantitative scientific indicators, but not everyone understands the value of qualitative assessments of happiness and well-being. This social aspect of sustainability adds an interesting and important dimension to ecological sustainability assessments. Quality of life (QOL) is an indicator of happiness and well-being which can be measured both qualitatively and quantitatively. QOL is an important part of analysis and an

important indicator of social sustainability. Dancing Rabbit's list of priority indicators did not include any measure of economic or social sustainability. There are a lot of objective elements to quality of life as well, which are easier to measure, as discussed below. Additionally, I explain how the capitalist context within which ecovillages are situated affects QOL—an important factor to keep in mind with assessing happiness or well-being in an ecovillage.

Quality of life is "a measure of how positively or negatively we perceive our lives – a measure of well-being" (Malkina-Pykh and Pykh, 2008, p. 858), but not in the traditional economics-centric sense. QOL encompasses a largely subjective element because everyone has a different idea of how life should be and various internal and external factors play into each individual's perception and level of overall happiness. According to Malkina-Pykh and Pykh (2008), many QOL scholars argue the need for both subjective and objective indicators and the need to incorporate measures from three QOL environments (built, social and economic). Subjective indicators/measures for QOL could include personal happiness, job satisfaction, life satisfaction, feeling part of one's local community (Malkina-Pykh and Pykh, 2008), quality of community relations, amount of time for social activity and time with family and friends (Mulder, Costanza, and Erickson, 2006). Objective indicators/measures for QOL could include standard of living, physical and mental health status, personal income, crime rate or personal safety (Malkina-Pykh and Pykh, 2008), equality of distributions, health of and time spent in the natural environment (Mulder et al., 2006), air quality, soil quality, water quality, shelter quality, communications, and education (Papageorgiou, 1976). Given the immensely different situations people live in throughout the world—including countless vastly different

environments, cultures and worldviews—numerous other factors can play into an individual's QOL.

Ecovillages and other intentional communities can have more influence if they demonstrate residents are happy while consuming fewer resources. Mulder et al. (2006) explain the effectiveness of intentional communities with regards to sustainable development and increased QOL as discovered through their survey of a subset of intentional communities:

> [Intentional communities] were specifically designed to enhance their resident's quality of life by balancing concern for interpersonal relationships (social capital), personal growth and development (human capital) and connection with nature (natural capital) with needs for physical subsistence (built capital and income). Our hypothesis was that intentional communities could achieve a higher quality of life with less resource consumption than unintentional communities and could thus serve as models for sustainable development. (p. 14). …
>
> Some elements of our survey certainly suggest that ICs enable their residents to pursue a more sustainable lifestyle. By substituting social capital for built capital, ICs provide a higher quality of life to their residents despite significantly lower income. By converting private goods into public goods, it is feasible that ICs enable all to live better with less capital. …Results of this study represent an existence of proof: it is possible to achieve a high (and probably more sustainable) quality of life while consuming at rates much less than the U.S. average. (p. 20)

Mulder et al. (2006) demonstrate ecovillages potential for impact in the world and is a testament to why QOL is an important element within a sustainability assessment, particularly for intentional communities. If ecovillages are designed to enhance quality of life, it is important to see if this really happens. Does theory meet practice?

Instead of including QOL in with ecological indicators The Neighborhood Sustainability Indicators Guidebook treats this as a separate category of indicators in their assessment, explaining that QOL is one of three main categories of indicators they measured. This guidebook treats QOL as a separate element from sustainability in the context of mainstream

communities and neighborhoods. Meter puts forth that QOL indicators "differ from sustainability indicators in addressing shorter-term goals and by not needing to show linkages between issue areas" (1999, p. 11). I agree that QOL addresses shorter term goals but QOL also overlaps many other indicators of sustainability, such as air and water quality. These elements are definitely linked and exploring these linkages and the affects indicators might have on each other can prove useful for self-evaluation in an ecovillage setting.

Outside influences such as the capitalist context within which ecovillages exist often have an effect on QOL (Baker, 2013). As explained in section 1.3, ecovillages are created within the unsustainable context of a capitalist consumer society, making it difficult for them to be as sustainable as they could be, especially given they do not usually garner support from larger society. "Probably 95% of the major variables involved in forming a community *are not in the founders' control* – land value and availability, banks' lending policies, and city or county zoning regulations" (Baker, 2013, p. 425). Additionally, conflict can occur within the community because some members perceive themselves as bearing the brunt of responsibilities due to the necessity for other members to find outside work to subsist. In the same manner, with increasing globalization, it is hard and usually expensive to get any necessary daily products that have not been shipped across the world or from great distances within the country. In this manner, the unsustainable context within which ecovillages exist can lead to the internal creation of another unsustainable situation (Baker, 2013).

Similarly, Siracusa, La Rosa, Palma, and La Mola (2008) and Dawson (2006) corroborate Baker's argument that outside forces can influence ecovillage success and QOL. Siracusa et al. (2008) explains that solar panels are extremely expensive due to scarce diffusion of technology.

Therefore, such technology is often hard to obtain for people with relatively low income, such as those who usually reside in ecovillages. Dawson concurs, explaining, "for almost all ecovillages are inextricably tied into the wider and destructive global economy that surrounds them…a key additional step is to recognize that on their own, individual ecovillages are much too small to escape the perverse gravitational pull of the global economy" (2006, p. 56-59). Undeniably, ecovillages are not solely under their own control and larger forces are in play, such as capitalism, which do not tend to support their endeavors.

The unsustainable capitalist context makes it more difficult for ecovillages to reach sustainability goals, sometimes creating frustrations over factors which can lead to conflict and reduce perceived quality of life, resulting in ecovillagers placing the blame internally within the village and not recognizing the outside forces in play. QOL is a very important and revealing aspect of any sustainability assessment and understanding the context within which these communities are created lends to a better understanding of their perceived QOL.

1.8 Applying Anthropological Theory and Methods to the Study of Ecovillages

Ecovillages can be valuable in the process of societal change by demonstrating that sustainable living is possible; that we can learn new ways of being more cooperative instead of competitive and release our individualistic attitudes to come together in community (Burke and Arjona 2013). Most citizens of industrialized societies will have to reduce consumption to reach sustainability but do not know how to because capitalist consumption norms are too deeply engrained in the Western way of thinking. People can learn various methods of living on fewer resources through ecovillages examples. Individuals and institutions can learn from the

experimental trials and errors of ecovillages, examining the various lifestyle choices exhibited to decide what fits their worldview, resources, values, comfort level and what might or might not work within their own communities. If people can recognize the value in ecovillages and their mission, such communities could serve as a point of reference to begin a shift in values. In this section, I explain how anthropologists and the discipline of anthropology provide useful tools to help understand and evaluate alternative societies such as ecovillages and facilitate bridging gaps between competing cultures.

Anthropologists' skill sets and theoretical frameworks are well-suited to studying alternative communities and to help bridge the gap between these such experiments and mainstream culture. As Fiske explains, "Cultural ecology is a primary theoretical underpinning [of environmental anthropology]...cultural ecology understood human societies and culture as adaptations to their environment (including climate) that cultures worked out over time …adaptation to forces outside the community such as political and economic systems within which they are imbedded" (2012, p. 146). This is exactly what an ecovillage is. Ecovillages are creating alternative culture to adjust to the current climate crisis and destruction caused by capitalist culture and globalization. Anthropological research in ecovillages can help develop a body of scholarly literature, which in turn can help us understand what ecovillages are, what alternative lifestyles might look like, and how effective they are in reducing human impact in the face of global warming. Assuming that scholarly literature has an effect on wider culture, this could elevate ecovillages influence within larger society and gain merit for their cause. At the least, through the creation of assessment tools such as sustainability indicators and indexes,

research may assist scholars to track progress within these novel communities and demonstrate their effectiveness (or lack thereof) in creating sustainable lifestyles.

Furthermore, political ecology provides an "insightful framework to understand cultural behavior at the local ecosystem level" (Fisk, 2012, p. 146). Political ecology explores the relationships between global and national politics, economy, and society and environmental issues to understand people's relationship to their environment. Political ecology provides an appropriate lens to understand and evaluate ecovillage culture both as an adaptation to the current environmental situation determined by both the physical environment (availability of and access to resources, weather patterns, etc.) and the social and political culture within which they exist. Accordingly, ecovillage culture will change along with larger environmental and societal shifts. Many people on the planet may be forced to adapt to varying environmental conditions that they are not accustomed to within the next few decades (Pachauri, Meyer, and The Core Writing Team, 2014, pp. 7-8). Understanding how ecovillages are preemptively adjusting to this possibility can give us insight into adaptation strategies which may be necessary sooner than some might think. Understanding ecovillage culture through the lens of cultural and political ecology puts anthropologists in a position to gain a deep understanding of how such communities function and provides a wealth of knowledge and insight to facilitating more effective cultural analysis. In turn, anthropologists can help translate these ideas outward. Further, Lockyer and Veteto (2013) effectively explain the value of political ecology within a permaculture setting such as ecovillages.

> The political ecology approach articulates well with permaculture ethics and cultural critique that encourage modern individuals to take responsibility for their own actions, reduce their consumption and waste, and live a more simple and ecological lifestyle; thereby enacting a more democratic and fair division of and access to the world's

> environmental resources (Holmgren 2002). Both permaculture and many prominent strains of political ecology are engaged in critique of current globalization trends emerging from a capitalism whose political power is centered largely in the Global North. (Lockyer and Veteto, 2013, p. 171)

Ecovillages, based on permaculture principles, are living experiments in alternative political ecologies, demonstrating considerable value to the field of environmental anthropology.

Burke and Arjona (2013) give a detailed explanation of how ecovillages are effective experiments into alternative political ecologies. Ecovillages are "experiments in alternative systems of relationships with the natural environment, human communities, productive processes, broader economic dynamics, and state structures" (Burke and Arjona, 2013). Ecovillages use a completely different social and economic logic to move away from the capitalist system and provide new systems of consumption, production, and distribution (Burke and Arjona, 2013). This is not always an easy transition for people to make—leaving one lifestyle and way of thinking and moving into another one based on a completely different value system is intimidating and often times difficult. Ecovillages become places not only for recreating society but also ourselves (Burke and Arjona, 2013). It is in this sense that social capital becomes increasingly important within ecovillage settings.

Adaptation and social capital have long been topics in anthropological discourse, especially within the subdiscipline of environmental anthropology. When adapting to environmental stressors, social capital can be a key factor in easing the transition. As Fisk explains:

> To environmental anthropologists, adaptation is rooted in a social context where any adaptation means also changing ways of relating to people, or having access to family groups' resources, or access to external assistance. Adaptation is a social process that stems from a "web of social reciprocities and obligations" that informs peoples' decisions about what to do under uncertain circumstances (Roncoli et al. 2009:101).

> For anthropologists, adaptation does not refer to a technological or engineering fix, such as building dikes to keep the ocean out as a sea levels rise. In addition, anthropologists have shown that "social capital" is a valuable cultural asset for adaptation and natural disasters, like having social insurance or a support network, leading to resilience and adaptability during the stress of climate change (Galvin et al. 2007; Vásquez-León 2009). (Fisk, 2012, p. 147-148)

Social capital is very important within a culture heavily dependent on sharing resources (such as an ecovillage) and can drastically influence a person's experience within these cultures. Anthropologists have a skill set which allows us to understand social dynamics within such tightly-knit communities as they relate to their environment. Recognizing that ecovillages are situated within, and often limited by, the society which they seek to change allows for more effective analysis—especially within qualitative assessments such as quality of life.

Adaptation is also important to understand when assessing sustainability in an ecovillage; as each location will look and function different based on local environment, availability of and access to resources, and the broader cultures within which they exist. A lot can be learned and shared between communities when developing indicator measurement techniques as they are generally based on very similar ideals, etc. However, no two ecovillages are the same and sustainability assessments in one community generally cannot be exactly duplicated in another. An ecovillage in a third world country likely would not be effectively assessed with the same measures as one in the US. Although some indicators and measurement techniques might translate, others likely would not. Assessments must be reconsidered and adapted to each community situation, with participation from the local community, to ensure cultural relativity. The hope is for the indicator list developed for Dancing Rabbit, once fully developed and proven to be effective, could be adapted to various other ecovillage settings to aid in development of their own self-evaluation tools.

The frameworks of cultural and political ecology, along with anthropologists' deep understanding of adaptation in relation to environmental situations, provide us with training that can effectively translate assessments between cultural and environmental contexts. Anthropologists and the discipline of anthropology provide useful tools to help understand and evaluate alternative societies and can prove useful and effective in aiding evaluation tools in an ecovillage setting.

CHAPTER 2

THE DANCING RABBIT COMMUNITY: THE CHALLENGES OF ECOLOGICAL ASSESSMENT IN AN ECOVILLAGE

2.1 Introduction

Agenda 21 recognized the necessity to monitor progress toward sustainability goals (United Nations Sustainable Development, 1992). Dancing Rabbit Ecovillage, an intentional community of roughly 70 members situated in the rolling hills of northeastern Missouri, is currently undergoing this process by creating a list of sustainability indicators to monitor ecological progress toward the community's stated goals. Self-evaluation is important to ensure that Dancing Rabbit's philosophy meets practice and that they are reducing consumption and impact on the planet. Such self-evaluation can help determine whether the covenants and sustainability guidelines are actually lived out in real life. A list of indicators was more appropriate for this project than an aggregated and compiled index for many reasons, particularly time, money, and resource limitations during the three-month research period.

2.2 Dancing Rabbit Ecovillage Overview

2.2.1 Introduction

Dancing Rabbit Ecovillage is a novel community whose self-described goal is "to live ecologically sustainable and socially rewarding lives, and to share the skills and ideas behind that lifestyle," as stated on their website (2014, Homepage). This section explores demographic information for the community as collected through a survey of research participants as well as

how living in a community structured around the sharing of resources contributes to low-cost sustainable living.

The community is composed of members (who have officially signed a membership agreement and agreed to abide by the covenants and guidelines), residents (no membership agreement and temporary 'trial' status) and kids (guests of their parents), along with various other temporary segments of the population as explained below. A demographic survey of participants revealed members ranging in age from twenty-seven to sixty-four years, with a mean age of forty years old. The community is predominantly White Euro-American in ethnicity, with residence lengths at Dancing Rabbit ranging from one to seventeen years, with a mean residence length of six years. Politically, most participants were self-identified liberal, progressive or democratic by a 60% majority, other political affiliations identified include independent, green party, anarchist, and republican, in order of decreasing frequency.

Community members are highly educated both through formal education and self-education, 73% have earned a college degree. The US Census Bureau reports that only 30% of people twenty-five years of age and older in the US have a college degree as of the 2010 census (The 2012 Statistical Abstract). Religious practices vary: with 40% identifying as atheist or no religion; 36% identify personal spiritual practices such as mindfulness, meditation, and compassion; and the remaining practice Pagan, Buddhist, and Christian beliefs. Gender balance is almost even with one more male participant than female.

According to survey data, most community members have more than one income stream. Gardening and odd community jobs are the most commonly reported occupations; likely overlapping with the next most common, construction/carpentry, real estate or other

investment income, followed by equal self-reporting of nonprofit work and accounting/bookkeeping. From my observation, gardening at Dancing Rabbit could include selling this produce within the community or trading it for other goods or services, and not many produce significant enough gardens to support themselves fully off of this endeavor. Odd community jobs are usually paid, but trade for goods and services can be worked out in almost any situation. There is no way to know, based on survey data, which of these scenarios is true here. Additionally, roughly 70% of participants reported monetary resources outside the community, such as investment income, savings, inheritance, trust funds, other familial or government support, as enhancing their financial situation. Survey data shows 60% of the community lives on an individual yearly earned income of less than $5,000, roughly32% of the community lives on household income of less than $5,000 a year, and 80% live on household income of less than $15,000 a year. For comparison, the median household income in the US is $51,371 according to US Census Bureau data (2012, Household Income).

Living in a community structured to facilitate the sharing of resources significantly contributes to their low cost-of-living, making it possible to live abundantly on a fraction of the income of most Americans. The common house and existence of various co-ops facilitate and play a crucial role in resource sharing. The common house is a community building complete with bathroom and kitchen facilities which members can join in the form of various co-ops (e.g. for phone, internet, showers, kitchen), and pay a small flat fee to use those facilities. The entire community has access to the building but in order to be a regular user of certain facilities such as the kitchen, restrooms, and internet, one must join the co-op for that service. As a result, members can build small-scale houses without these expensive amenities, greatly reducing the

cost of building. Other co-ops further reduce costs such as food and driving, two major expenses, as is explained in more detail throughout this thesis. Sharing resources in this intimate manner makes social capital, cooperation and communication critically important to facilitate bartering, sharing, running errands, social interactions, etc.

Social capital is extremely important in a community such as Dancing Rabbit which relies heavily on cooperation and sharing of resources. Social capital makes it much easier to navigate the community, find a kitchen to participate in, borrow a tool or other object which you do not own yourself, and get cooperation or assistance from other members on various tasks. Lack of social capital could intensify feelings of loneliness and isolation and make it a bit more difficult to live on few resources, possibly forcing you to acquire more of those resources on your own and not in a shared manner. Scheduling and planning also become markedly important to make sure community members have access to the resources when needed and to ensure smooth community functioning. Community norms of recycle and reuse further reduce costs in lieu of constantly purchasing new things. The kitchen co-op I participated in washes and reuses everything down to plastic ziplock bags used to store frozen food for the winter. Plastic bags enable efficient freezing compared to the glass jars commonly used for other applications.

Dancing Rabbit demonstrates commitment to sustainability through community norms of reducing waste (reduce, reuse, recycle) and the existence of various co-ops facilitate sharing resources and ecological living, reducing resource use and consumption. Dancing Rabbit also demonstrates ecological commitment through their ecological covenants and sustainability guidelines as described in the next section.

2.2.2 Ecological Covenants and Sustainability Guidelines

Deeply committed to social justice and ecological sustainability, Dancing Rabbit community members actively work to create societal change through radical sustainable living practices and creating a culture of eco-conscious and feminist norms. Upon signing the membership agreement, members commit to abide by a set of ecological covenants and sustainability guidelines which give insight into the community's worldview and value system. The six covenants, as displayed on the community website are:

1) Dancing Rabbit members will not use personal motorized vehicles, or store them on Dancing Rabbit property;
2) At Dancing Rabbit, fossil fuels will not be applied to the following uses: powering vehicles, space-heating and -cooling, refrigeration, and heating domestic water;
3) All gardening, landscaping, horticulture, silviculture and agriculture conducted on Dancing Rabbit property must conform to the standards as set by OCIA for organic procedures and processing. In addition, no petrochemical biocides may be used or stored on DR property for household or other purposes;
4) All electricity produced at Dancing Rabbit shall be from sustainable sources. Any electricity imported from off-site shall be balanced by Dancing Rabbit exporting enough on site, sustainably generated electricity, to offset the imported electricity;
5) No lumber harvested outside of the bioregion, excepting reused and reclaimed lumber, shall be used for construction at Dancing Rabbit;
6) Waste disposal systems at Dancing Rabbit shall reclaim organic and recyclable materials. (Dancing Rabbit, 2014, Ecological Covenants)

Further clarifying the community's commitment to sustainability, the guidelines read:

1) Dancing Rabbit will look holistically at the issues of sustainability to create a sustainable culture that takes into account all impacts of its actions and acts to preserve the Earth for the future;
2) Dancing Rabbit will strive to rely only upon renewable resources, and to use them at a rate less than their replacement;
3) Dancing Rabbit will try to understand and minimize its negative impact on global ecological systems;

4) Dancing Rabbit will attempt to preserve and rebuild healthy ecosystems and have a positive impact on biodiversity;
5) Dancing Rabbit will try to create a closed resource loop where byproducts are reintegrated as useful resources, thus attempting to minimize waste products, especially those toxic or radioactive;
6) Dancing Rabbit will try to avoid exploiting people and other cultures;
7) Dancing Rabbit will strive to achieve negative population growth from reproduction. (Dancing Rabbit, 2014, Sustainability Guidelines)

These covenants and guidelines exemplify the amount of thought and intention behind the steadfast ecological commitment of community members. However, during the interview process, some members noted concern regarding the perceived lack of ecological commitment on the part of other, mostly new or incoming members, fearing the community will continually let their ecological commitment go as it grows larger. Along with these covenants and guidelines, Dancing Rabbit's mission also shows the community's commitment to living sustainably as explained in the next section.

2.2.3 Mission

Dancing Rabbit's mission statement establishes the community's commitment to growth, outreach, and education and explains what sustainability means to them.

> To create a society, the size of a small town or village, made up of individuals and communities of various sizes and social structures, which allows and encourages its members to live sustainably.* To encourage this sustainable society to grow to have the size and recognition necessary to have an influence on the global community by example, education, and research.
>
> *Sustainably: In such a manner that, within the defined area, no resources are consumed faster than their natural replenishment, and the enclosed system can continue indefinitely without degradation of its internal resource base or the standard of living of the people and the rest of the ecosystem within it, and without contributing to the non-sustainability of ecosystems outside. (Dancing Rabbit, 2014, Mission Statement)

Dedication to outreach and education is a very visible part of the community online and in person. Although it is a private community, many of these outreach activities bring people from all over the world to visit, experience, and learn. From April to October, the community hosts various visitors sessions designed for experiential education through a one to three week stay in the village. During their session, visitors tent or find a place to rent and eat with various community members and kitchen co-ops. Visitors are given the opportunity to help with 'cook shifts' during their stay and learn more sustainable ways of preparing food. Visitors are also offered presentations and classes where various aspects of the community are explained and demonstrated and given the opportunity to attend question and answer sessions with current members, go on walkabouts on the land, visit neighboring communities, and attend work parties where they can learn about natural building/construction and other community projects. Furthermore, the community hosts work exchangers (called wexers) and interns for varying lengths of stay to help on projects such as green and natural building, organic gardening, sustainable technology, or other community endeavors. For example, I was considered an intern during my research time in the community. In exchange for paid living expenses, wexers and interns help out on a project and see what it is like to live and work in the community while learning more about sustainable living.

On a short term basis people from outside the community can stay at the Milkweed Mercantile, an eco friendly bed and breakfast (sometimes offering canning workshops and other seminars) and check out the community. Other people outside the community can visit through the guided tours offered twice a month, the second and fourth Saturday, April through October. Special and group tours can be arranged at other times. However, community

members take November through March to rest and recuperate from all the community traffic and activity, and to plan for the next season. Once a year, the community holds an open house and village fair event where tours are offered and booths enable people to learn about sustainability, how they can apply it in their own lives, and shop for local crafts and other wares. Furthering outreach efforts, many community representatives also travel to give presentations about Dancing Rabbit and sustainable living and set up booths at events throughout the state and country.

Dancing Rabbit aims to be transparent and engaging with local communities in order to form relationships, ease concerns and rumors, and show how much they actually have in common. Since 2000, Dancing Rabbit has a column in the local newspaper the Memphis Democrat, where various members write articles about the week's activities and engage the local community. Additionally, this column is sent out to a six thousand person email list and posted on the Dancing Rabbit blog, *The March Hare*, in hopes of reaching a wider audience. Dancing Rabbit has also built a healthy relationship with the local dairy—and local Mennonite community in nearby Rutledge, both three miles away. Many community members supplement their needs from the dairy and the local retail food store in Rutledge (Zimmerman's), which caters to the community's desires and needs.

Two other neighboring sustainable intentional communities, Sandhill and Red Earth Farms, also have very close working relationships with Dancing Rabbit. Proximity to other communities was an important aspect of location selection and has served the community well. Sandhill is an income sharing and egalitarian intentional community of roughly ten members who produce organic vegetables, sorghum and honey. Red Earth Farms is a younger

community of sustainable homesteads in contrast to the dense social model of Dancing Rabbit. Collectively known as the tri-communities, the three groups get together for a once a week potluck dinner to maintain connections with each other. Perhaps this is the start of the society of communities Dancing Rabbit strives to create, as one member suggested. Visitors get to tour Sandhill and Red Earth during their stay as well to experience various models of sustainable community.

The future Green Community Center is another initiative aimed at increasing Dancing Rabbit's influence on the wider culture by constructing an ecological building which can support the village mission of growing to 500 to 1,000 people. The 8,700 square foot structure will reduce stress on the current common house by expanding amenities complete with composting toilets to accommodate the growing community. Aiming for the best in green construction technology, the goal is for the Green Community Center to be certified LEED (Leadership in Energy and Environmental Design) Platinum (US Green Building Council, 2014, LEED) as well as meet the strict standards of the Living Building Challenge (International Living Future Institute, 2014, Living Building Challenge). These two certification programs are aimed at ensuring the sustainability of buildings. LEED Platinum is a certification program where projects "earn points to achieve different levels of certification….prerequisites and credits differ for each rating system, and teams choose the best fit for their project" (USGBC, 2014, LEED). The Living Building Challenge is a more rigorous "building certification program, advocacy tool and philosophy that defines the most advanced measure of sustainability in the built environment possible today and acts to rapidly diminish the gap between current limits and the end-game positive solutions we seek" (ILFI, 2014, Living Building Challenge).

A less rustic model of sustainability by many standards, this building could demonstrate a more mainstream-friendly model of sustainability. This building could have more aesthetic appeal by many mainstream standards and would be equipped with more mainstream acceptable facilities such as composting toilets, in lieu of the humanure system that is often off-putting to various visitors. The community is currently reworking plans for the building due to budgetary issues, challenges in obtaining funding, and discord among community members about the design and financing for the building.

Dedication to such rigorous building standards exemplifies the community's commitment to reducing environmental impact. In addition to the mission described here, community land, structure, and governance are also set up to aid in the creation of sustainable lifestyles as described in the next section.

2.2.4 Community Land, Structure and Governance

Dancing Rabbit has 220 acres of Midwest prairie land dedicated to habitat preservation and agricultural or residential expansion. Of that, 160 acres are committed to the Conservation Reserve Program. On a ten year USDA contract, the government pays the community a yearly sum to take that portion of land out of use. Village design, partially based on permaculture principles, a global "philosophy and movement that encompasses a set of ethical principles and design guidelines and techniques for creating sustainable, permanent culture and agriculture" (Lockyer and Veteto, 2012, p. 92), is structured around social interaction and sharing resources. In order to keep the community dense, all structures are designated to the southeast forty acres. The current buildings do not completely fill the forty acres at this time; it is set up to

serve up to 300 people at current density. These forty residential acres are interspersed with garden space and another twenty acres of land is dedicated to agricultural space along the outside perimeter with plans to open up more land for agriculture in the future. Land is owned by the Dancing Rabbit Community Land Trust 501(c)2, partnered with Dancing Rabbit, Inc. 501(c)3, the community's nonprofit organization which supports much of the outreach and education efforts. Both of these organizations are headed by a board of directors, made up of both members and non-members, while day-to-day decisions and operations management are performed by on-site community members. Members commit to donating two percent of their income, with a sixty dollar yearly minimum, to Dancing Rabbit, Inc. to support outreach, education, and other efforts of the nonprofit organization.

Dancing Rabbit has no buy-in fees and no land purchase option; land is collectively owned by the community and leased to members, an attempt to prevent leverage over one another due to land ownership. Taking land out of the market also aims to help Dancing Rabbit to remain economically accessible to people from diverse socioeconomic backgrounds. Lease-holds at Dancing Rabbit are called warrens to honor the name of rabbit's underground burrows, and each new lease-hold must go through community approval processes, including the Warren Siting Committee, before construction can begin. This committee is designed to ensure community structures stay in line with the community vision and mission. Lease terms are generally 99 years and any improvements on the land are owned by the lessee. Community land trusts such as this are not unheard of in the US but are also not particularly common.

Governance is another unique situation at Dancing Rabbit and one currently shifting within the community. Historically, Dancing Rabbit operated through full consensus decision-

making, an attempt to take all community members' concerns and needs into account. Consensus literally means 'general agreement' and consensus decision making seeks general agreement by encompassing principles of inclusion, participation, collaboration, and cooperation (Consensus Decision Making, 2014, Homepage). At Dancing Rabbit no decisions are made until each member agrees or a comment period has passed and no one expresses a blocking concern (where a member expresses enough discomfort with the decision to stop the process). A blocking concern halts the decision process until agreement is reached by all parties. Decisions can only be blocked for group held values, not based on personal values, preferences, or beliefs.

Conversations with community members helped me understand some of the flaws of consensus. For example, consensus can, like other political systems, come down to the tyranny of one, with the one person in opposition holding up decisions. This can in turn end up demonizing the one in opposition as community members' frustrations grow around the lack of a final decision and increased time spent in meetings and discussions. One member expressed a desire for,

> …broader acknowledgement of the limitations of consensus decision making. There's a notion that (and I agree with it) everybody holds a piece of the truth, and everybody has something to contribute; but not all pieces of the truth necessarily carry equal weight or are equally relevant or right. I think we often come to a consensus decision that is a compromise that everyone can live with, and no one is really necessarily happy about, and it's not the best objective decision we could make.

Additionally, the larger a group gets the harder it is to reach a consensus decision and the more meetings and time it takes to do so.

To relieve strain on community members from attending lengthy plenary meetings, during the summer of 2013 Dancing Rabbit converted to a representative Village Council (VC)

governance model. Election of the village council heavily involved all community members who participated. I attended the first meeting for the first election of the first Village Council (VC) at Dancing Rabbit. How exciting! It was an interesting process to witness. I expected to see everyone participate in VC selection meetings, yet that was not the reality. Admittedly, I had unrealistic expectations that the entire community would show up and be excited about participating in this process. Full participation was not the case but roughly 60% of the on-site members did attend the meetings I witnessed. It was later explained to me that this had been a long and drawn out process and many were frustrated and burnt out and just wanted it over with. However, all potential decisions go out via email, so even those who do not participate in meetings or who might be travelling at the time have a chance to voice their opinion or block a decision. It is possible that some people chose to weigh in on the final VC selection via email and did not attend the pre-selection/nomination meetings.

The participating group selected various slates, or groupings, of seven members suggested to serve cooperatively on the council and then narrowed it down to the few slates which participating members felt the most comfortable with. Those slates were then voted on by the entire membership. This process (an example of consensus) heavily relied on community input and feedback, with many 'level checks,' or breaks in discussion to check in with participants feelings at that point in the process, performed throughout each meeting. Transparency exhibited by communitarians throughout this process was surprising. Community members openly and honestly discussed their reservations and concerns about one another, or support for one another, resulting in a dynamic rarely encountered in mainstream politics. Effects of this governance shift remain to be seen but my observation is that the community is

satisfied with the process thus far and it has relieved much stress around time constraints and community responsibility. Community members are encouraged to still participate in governance, through participating in the VC selection process or expressing their views to council members. Additionally, any community member can initiate a recall process if they are not happy with a VC decision; twenty-five percent of the membership must agree to recall a VC decision.

In addition to the VC, volunteer and paid committees, with various levels of power, are designed to develop and implement policy, and thus contribute to the functionality of the village on a daily basis. Community members are encouraged and expected, but not required, to participate on committees and contribute to village needs. Examples of committees, many with their own creative acronym, include OT or Oversight Team, ROMACOM or Road Maintenance Committee, LUPP or Land Use Planning and Policy, DRVC or Dancing Rabbit Vehicle Co-op Committee, MARC or Members and Residents Committee, Outreach, KidCom or Kid Committee, Pet Committee, and ELMS or Exchange Local Money System Committee.

Community currency is another interesting piece of Dancing Rabbit. As explained on the community website "The ELM system is a modified version of a LETS (local exchange trading system), a general term for locally-initiated, democratically-organized, not-for-profit community enterprises that provide a community information service and record transactions of members exchanging goods and services" (Dancing Rabbit, 2014, Local Currency). Most community members have an ELMS account and use it for virtually all in-community expenses and transactions. Basic living expenses, lease fees, nonprofit dues, Mercantile bills, bills from the community Grocery Store (an army tent with bulk dry goods available for purchase), and

services from other community members can all be paid for in ELMS. ELMS is a simple to use electronic transaction management system which provides easy access to records and exchanges. Currency remains within the community instead of feeding into big banks and encourages local exchanges, strengthening the local economy. The ELMS system recently reached almost one hundred thousand dollars in circulation, a very big deal for some communitarians, as local currency provides funding for community projects and increases local resilience.

I did not do a comprehensive analysis of internal economics, partially because it was not an agreed upon indicator or focus of the community for this project. Additionally, economics is a point of contention within the community. My observation is this is the piece of Dancing Rabbit needs the most development, possibly due to the divergence in views, and has the most potential to benefit from community growth by expanding the market for business. Barter and exchange plays a large role at Dancing Rabbit with many community members frequently trading goods and services. Additionally, several people telecommute to bring in more significant income.

Outside income is generally necessary to build a home at Dancing Rabbit, however, it is a possibility to show up with nothing and make a living within the community depending on your skills and willingness to accept various types of work and streams of income. Especially as the community grows, builders can fairly easily secure income within the community as can food producers. The Mercantile often has positions available for limited part-time work as well, but until the community grows the internal market for business in areas outside of building or food production does not seem to be flourishing and full time jobs are scarce. Income is

generally piecemealed together from various streams. The standard wage is $9.50 per hour and most jobs pay at this rate within the community regardless of skill required, level of responsibility or stress involved in the job.

As one member explained during conversation,

> Admittedly, not many people at Dancing Rabbit see things this way, but I think many people here have equated sustainable with cheap. An unfortunate byproduct of this sort of orientation to money is that it depresses our economy by keeping down the wages of people who do work for our collective institutions. For example, accounting jobs in the Dancing Rabbit co-ops are paid $9.50 an hour, where in most of the world this sort of work would get at least $20 an hour or more depending on the qualifications of the person doing the work.

Relationships to and values surrounding money and economics vary drastically within the community. Difficulties surrounding the new Green Community Center, as discussed in the next section, are influenced by this discord.

This section demonstrates how community land, structure and governance contribute to the sustainability of lifestyles at Dancing Rabbit. Other aspects of Dancing Rabbit culture which further facilitate sustainability are discussed in the next section.

2.2.5 Culture

What is Dancing Rabbit? What is it like to live at Dancing Rabbit? Every communitarian has a different answer to these questions. Personal experience varies given each individual and their previous experiences, worldviews, and concepts of sustainability; financial and other resources, and expectations upon arrival. The location of Dancing Rabbit—in the deep rural Missouri prairie—and the overlap of personal, professional, and social lives, facilitates the creation of a unique and intimate culture. Entertainment in various forms is often provided on-

site, but some communitarians do travel to neighboring towns on occasion for dinner, a movie or other entertainment. Most members do not leave for work, supporting themselves through income earned from within the community economy or via telecommuting, or other resources such as savings, inheritance, trust fund, and social security/disability. Some members are able to find enough work within Dancing Rabbit to subsist as was discussed in the previous section.

Outside of the covenants and guidelines, members have complete freedom to live life as they choose, within their own values. Mainstream norms in respect to appearance and personal grooming are not the norm at Dancing Rabbit. Daily showers are not expected, partially in an effort to conserve water, although everyone has the option to shower as much as they feel necessary. People wear whatever they have or whatever feels comfortable. It is not uncommon to see a man in a dress, sarong, or kilt. This also exemplifies community norms of non-judgment and honoring diversity. Gender roles at Dancing Rabbit are not as pronounced or differentiated as they are in mainstream American culture, in line with the feminist values of the community.

Language patterns, along with gender roles exhibit the feminist aspect of Dancing Rabbit. Some members use the word “co” in lieu of gender specific personal pronouns, and gender roles are not assumed or expected. “Y’all” is commonly used in place of “you guys,” to acknowledge presence of both genders. Community members are conscientious of language, much in the spirit of nonviolent communication as described below. Both women and men are expected to participate in community labor and chore rotations equally, cooking and cleaning in their respective kitchen situations, common house cleaning, chopping wood, or performing a humey shift. The website’s Feminism Empowerment section explains, “We believe everyone,

regardless of gender, can nurture and support others, or cry when they are sad or angry, or be assertive and confident. We try to break down assumptions and encourage people to grow in ways not always supported by the wider culture" (Dancing Rabbit, 2014, Feminism Empowerment).

Dancing Rabbit culture is so different from mainstream that it often takes an acclimation period to let go of cultural baggage and adjust to a new way of being. This often leads to self-discovery and personal growth. Personal growth (or self-improvement) is another community norm. Personal growth is not always a pleasant process but generally a rewarding one. Visitors, wexers, residents, and members often encounter personal growth during their time at Dancing Rabbit as they adjust to a new culture and learn new ways of being (my experience with this is chronicled in Chapter 4). This is part of the transformative experience for many people and is partially due to the intimate setting, where everyone around you is generally open, honest and communicative, and expects you to be the same. Inner sustainability as it is referred to, or sustainability of one's inner/emotional self, is also an important norm at Dancing Rabbit.

Recently, an inner sustainability class was added to the visitor program to give a more complete picture of what life is like in the community. Importance is placed on self-awareness, self-care, self-acceptance, and learning tools to help cope with emotional situations. Community members offer support to one another in many forms for both intrapersonal and interpersonal conflicts. Inner empathy sessions are one way some community members offer support to one another. Inner empathy is a process of recognizing, accepting, and loving the sometimes dark or unpleasant inner parts of yourself— allowing them to come out and

embracing the process. Interpersonal conflict and communication also have an important focus; with norms including openness, honesty, transparency, acceptance, tolerance, and compassion.

Members agree to communicate and handle conflicts peaceably and often follow the principles of nonviolent communication (NVC). NVC "assumes that we all share the same, basic human needs, and that each of our actions are a strategy to meet one or more of these needs….people who practice NVC have found greater authenticity in their communication, increased understanding, deepening connection and conflict resolution" as explained by the Center for Nonviolent Communication (2014, Homepage). Communication between people and between parents and children appeared generally healthy, open, and honest during my time at Dancing Rabbit. Community members are encouraged to confront and work through conflict together. The conflict resolution team, formed to handle intense situations, is designed to step in and facilitate conversation, mediate, hold restorative circles (stemming from restorative justice), or otherwise aid in the resolution of discord between community members.

Conflict is not viewed negatively, as long as members proactively handle personal situations and do not let them fester and overflow into community dynamics. A previously-married couple worked through their divorce, complete with arrangements for finances, a house, and children, with community support and kept it out of the courts through arbitration and mediation. This is not to say 'everything comes up roses' and everyone comes out of a conflict feeling wonderful, but they do strive to keep discords to a manageable level and help people communicate and work together toward resolution. The overlap of lives—community members eat, work, socialize and play all with the same group of people—does not allow for

simply avoiding someone or cutting them out of your life because you do not get along. Dancing Rabbit is densely designed to facilitate and encourage socialization and prevent the 'drive directly into your house and never interact with your neighbors' type lifestyle. Focus on communication and tools for conflict resolution, community structure, norms, and attention to building community relationships at Dancing Rabbit help maintain social cohesion.

Community social interaction and cohesiveness at Dancing Rabbit is demonstrated during holidays and events. Holidays at Dancing Rabbit serve as community building activities and are celebrated in a comparatively sustainable and non-consumptive manner than in mainstream society. The community's uniquely sustainable take on Valentine's Day is notable. Validation Day, as it is called, scraps the consumptive tradition of buying individually packaged cards, candy, stuffed animals, and flowers. Rather, kids and adults participate in personal hand creation of validation cards for participating members. One card is created for each member (usually from scrap paper, old magazines, old boxes, or whatever else can be reused) and everyone who participates writes a validating message in each person's card.

On Validation day, cards are presented to respective owners. Smiles, hugs, conversations, and emotions were exchanged as people read through their cards. Many participants could not get through the process without crying. Removing the focus on romantic love, single people participated in the same manner with equal focus, removing the negative feelings this holiday often causes for single people in mainstream American culture. Like Valentine's Day, it was about love—but more specifically about community love, self-love, Platonic love; validating each other; taking the opportunity to let others in the community know how valuable they are to you and to the system as a whole, without feeling the need to buy

unnecessary 'gifts.' Holidays, each celebrated with a particular sustainable twist, exemplify the community's commitment to sustainability, and norms of voluntary simplicity and non-attachment to material things.

Of course, Dancing Rabbit is not a perfect utopia. During my visit Dancing Rabbit was, and in many respects always is, in a transitional state. Tensions were high surrounding several community decisions. Contention around kitchen proposals, Village Council elections, and the new Green Community Center were hot topics over the summer. Although kitchen and VC issues have since subsided, controversy over the Green Community Center is still causing issues as many don't agree on cost or how to finance the building. Many salons (meetings or gatherings) have been held to discuss the subject and the project is currently on hold while they determine the best way to move forward. Frustrations surrounding the Green Community Center, bureaucracy, and power dynamics are evident within the community as discussed further in section 3.2.6.

2.3 Thesis Project Overview

2.3.1 Introduction

In conjunction with the Dancing Rabbit Eco-progress Committee, my thesis project conducted a pilot study to develop a list of indicators to facilitate the community's self-evaluation and monitoring of ecological progress. It will also allow the community to eventually make comparisons between themselves, the average American, and other communities throughout the US and rest of the world. This research project is part of a longer term project for the community which will expand indicators, collect further data, and continually monitor

and improve their internal systems. My own personal research interests conform to index models discussed above, attempt to add to the anthropological literature, and include the human dimension. I attempted to assess how Dancing Rabbit's alternative lifestyles meets basic human needs and if they leave community members content by assessing quality of life.

Once the indicator list is fully developed and successfully monitors ecological progress, the Appalachian Institute of Mountain Studies (n.d.) may adapt and apply the indicators to other ecovillages in the future. This project is an ongoing endeavor of Dr. Joshua Lockyer and Dr. James Veteto who worked with the Dancing Rabbit community to set the stage for this project before my research began. The larger scope of this project aims to study ecovillages around the world and explore their effectiveness in reducing environmental impact and creating socially and environmentally sustainable cultures.

The project at Dancing Rabbit is part of the beginning stage of this much larger project. The following two sections explore the Dancing Rabbit research site, along with research design, methodology, and challenges encountered during the process.

2.3.2 Research Site

Dancing Rabbit is located in the northeast corner of rural Missouri amidst a lush rolling green tall grass prairie and oak savannah ecosystem. The area experiences four distinct seasons with fairly harsh, dry-cold winters with enough snow to cross-country ski, hot and humid summers, and a transitionary spring and fall with abrupt temperature changes. The community is in Scotland County which has a population of roughly 5,000 and includes various agricultural operations including GMO (genetically modified organism) corn and soy and

concentrated animal (mostly cattle) feeding operations (CAFOs). On a warm day with a strong enough breeze, the smell of animal lots radiates into the village, a staunch reminder of what Dancing Rabbit is working for (or in this case, against).

Figure 1. Foot path sign at entrance of Dancing Rabbit. Photo by: Dancing Rabbit Ecovillage.

Surrounded by a predominantly (94%) white (Missouri Department of Economic Development, 2014, Regional WIA Demographics) and largely religious population with increasing numbers of Mennonites, the area is more progressive than one might imagine. I have often heard people speak of the laidback lifestyle of the Midwest and this definitely proved to be true in my experience of the area. Several intentional communities are within proximity of Dancing Rabbit including Sandill Farms, Red Earth Farms, the Possibility Alliance, and the Amana Colonies. Additionally, several cities with a population of over 5,000 are within a few hours' drive; Kirksville, MO; St. Louis, MO; Ottumwa, IA; Fairfield, IA; and Quincy, IL. With the existence of so many additional intentional communities in the area Dancing Rabbit has a fairly large social support network.

2.3.3 Research Design and Methodology

My literature review in Chapter 1 reviewed several ways to create sustainability indicators. My indicator development process utilized a Systemic Sustainability Analysis (SSA) framework, through a combination of the MESMIS Framework, as proposed by López-Ridaura et al. (2002), and the Imagine framework as proposed by Bell and Morse (2008). This framework allowed me to develop a bottom-up participatory process to create an initial list of suggested indicators for Dancing Rabbit which was both relative to community values and comparable to other local level indexes. Adaptability was extremely important within this methodology so it could be adjusted once I arrived at Dancing Rabbit and collaborated with the community. Collaborators included my advising professors, Dancing Rabbit's Eco-progress Committee, the Eco Audit Research Liaison (EARL) hired from within the community to assist with orientation and research, three research assistants, myself, and the community. Cooperatively, we created a list of indicators that is relevant to the community's worldview and values, as well as comparable to other local level indexes found in the literature.

The ideal indicator development process included several steps: 1) understanding the context and desires of the community; 2) developing and defining a core set of 'headline' indicators; 3) defining indicator measurement techniques and bands of equilibrium (target range); 4) developing agreed upon monitoring and reporting techniques and timeframes; 5) data collection; 6) data analysis, synthesis and integration of results into indicators; and 7) conclusions and recommendations. Although my intention was to have a fully-developed indicator report formulated at the end of the research period, once I arrived at Dancing Rabbit and consulted with Eco-progress, I learned the community was uncomfortable with setting

target areas without current data as a baseline measure. Instead, Eco-progress and I discussed re-framing the project as a pilot study to begin thinking through possible indicators and figuring out how to collect baseline data to learn how to, or how not to, measure indicators and evaluate their current state. The SSA framework guided us through this process.

I stayed at Dancing Rabbit for three months to participate in and gain an understanding of the community and implement and complete data collection. Participatory action research (or PAR) is the overarching methodology used in the execution of this project. PAR is a reflexive process of inquiry which involves both the researcher and community or client as active participants in all stages of research and development. PAR is a different kind of applied research in contrast to the traditional model where the researcher acts as an expert who designs and implements the project alone and then delivers results to the community (Whyte, Greenwood, and Lazes, 1989). Instead, in the PAR process the researcher works diligently in a reflexive process with the local community to identify and solve local problems (Hemment, 2007). Hemment (2007) explains that participant observation facilitates this process to allow the researcher to gain a deep understanding of the community and build relationships which will improve trust and cooperation with the researcher. Accordingly, the researcher must check all facts with the local community before drawing any final conclusions or creating reports (Whyte et al., 1989). This process leads to advancements in anthropological research and theory by opening researchers minds to new perspectives as described by Whyte et al. (1989). Every stage of the research process for this project was largely reflexive, with extensive review and conversation between myself and the Eco-progress Committee. Community members helped me refine my data collection methods; pointed out inaccurate assessments I made of

various sectors of the community, and helped me reach more accurate conclusions through review and critique of the final report.

Participant observation facilitated the process of PAR and also played a large role in my assessment of the community. Other data collection methods include review of existing data collected in the community, qualitative interviews, surveys, self-reported participant data logs for food consumption and long-distance travel, and a period of physical data collection such as collecting and weighing residential trash on a weekly basis. Existing data sources, such as county water consumption and local vehicle mileage data measure the entire community's consumption. Depending on data available for collection, some data is from 2012 and some from 2013; the year is specified within each indicator description section. Once collected, data was analyzed using excel for things such as energy and water consumption, qualitative data was analyzed using ATLAS.ti, and survey data was analyzed using the SPSS statistical data analysis program.

Research participants were limited to adult members, as they are fully vested in the community and committed to community goals. Participants were recruited during the announcements portion of the week-in-preview (WIP) meeting and through email to the Dancing Rabbit "all list," a primary means of communication, attempting to reach out to those who do not regularly attend meetings. We gave participants two weeks to sign up via email, talking directly to me or the EARL to ensure privacy, or via a paper copy of a signup sheet left in the common house for easy access and visibility. It was my hope that a participatory process would encourage and increase research participation within the community. In the end, we did reach and slightly exceed our goal of twenty-five adult member participants (twenty-seven

eventually signed up). Twenty-six community members actually participated to varying degrees, along with the Common House and Mercantile, both of which are explained further in the challenges section.

Through the methods explained above, I was able to develop a suggested list of indicators for the community. The suggested list of indicators was categorized into the indicator themes which were prioritized by Eco-progress before my arrival, including one or more individual indicators within each theme. The consensus indicator themes include solid waste and recycling, transportation, fuel consumption, energy consumption, water consumption, perceived quality of life, food consumption, consumer goods consumption, building structures, and toxicity. Once arriving at Dancing Rabbit and assessing time, resources, priorities, and after several meetings with Eco-progress, we decided to table consumer goods consumption, building structures, and toxicity for another round of research due to their complexity and in order to focus more attention on the other themes.

Initial indicators within each of these themes were constructed for this project by examining the Eco-progress Committee's priority indicators list and exploring comparable local indicator examples such as those represented in *The Neighborhood Sustainability Indicators Guidebook* (Meter, 1999), *Sustainable Seattle's Indicators of Sustainable Community 1998* (Palmer, 2004), and the *City of Hamilton's Vision 2020 Sustainability Indicators Report 2008* (McCabe), along with considerations of data sources within the Dancing Rabbit community (e.g. community electricity consumption data, water consumption data, and vehicle co-op mileage logs). Deliverables for the project include a written report, a data set for all indicators measured, and a verbal presentation to demonstrate results of research to the community.

Results of data collection are examined in Chapter 3. Major challenges encountered throughout this indicator development and data collection process are explored in the next section.

2.3.4 Methodological Challenges

2.3.4.1 Introduction

Challenges were presented at every stage of this project, starting with the uniqueness of the community and novelty of this research. The lack of existing examples presented initial and methodological difficulties. Lack of participation and lack of previous reliable data collection presented challenges within the community. Additionally, two buildings, the Common House and the Milkweed Mercantile, proved difficult to assess due to the complexity and multi-functionality of their usage.

2.3.4.2 Lack of Existing Examples

Foremost, the lack of currently existing lists of indicators for ecovillages presented a huge challenge. Starting from scratch, with only local level index examples from mainstream communities which are vastly different from Dancing Rabbit proved arduous since most frequently used indicators are not relevant to the Dancing Rabbit project. For example, the well-known indicator ecological footprint (EF) requires deep scientific analysis, aggregation and calculations of data such as the amount of carbon in the soil or carbon sequestration into a representation of how many hectares of land it would take to support that nation, community, or person's lifestyle (Hopton and White, 2012). We did not have the tools, funding, time, or

scientific expertise to measure these types of indicators at Dancing Rabbit. Additionally, standard calculation tools for ecological footprint often include measures such as housing space to determine energy usage; but do not have options for alternative style cob or straw bale housing, energy saving techniques such as living roofs, local food consumption patterns, and alternative energy producing methods, all of which are common practice at Dancing Rabbit.

Furthermore, EF has been criticized for many things, including failing to allocate space for non-human species (Sonu, Binod, and Sonika, 2011); it is exclusively focused on human demands and needs, and therefore devalues land that is not productive for human use; treats land as if it can only serve one purpose; and relies on the assumption that "all biocapacity is available for sustainable human use, and that none of this capacity is needed to sustain other species which may indirectly contribute to the amount and quality of renewable resources available for future generations" (Venetoulis and Talberth, 2008, p. 446-447). In a community deeply focused ecological values, this lack of consideration for other species does not make sense. Consequently, due to these assumptions in typical EF analysis, the calculations in Global Footprint Network's 2004 report implied that "humanity can nearly double its consumption of food, fiber, timber, and fish without exceeding ecological limits" as Venetoulis and Talberth (2008, p. 450) explain. The uniqueness of the community itself makes it difficult to make a comparison to other communities with standard measures such as the EF.

2.3.4.3 Participation

Securing participation proved challenging as well. Twenty-seven out of the forty-one community members on-site eventually signed up to participate after much prompting.

Twenty-six participants actually completed the interview and survey portion of the research, but most did not fully complete data logs, and only eleven people completed all portions of the study in its entirety. Ideally, full community participation would elicit more accurate data and a more complete picture of community data. Participation, or lack thereof, is noted within indicator descriptions. I would argue that selection bias is likely an issue. Indeed, I was told that some members did not participate because they did not want to make the community look bad. It is also possible those that agreed to participate are the happier folks in the community, more in line with the mission and vision, and therefore happiness and other measures are skewed as a result. Despite the difficulty of getting participants, we eventually exceeded our goal of twenty five participants and survey data demonstrates that we met our goal of participants from various social and eating scenes within the community to ensure diversity of perspectives and experiences in the study.

2.3.4.4 Lack of Previous Reliable Data Collection

Dancing Rabbit does not have citywide infrastructure or monitoring systems utilized to collect data as in cities (e.g. household water meters). Additionally, the community has not yet created reliable data collection systems for many variables, including population tracking, which is ripe with complexity. For example, there are various segments of the population on-site at any given time. This includes members, who have signed a membership agreement committing to all the covenants and guidelines, have official membership status and plan to be at Dancing Rabbit long-term. Members may be on site or living elsewhere. Residents have temporary official status and are testing out the community to see if it is a good fit. The

residency period can last anywhere from six months to two years depending on the situation and desires of the resident and existing community members, each of which can extend the residency period due to concerns. Children have no official status and are considered guests of their parents. Furthermore, the community experiences a never-ending and often seasonal influx of visitors, work exchangers, students, interns and guests.

Largely due to this complexity, community population tracking data was not consistent and accurate enough for me to use for research purposes. Instead, after discussing this with Eco-progress and other community members, we decided to calculate Person Years as our base population number for most indicators. Person Years were determined through Dancing Rabbit's accounting system by calculating the number of people who paid the required, quarterly, village-wide fee. As payment of this fee is required for anyone on-site for a week or more, it should account for all segments of the population. It is worth mentioning that a number of indicator values are likely to be inflated based on the inclusion of visitors, wexers, etc.; therefore, Dancing Rabbit's numbers for member consumption are likely even lower/more sustainable for things like water use and electricity use.

2.3.4.5 The Common House

The common house, a community building equipped with a kitchen, toilets, sinks, showers, washer (they do not use dryers), kid's room, library, office for Dancing Rabbit, Inc. and a multi-purpose great room, serves the needs of many community members. This shared resource makes it possible for members to build small-scale houses much more economically without all the modern amenities. Some people use the building daily as their primary

bathroom, kitchen or office, some use it only occasionally as needed, and others rarely walk in the building except for weekly community meetings or dinners. Additionally, during visitor season a varying number of tenting visitors use the common house daily, along with any other guests on site. How to include this building in the indicators and determine how many people actually use this building at what frequency proved difficult. For research purposes, we assumed the Common House serves the number of Person Years calculated, given that is its purpose, whether or not people choose to use it. This is a faulty assumption but the best we could do given the circumstances. This building is included in all appropriate measures.

Figure 2. Common house. Photo by: Dancing Rabbit Ecovillage.

2.3.4.6 The Milkweed Mercantile

The Milkweed Mercantile (or simply 'the Mercantile') is a privately-owned business housed in a two-story straw bale, solar- and wind-powered building which operates an inn, café and store. The Mercantile also proved troublesome to evaluate. The Mercantile plays an

important role in the community, serving as a social hub and local craft beer tavern where many community members come to relax and take a load off after a hard day's work.

Figure 3. The Milkweed Mercantile. Photo by: Dancing Rabbit Ecovillage.

Each Thursday the Mercantile has 'pizza night' and every Sunday has brunch, both popular with community members and town folk alike. This building always serves as the primary kitchen and bathroom for the owners and any of their wexers or guests, sometimes serves as the primary residence for a few community members, and as a business for the entire community. How do we account for all of this use? Should it be treated as residential, business or both? If both, what percentage is residential and what percentage is business? Separating business from residential data is important both to get a clear picture of consumption within the community and to make sure it is comparable to other standard measures. Most measures in the US and other local community indicators and indexes are separated between residential and business consumption and it is important to keep these indicators in line with that standard. I attempted to get records for the number of patrons during the research period, but

was only able to obtain the number of cash and number of credit card transactions, which could theoretically all be from the same person.

Despite the aforementioned difficulties, we were able to conduct an effective pilot study and gather relevant data to begin developing indicators to monitor progress at Dancing Rabbit. Based on review of applicable literature; combined with consideration of Dancing Rabbit's definition of sustainability, the ecological covenants, the Eco-progress Committee's list of priority indicator themes, and possible data sources; the suggested list of indicators is detailed in the following section. Additional challenges presented within each of the measured indicators is explained within individual indicator sections in Chapter 3.

CHAPTER 3

ASSESSING SUSTAINABILITY AT DANCING RABBIT ECOVILLAGE

3.1 Introduction

Dancing Rabbit's vision of sustainability is, to live "in such a manner that, within the defined area, no resources are consumed faster than their natural replenishment, and the enclosed system can continue indefinitely without degradation of its internal resource base or the standard of living of the people and the rest of the ecosystem within it, and without contributing to the non-sustainability of ecosystems outside" (2014, Mission Statement). All indicators were developed with this in mind, in addition to the covenants and guidelines. Given the level of ecological concern in the community, rationale behind these indicators revolves around reduction of consumption, waste, and production of greenhouse gases to reduce impact on the environment in the face of climate change and global warming. Individual indicators within each theme is described including the rationale, measure, methodology (including the inclusion, exclusion, or separation of Milkweed Mercantile data), and results and comparisons to mean American data and other local level indicators where applicable. Due to the local and seasonal nature of Dancing Rabbit, it is important to note that all data collected during the research period for food, long distance travel and trash is based on one summer's worth of data, not a complete picture of yearly use within the community. A full years' worth of data and more data collection in general regarding travel and food consumption needs to be completed in order to get a more accurate picture of these measures.

Measuring Dancing Rabbit's progress over time will allow the community to self-evaluate and explore whether or not their actions are leading toward long-term goals to

determine if they are moving toward their vision of sustainability. Are community values and ecological covenants actually represented within lifestyles? Exploring differences between philosophy and reality as measured by these indicators can show what areas need improvement and help push Dancing Rabbit further toward reducing its ecological impact.

3.2 Indicators, Descriptions and Results

3.2.1 Solid Waste and Recycling

This theme breaks down into three indicators, solid waste, recycling, and total municipal solid waste, which is comprised of the combination of the first two indicators. These three indicators align with covenant six. Agenda 21 calls to reduce the amount of solid waste we produce by changing our consumption patterns (United Nations Sustainable Development, 1992). Minimizing solid waste and reducing the amount of garbage that ends up in landfills is a move towards a more sustainable society as it reduces stress on the environment. Reduction of waste results in the decline in consumption of fossil fuels (a large contributor to greenhouse gases) used to transport, process, and manage such waste. Further, accumulation of waste has hazardous effects on health; waste can seep into the ground and pollute local soil and groundwater sources, eventually contaminating food and water consumed by humans. Recycling is important as allows us to use materials more efficiently and reduce the amount of waste that ends up in landfills. Reusing products reduces the amount of trash that piles up in landfills which will likely eventually run out of space.

Challenges quickly emerged as I worked through measuring each person's trash and recycling. Members have a myriad of choices in which to deposit their trash: in their home,

kitchen co-op, common house, Mercantile, or directly into the community recycling bins or dumpster. How can we get an accurate picture of any one person's trash when their kitchen, bathroom and house may be in three separate locations with various other contributors to each? One member jokingly suggested we should require participants to carry a "trash-pack," or backpack where they must deposit all personal trash for the research period. This would definitely increase awareness of waste and could be useful in further development of this indicator list but was not a feasible idea for this round of research.

The community has one dumpster where all waste is collected, with the exception of recycling. This waste includes building and construction waste, business waste, as well as residential waste. There is no way to separate what is in the dumpster between construction or business related and what is residential. Separating between construction, business and residential waste allows us to determine which sector produces the most waste; giving us a better idea of where changes need to be made. It also enables better comparisons between the DR community and usage in mainstream society which commonly separates between these sources of waste. The community has a recycle center where all recyclable materials are separated between cardboard, papers, plastic, glass, aluminum and metal and deposited into large fifty-five gallon barrels. We did not have the funds to purchase an industrial-type scale to weigh the large barrels before community members cart them into city recycling centers. Additionally, we had no way of weighing the entire contents of the dumpster so other methods of measurement had to be implemented. This also means that this is an incomplete picture of waste produced at Dancing Rabbit.

Solid waste and recycling data was gathered by myself and two research assistants, going door to door once a week, collecting trash and recycling from each participant, their respective kitchens, and the common house. Trash and recycling was taken to the dumpster area and weighed separately, then disposed of. All receptacles were weighed and subtracted from gross weight to calculate net weight and empty receptacles were returned back to each residence. The waste rates were calculated in pounds, divided by the number of days' worth of trash and also by the number of people regularly contributing to that trash receptacle, in order to get a per day per capita amount of waste produced.

Figure 4. Collecting and weighing trash. Photo by: Brooke Jones

All three indicators in this theme include trash from participants' residence, kitchens, the common house and the Milkweed Mercantile. Common house and Milkweed Mercantile data were collected separately but in the same manner and divided by the number of person

years to reach a per person estimate for each building. This data was added to the residential per person rate to get the total per capita rate of solid waste and recycling production in the community. It is worth noting that common house waste also includes much of Dancing Rabbit, Inc. business waste. Given that waste from all streams (homes, businesses, institutions) is included in other indicators reviewed for comparison, it is also included in these measures for Dancing Rabbit.

Outside of the obstacles, this was participants' favorite part of the research process. Who doesn't like free trash service for two months? Interestingly, this is also a reason some people chose not to participate in the study, because they were uncomfortable with a stranger collecting their trash. Multiple times I was told someone did not participate because of this, or because they did not "want to make Dancing Rabbit look bad."

3.2.1.1 Solid Waste

Solid waste includes waste generated from all locations within Dancing Rabbit which end up in a landfill; not reclaimed, composted, or recycled by the community. Research results show the community has reduced waste significantly compared to the average person in the US. On average, member participants produced about .4 pounds of solid waste (non-recyclable) per person, per day. According to the Environmental Protection Agency's 2011 Facts and Figures, the average American produced 2.9 pounds of solid waste per day (EPA, 2013, p. 2), which puts Dancing Rabbit at only 14% of the average American rate of waste production. Sustainable Seattle (Palmer, 2004) also measured solid waste separately from recycled waste in their Solid Waste Generated & Recycled indicator. Seattle residents'

generated 91% more waste than Dancing Rabbit, producing 4.2 pounds of solid waste per day per capita in 1997.

3.2.1.2 Recycling

Recycling includes all solid waste that is recycled and does not make its way to a landfill. This does not include reclaimed or composted items as those are extremely difficult to track and would have to be tracked on an individual basis as items are reused or composted. This indicator is measured as total pounds of recycled waste, as a percentage of total solid waste production. Research results show the average participant produced 1.6 pounds of recycling per person per day, a recycling percentage of 79% of the total solid waste. According to the EPA, in 2011 the average person in the US recycled at a rate of 35% of total solid waste (2013, p. 1). This means that Dancing Rabbit recycles over twice as much of the waste they produce in comparison to the average American. The City of Hamilton (McCabe, 2008), Ontario also measured recycled waste within their Reducing & Managing Waste indicator. However, they measure recycling separate from other landfill diversion tactics, such as incineration of waste, and calculated rates of diversion for all of these methods. The City of Hamilton (McCabe, 2008) recycled 18% of waste, but diverted a total of 42%. Dancing Rabbit is doing better than the city of Hamilton by diverting 37% more waste through recycling alone. Sustainable Seattle (Palmer, 2004) measured recycling at 3.9 pounds per person per day, a rate of 48% of their total waste production. Dancing Rabbit recycles 31% more than Seattle.

During my time at Dancing Rabbit I made several observations about community recycling. Glass was the bulk of recycling output both by weight and volume. It is important to

note, shortly after data collection ended, the Mercantile acquired a 'kegerator' and now carries two beers on tap, which will significantly reduce their glass recycling output. Also, the community acquired a glass crusher and is working on creative ways to reuse this glass on property instead of sending it off-site.

Figure 5. Sorting in the recycling center. Photo by Brooke Jones

On the other hand, I was surprised by seeming lack of attention and understanding of recycling basics exhibited at Dancing Rabbit. It became quickly apparent this is a major source of frustration for particular community members concerned with the issue. One member expressed disgust with 'the tragedy of the commons', explaining that "we are supposed to be this model of sustainability and yet we can't even wash out a ketchup bottle before putting it in the plastic, you know, I get really pissed off".

At a radically sustainable ecovillage, I expected recycling processes to be virtually flawless. On the contrary, recycling basics such as washing out containers, removing lids from plastic bottles, and separating between colored and clear glass seemed to be lost on some. We had to request for participants to clean out items before depositing in their recycling bins, as is

required almost everywhere. Quite often, my research assistant and I spent time rinsing and cleaning items out before depositing them in the community bins to make sure those items did indeed get recycled appropriately. However, one member mentioned that they could not spare the water at home to rinse recyclables; manually transporting water from the community pumps to a residence is often a difficult and time consuming task so some are not willing to use their residential water supply for such tasks. In that case, it could be that some residents would have rinsed containers at the water spout by the trash can before depositing in barrels if we did not pick up recycling for them during this time. Visitors are an additional consideration, possibly unfamiliar with community or general recycling processes; they could have been contributors to inappropriately recycling items as well.

Additionally, when depositing recyclable items, some community members would dump all glass in any available barrel, mixed together, with no regard to color designation or to preventing bottles from being crushed in the process. Multiple times, my research assistants and I separated the full barrels worth of glass as we were depositing items from participant's receptacles. Yet, results show significant improvement in the amount of recyclable waste captured by Dancing Rabbit over the average American, an increase of 45%, so they do a good job with recycling regardless of the lack of attention to basics. Missouri doesn't accept recyclable items if they are not clean; this is a common recycling norm. This rate might actually be reduced if we were not there sorting and cleaning recyclable items for them, as some of those items would possibly end up in the landfill as a result of not following the rules.

3.2.1.3 Total Municipal Solid Waste

The amount of solid waste and recycling are combined to form the total solid municipal waste produced at Dancing Rabbit. This does not include humanure waste or other composted organic waste. Results show, on average Dancing Rabbit produces 2.1 total pounds of solid municipal waste per person, per day. This is 47% of the average American rate of 4.4 pounds per person, per day according to the EPA (2013, p. 1). Dancing Rabbit produces only 25% of the amount of total solid waste as Sustainable Seattle (Palmer, 2004) reported; 8.1 pounds total solid waste and a recycling. Dancing Rabbit has significantly reduced waste production both in comparison to the average American and the city of Seattle.

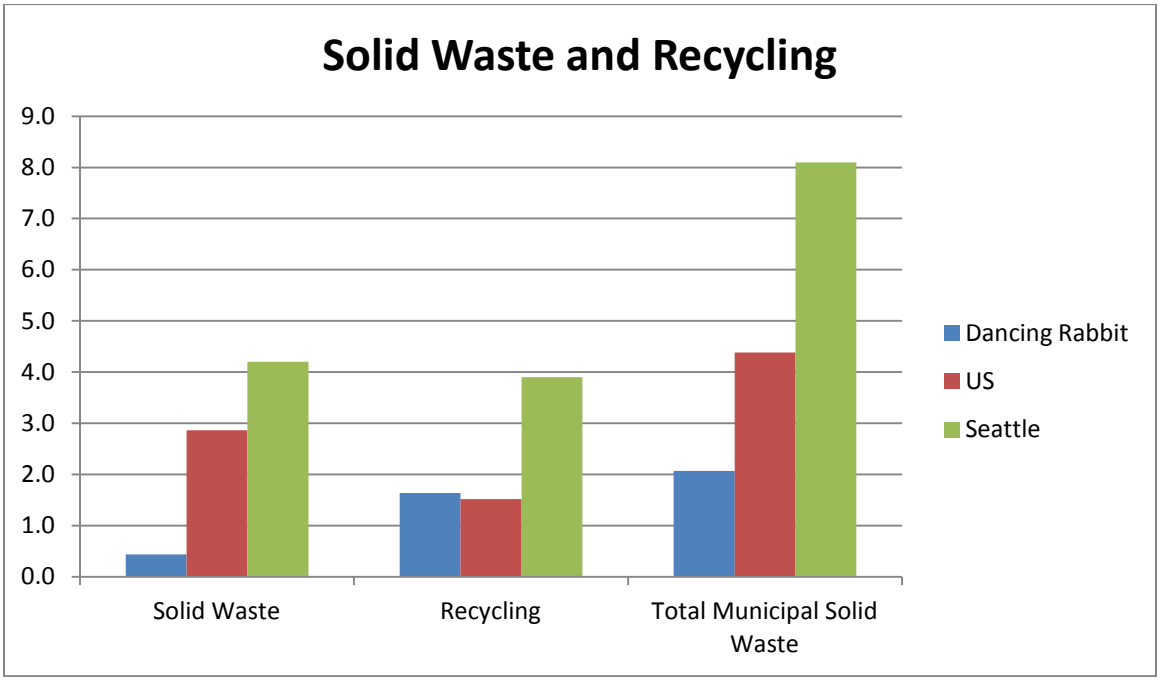

Figure 6. Solid waste and recycling chart.

3.2.1.4 Suggestions for Improvements

To get an accurate picture of entire community trash generation, I suggest investing in a large industrial size floor scale (such as those located at Mettler Toledo online) capable of

weighing the full fifty-five gallon recycle barrels before they are transported to the city recycling centers. This accounts for recycling by all members of the community, visitors, guests, and otherwise. Weighing the community dumpster would be beneficial as well but I have no suggestions on how to accomplish this, unless the waste management company can weigh it before or during dumping it in the landfill. One community member expressed interest in following the recycling stream, to see where recycling ends up once it leaves Dancing Rabbit property. Where does it go? How is it processed? What is its ultimate destination? Such an investigation could be extremely revealing and important to this type of study, revealing the amount of energy is consumed by processing recycling. Following the recycling stream will allow them to assess how much this effort really matters in the scheme of ecological impact.

3.2.1.5 Connections to Other Themes

Solid waste and recycling links directly to other indicator themes including energy consumption, which is increased concurrent with the amount of waste management needed. Building structures is linked through sustainable building practices, which can reduce the amount of waste produced. Consumer products and food consumption are also linked given that sustainable practices in these areas reduce waste produced. Quality of life is directly linked through the effects on ecological and personal health, since mismanagement of waste pollutes and contaminates environments. Additionally, this theme overlaps transportation as some means of transport is necessary to remove waste from Dancing Rabbit.

3.2.2 Transportation

Including three indicators (number of vehicles, local travel miles and long distance travel miles), the transportation theme supports ecological covenant one. The community is currently undergoing a tedious process of explicitly clarifying this covenant due to some ambiguity and varying interpretations among members. For example, what characteristics determine what a motorized vehicle is? Is an electric assist bike considered a motorized vehicle? These questions consistently come up in conversation as the community grows and incoming residents and members interpret covenants differently, combined with differing ideas regarding what is ecologically sustainable.

Car emissions are harmful to human health and the environment. Petroleum diesel and gasoline are fossil fuels which contribute to the rise in greenhouse gases; therefore, reduction in personal travel should consequently cause the reduction of these harmful pollutants in the atmosphere as is needed to combat climate change and global warming. Additionally, air quality is reduced by the amount of pollution emitted from vehicles, diminishing personal health and quality of life. Reducing individual travel means less need for roadway construction and expansion which harms the environment by encroaching on natural ecosystems and landscapes. Further, increased physical activity through walking and biking improve physical and mental health. The typical sedentary lifestyle in the US has been a major contributor to the rise in diseases such as diabetes, obesity and heart disease.

Community members have the option to join the Dancing Rabbit Vehicle Co-op or DRVC. The DRVC consists of three cars and one truck: a 2012 all electric, zero emissions Nissan Leaf; a 2006 model and a 1998 model Volkswagen Jetta; and a 2000 Ford F150 truck. All vehicles

except the Leaf are biodiesel converted. No separate car payments, insurance payments, gas or other costs are charged; instead each member pays a flat per mile fee, ranging from sixty two cents to eighty cents per mile depending on the vehicle. Although this provides significant cost savings for some people compared to personal vehicle ownership and use, it can feel cost prohibitive to use the vehicles very often for members with fewer financial resources. A trip to the closest town with more than a small grocery store (Memphis, Missouri) is fifteen miles away and costs roughly twenty dollars at minimum round trip. This is a significant cost for those who are economically challenged.

Cooperation and intense scheduling, including ride shares and cooperatively running errands by and for community members, all contribute to the functionality of using four cars to meet the needs of all community members, visitors, and guests. It functions very efficiently. It is important to note that some neighboring community members use DRVC vehicles and some Dancing Rabbit community members may ride in a neighboring community or visitor vehicle from time to time. Additionally, some members opt out of the DRVC and choose to travel locally primarily by bike or foot.

3.2.2.1 Number of Vehicles

Number of vehicles includes all vehicles owned and operated by DRVC members' per capita, using number of DRVC users (paying users, both drivers and passengers). DRVC collects data on all vehicle miles traveled, by whom, and where, providing an abundant data source for these indicators. Seventy one DRVC users were noted for 2013, sharing four vehicles. This means Dancing Rabbit has .06 cars per capita which is 7% the US per capita rate, or 93% less

than the average American rate of .8 cars per capita (Davis, Diegel, and Boundy, 2013). The City of Hamilton (McCabe, 2008) also used number of miles per capita within their Changing Our Mode of transportation theme, with 1.07 cars per capita in 2007. Dancing Rabbit owns 6% the amount of vehicles, or 94% less vehicles per capita, than the City of Hamilton (McCabe, 2008).

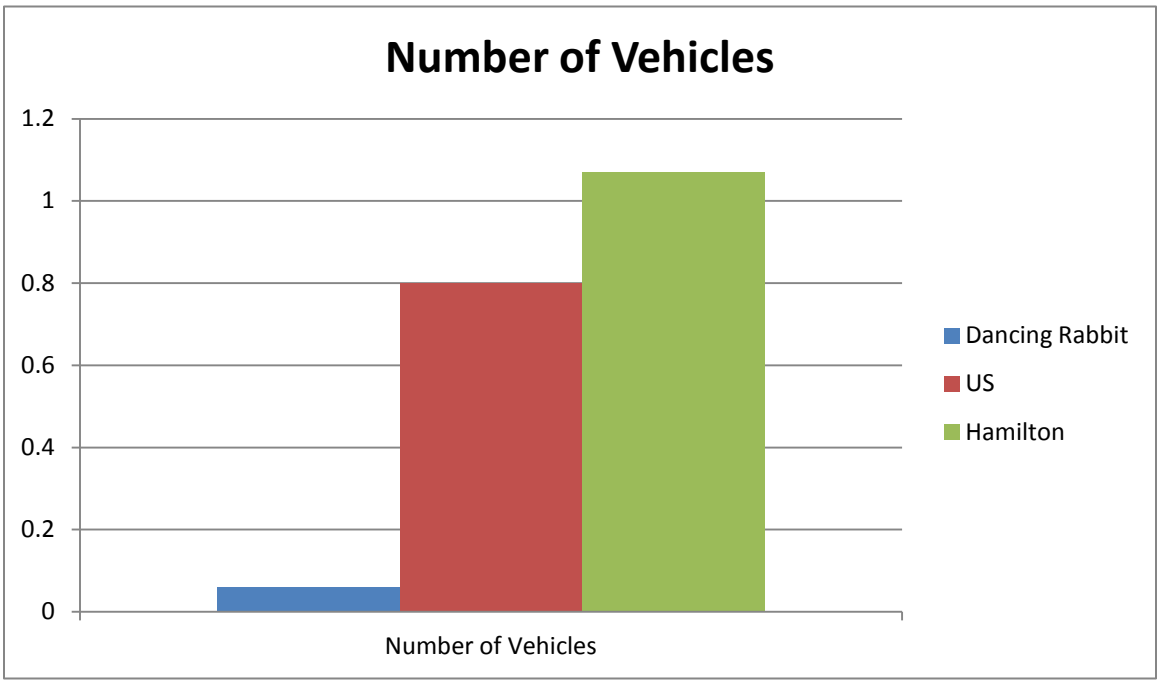

Figure 7. Number of vehicles chart.

3.2.2.2 Local Travel Miles

This Indicator is a measure of all local miles (generally one hundred miles or less from Dancing Rabbit) traveled by DRVC users. Since DRVC vehicles are supposed to only be used for local travel, the co-op data is a good source of information to calculate local travel miles. Each vehicle has a mileage log that must be completed during each trip for billing purposes. For purposes of this research we consider all DRVC miles as local travel miles. From my observation and a quick review the number of long distance trips was miniscule. Data from DRVC

accounting was reviewed and compiled for miles traveled in each vehicle during 2012 and 2013. Total number of miles was divided by the number of DRVC users to get a per capita rate. Number of DRVC users was compiled by calculating the number of users once a quarter (January, April, July, and October) and averaging the number of users across all four quarters.

For 2013, the community drove an average of 834 miles per user, per year of locally. Compared to the average American's 9,455 miles, according to the Transportation Energy Data Book (Davis et al., 2013), this puts Dancing Rabbit at 9% the usage of the average person in the US, or a 91% reduction on average. Sustainable Seattle (Palmer, 2004) measures miles driven in their Vehicle Miles & Fuel Consumption section. For King County, the average person drove just under 9,500 miles per year. This also puts Dancing Rabbit at 9% of the average King County residents.

Figure 8. Local travel miles.

3.2.2.3 Long Distance Travel Miles

Total long distance travel miles is an assessment of miles traveled per capita outside of DRVC (generally over one hundred miles), separated by mode of transportation (car, bus, train, plane, etc.). This indicator takes into account the number of people per vehicle where applicable. Members who agreed to participate completed a log for long distance travel from June 15 through August 15, 2013, during the summer data collection period. DR policy indicates one hundred miles or more one way as long distance, stating that a personal motorized vehicle may be used/rented/borrowed for trips longer than that. DRVC vehicles can be used for long distance, but it is cost prohibitive and depends on how long the vehicle will be "checked out" since others in the community also depend on vehicle availability. Subsequently, DRVC vehicles have generally not been used for long distance travel, but the community recently designated a long-distance vehicle for this purpose.

For purposes of this research, instead of attempting to tease out each DRVC trip over one hundred miles, we considered all DRVC miles local miles, and any other travel beyond one hundred miles long distance travel. During the two month research period, nineteen participants completed the log or specifically noted 'no travel' during the research period. A total of 26,320 miles were traveled during these two months by the 19 responding participants—14,373 travelled by car, 5,369 by train, and 6,578 by airplane. Each of these modes must be evaluated separately to assess impact of long distance travel since each mode of travel has very different carbon emissions and other environmental effects. Per person totals, taking into consideration vehicle occupancy where applicable, are as follows: 1385 total miles, 756 car miles (305 miles per person when calculated considering the number of

passengers per vehicle), 283 train miles, and 346 airplane miles per person. This is an estimate based on an incomplete picture of long distance travel within the community. A full year's worth of data is necessary to accurately assess long distance travel and its impact, given that much travel occurs during the winter months due to holidays with family and people trying to escape northern Missouri's harsh winter weather.

It is important to note that long distance travel is necessary for Dancing Rabbit's outreach and education mission fulfillment. It is not possible to educate others and spread the community's message to the extent of their commitment to outreach solely from Dancing Rabbit property. Travel is required for presentations, event attendance, booths at environmental fairs and many other outreach situations. Also worth noting is that this indicator does not include visitor travel to Dancing Rabbit which hopefully can be assessed at some point as suggested in the next section.

3.2.2.4 Suggestions for Improvement

The long distance portion of this indicator theme needs much more data collection and assessment. Data collection for a full year is necessary to get accurate information. Most community members do not travel long distance very often and some only during winter months/holidays, etc. Additionally, considerations of visitor travel to and from Dancing Rabbit should be discussed and decided upon.

Further research is needed into long distance travel. Based on my perceptions, long distance travel could be one of Dancing Rabbit's ecological weak spots as significant air travel might discount the reduction in local vehicle travel. Research indicates air travel has significant

impact on climate change. “Compared to other modes of travel, such as driving or taking the train, travelling by air has a greater climate impact per passenger kilometre, even over longer distances. It's also the mode of freight transport that produces the most emissions” (David Suzuki Foundation, 2014, Air travel and climate change). Aviation uses a disproportionate amount of energy when compared to other modes of nonhighway travel, consuming almost 7% of transportation energy use (United States Department of Transportation, 2013, p. 79). These factors warrant further research into long distance travel at Dancing Rabbit.

Figure 8. Dancing Rabbit members enjoying a sunny day bike ride. Photo by: Angela Neese.

To further assess transportation, a measure of bicycle and foot travel miles within the community could be beneficial. Increasing bike or foot travel, if accompanied in a decrease in vehicle travel, results in a decrease in the use of fossil fuels for, resulting in less pollution and

creation of greenhouse gases. Additionally walking and biking are healthy forms of exercise which increase health of community members; exercise is shown to increase happiness. Pedometers or another inexpensive monitoring tool could be used to track this information. Walking and biking are common modes of transport around Dancing Rabbit and between neighboring communities. The amount of walking and biking at Dancing Rabbit largely contributes to the lack of vehicle miles traveled and likely has significant health benefits.

3.2.2.5 Connections to Other Themes

Transportation directly affects fuel consumption. Reduction of vehicles owned and miles driven results in a reduction in fuel consumed. This theme also links with quality of life in both positive and negative ways. From my personal experience, conversations with others, and observations of the reaction of visitors and incoming residents, one of the hardest parts for many new people at Dancing Rabbit is the adjustment to not owning a car. The car as a sign of independence in mainstream US society is hard to let go of for many people. Transportation can affect Quality of Life by increasing air pollution, leading to diminishing air quality and increasing greenhouse gases, which reduce the quality of ecological and personal health and further impact climate change. Reduction in the amount of fuel consumptive travel results in reduced need for roadway construction and travel infrastructure which harms the environment by encroaching on natural ecosystems and landscapes. Non-fuel consumptive modes of travel increase personal health through exercise which improves happiness and quality of life.

3.2.3 Fuel Consumption

Fuel consumption consists of two indicators, vehicle fuel consumption and other fossil fuel (propane) consumption. This theme relates to Dancing Rabbit's ecological covenant two. Fossil fuels are a finite and unsustainable resource; a shift to alternative fuels is necessary to transition to sustainable systems. Additionally, fossil fuels pollute the environment and increase greenhouse gas production, which affects climate change and global warming. Pollution also negatively affects ecological and personal health.

3.2.3.1 Vehicle Fuel Consumption

Vehicle fuel consumption is a measure of total gallons of fuel used for transportation within the DRVC, measured in gallons of fuel per capita. This indicator has three elements: petrol diesel consumption, biodiesel consumption, and total fuel consumption in gallons per person. DRVC accounting provided a wealth of information regarding fuel purchases, as did hand written fuel records. At this time, this indicator does not include long distance travel as that portion of the indicator needs more development to ensure accuracy. I took the amount of fuel consumed according to their records and divided by the number of DRVC users for 2013 in order to calculate the per person rate of consumption of 29 total gallons of fuel per person per year.

Dancing Rabbit vehicles run on biodiesel in warm months and petrol diesel during colder temperatures when biodiesel gels up and does not function as a viable fuel source. However, more petrol diesel is used by volume. This is possibly due to a lengthy cold season from September or October through April or May, combined with members fueling up at gas stations

instead of at Dancing Rabbit—where fuel pumps are manual and less convenient to use. The data revealed several occurrences of fuel purchased outside of Dancing Rabbit throughout the year. Another factor in the higher rate of petroleum fuel consumption could be the use of other equipment which only functions with petrol diesel such as tractors or other gas-powered machines.

In 2013, 29 total gallons of fuel were used per driver—18 petrol diesel and 11 biodiesel. Compared to the average American's 465 gallons per person per year, this puts Dancing Rabbit at 6% of the average American's total fuel use, and 4% of petrol diesel use. The average American number was calculated by taking the per capita miles driven (Davis et al., 2013), multiplied by the average fuel efficiency of vehicles, to reach the estimated per capita rate of fuel consumption. This calculation assumes the average American uses only petroleum fuel.

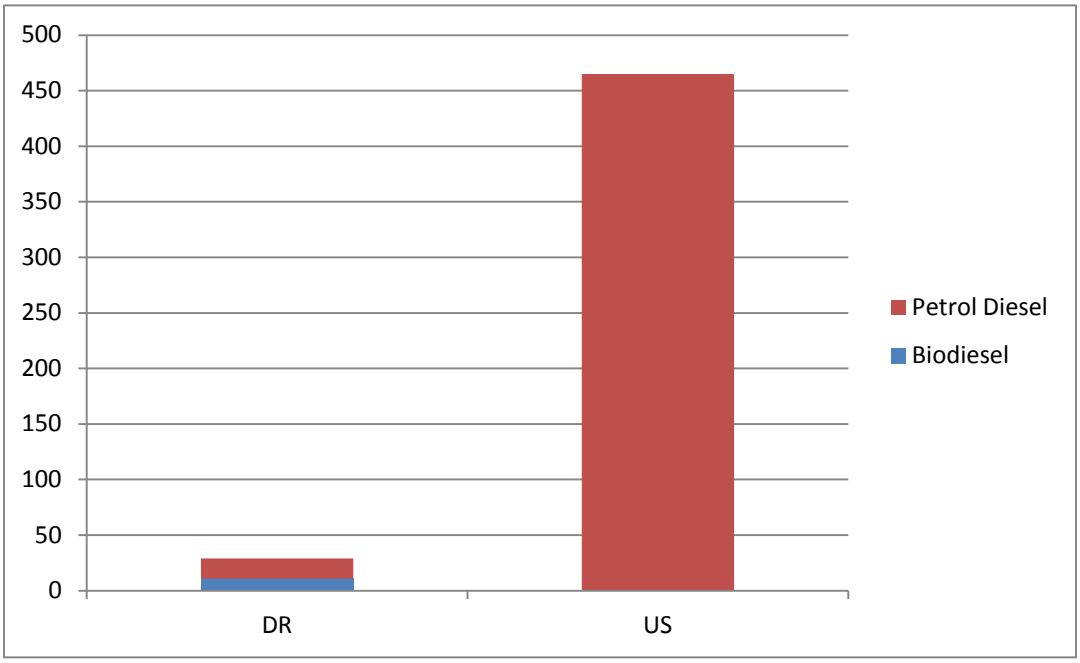

Figure 9. Vehicle fuel consumption chart.

3.2.3.2 Other Fossil Fuel Consumption

At this time, other fossil fuel consumption consists only of propane usage at Dancing Rabbit. Propane is the only gaseous fuel used in the community, primarily for cooking. This indicator monitors the amount of propane used per person, including data from MFA Oil records, the local propane company who truck in gas to fill stationary tanks. Individual reports from other propane users who fill their own tanks as needed are also included. Data collected accounts for roughly 80% of the community. The amount of propane calculated per year was divided by the number of people served by that propane tank in order to calculate a per person usage rate. This rate was converted to therms, a unit of heat equivalent to 100,000 BTUs, in order to be comparable to US data.

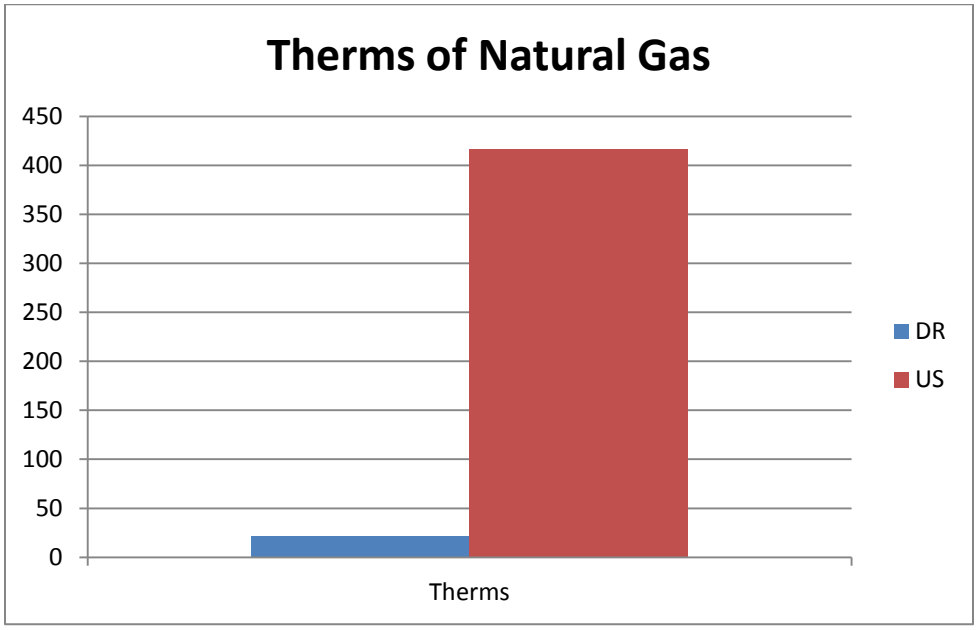

Figure 10. Natural gas table.

I compared the community propane usage to total natural gas usage for the average American in therms. Based on the data collected, community members use 21 therms of

propane gas per person, per year, equivalent to 5% of the average American's use of 417 therms of natural gas (EPA, 2013). The Milkweed Mercantile is held separately as business data since business and personal use could not be separated or determined.

3.2.3.3 Suggestions for Improvement

One thing not measured within this theme is fuel used to power small yard tools such as weedeaters. This type of fuel use is not explicitly addressed in the covenants and creates a loophole for members to use these fuel consuming tools without monitoring. Additionally, more research on long distance travel and associated fuel usage, visitor travel to and from Dancing Rabbit, and fuel used to ship goods into the community. Community members also ride in visitors or guests' cars on occasion, further research into this fuel use could be considered as well.

3.2.3.4 Connections to Other Themes

Fuel consumption links with several other indicator themes, including energy consumption, as alternative fuels are cleaner and renewable forms energy. Food consumption is related considering a large quantity of food consumed at Dancing Rabbit is shipped in from UNFI which results in the consumption of fuel. This indicator also links with quality of life through negative effects of air and water pollution on ecological and personal health. Lastly, fuel consumption directly correlates with transportation since motor fuel use is cross-linked to number of vehicles per capita and number of miles driven per capita.

3.2.4 Energy Consumption

Energy consumption currently consists of electricity consumption at Dancing Rabbit. This indicator relates to Dancing Rabbit's ecological covenant four. Renewable energy is a sustainable source of energy production. The more renewable energy produced within the community, the more independent they are. The existence of internal sustainable energy production in combination with BEDR grid connection means they have backup systems in the case of national or local failure. Reliance on non-renewable energy sources pollute the environment and increase greenhouse gases, which contribute to climate change and global warming. Non-renewable energy relies on and depletes finite natural resources (oil, natural gas, coal). Moreover, renewable energy contributes to energy security by decreasing dependence on these unsustainable sources (oil, natural gas, and coal) which will eventually deplete if consumption continues at the current rate. We need alternative modes of producing energy in order to adapt to this situation.

Dancing Rabbit recently became connected to the national power grid in December 2011. The community internally justified this for several reasons. First, the grid ensures a backup system when the sun and wind do not provide sufficient power. Second, it supports the growing population at Dancing Rabbit and the potential for developing businesses. Third, batteries, where electricity is stored when there is no power grid, are an expensive and toxic option. In order to deal with the discomfort of many community members surrounding this transition, the electricity covenant was modified to include the export clause in the second sentence (originally only consisting of the first sentence in the covenant. Several members do

not participate in the grid system and solely rely on their own personal solar or wind power systems and have the option of living without electric power at all.

3.2.4.1 Electricity Consumption

Electricity consumption includes the total amount of electricity used by Dancing Rabbit members as monitored through the Better Energy for Dancing Rabbit (or BEDR) system, measured as the average annual residential electricity consumption per capita in kilowatt hours. Total kWh of electricity consumed, minus the BEDR system losses, were divided by the number of person years to get to a per capita rate. BEDR system losses were calculated as follows:

> BEDR production + customer production (e.g. solar panels on the common house) – customer consumption – (amount exported to utility – amount imported from utility) = BEDR system losses

Based on 2012 data, the average person at Dancing Rabbit consumes 592 kWh per person per year, yearly total electricity consumption, 14% of the average American's 4,168 kWh per person per year, according to the United States Energy Information Administration (2013). I compiled US data using the monthly average residential bill (903 kWh), multiplied by 12 months (10,836 kWh), divided by 2.6 persons per household according to the United States Census Bureau's 2011 Fact Sheet (resulting in 4,168 kWh).

The data for Dancing Rabbit includes the Milkweed Mercantile, other on-site businesses, and many community members who telecommute, work from home, or work for Dancing Rabbit, Inc. The average American number data includes people who work from home but

does not include other business use, and therefore, this is not an exact match for this study. This is important to note because it implies that Dancing Rabbit's residential only consumption would likely be even further reduced from average US rates of electricity consumption if the date was separated between business and residential use.

Further, in 2012 through the generation of solar and wind power, Dancing Rabbit exported three and a half times the amount of electricity to the grid than they imported. The City of Hamilton (McCabe) used a similar indicator in their 2008 report entitled Consuming Less Energy. According to their data, City of Hamilton uses 3174 kWh per person, which means Dancing Rabbit uses 19% of the amount of electricity as Hamilton residents.

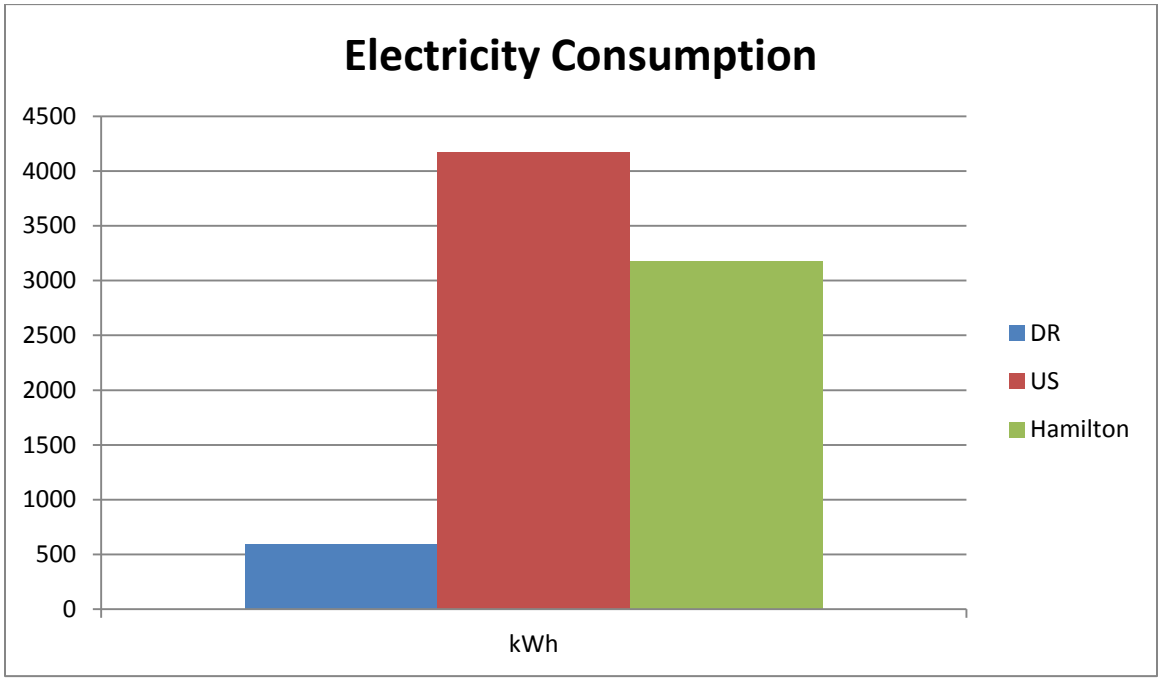

Figure 11. Electricity consumption table.

3.2.4.2 Suggestions for Improvement

This theme could be improved by implementing monitoring systems on individual power

grids to get a clearer picture of energy produced and consumed at Dancing Rabbit outside of BEDR. Additionally, teasing out what percentage of electricity use at Dancing Rabbit is business and how much is personal/residential will give further insight into how much energy consumption is reduced and in what capacity. Evaluating business use and residential use separately could allow the community to further evaluate energy consumption within the community and where improvements could be made. Also, it would allow the community to make a comparison between their business and national business practices.

3.2.4.3 Connections to Other Themes

Energy consumption links with many of the other indicator themes, including solid waste and recycling. The more solid waste and recycling produced, the more energy is necessary to dispose of it. Energy used to dispose of waste could be an additional indicator for the community to assess environmental impact. Expanding this theme to include another indicator for energy used to dispose of waste could prove useful for the community if they desire to do so. Quality of life is also affected given that the use of fossil fuels creates pollution, which affects ecological and personal health. However, materials used to produce sustainable modes of energy production, such as solar panels, often involve toxic materials which involve problematic mining practices which negatively affect the environment in contrast.

3.2.5 Water Consumption

The water consumption theme consists of county water consumption, rainwater catchment, and per capita daily water flow. Although it does not relate directly to one of

Dancing Rabbit's covenants, lifestyles at Dancing Rabbit focus on water conservation. Community implemented systems including greywater, humanure, and rainwater catchment are set up to aid in this effort. Humanure is explained in the paragraph below and rainwater catchment is explained in section 3.2.5.2. The greywater system mechanically filters and chemically biodegrades domestic kitchen and bathroom water and deposits it into the wetland area. Water conservation is critically important for the survival of our planet. Water is one of the number one requirements to sustain all life, at the top of Maslow's hierarchy of needs (1949), and is also a finite resource. Every animal on the planet must have water to survive. Using renewable water sources, increases water security within the community, ensuring that they could provide water for themselves if something happens to the municipal water supply, and reduces negative environmental impact of depleting water resources.

Dancing Rabbit further demonstrates commitment to conserving water through their organized human waste management system. Humanure, commonly called "humey," is a community-wide cooperative system of no-flush toilets to avoid defecating in potable drinking water. Members generally urinate outside and defecate in five-gallon buckets, cover each deposit with sawdust, then carry full buckets to the humey composting site where waste is stored, biologically treated and turned into compost. I did not collect any data on this system's functionality but undoubtedly it saves water over the common flush-toilet system of the average American household. The Milkweed Mercantile, an onsite eco bed and breakfast and a few other residents have composting toilets (another no-flush system) to better accommodate mainstream guests and demonstrate an additional water-saving waste management option. The results of measured indicators for water consumption are explained below.

3.2.5.1 County Water Consumption

County water consumption is a measure of per capita water consumed by the community according to the Scotland County Water District's records. County water consumption is measured in total volume (gallons) of water piped in, divided by the number of person years for a given year to reach the per capita rate. Both indoor and outdoor use is included as is the Milkweed Mercantile usage. Business use cannot be separated from residential use at Dancing Rabbit because two community water pumps supply all county water for the community. Residents must haul water from these pumps or from the common house if they do not have enough rainwater to meet needs. County records show the community used 7.42 gallons of water per capita, per day in 2013 (Scotland County Water Supply, 2013). This is 8% of the average American usage of 98 gallons per day according to the US Geological Society's 2005 Water Census data (Kenny et al., 2009, p. 19-20).

3.2.5.2 Rainwater Estimate

Rainwater consumption is estimated due to lack of monitoring systems on catchment barrels. The calculation used for rainwater catchment is:

Square Footage * Avg Rainfall (inches) / 12 = Rainfall in Cubic Feet*7.48 *Efficiency factor = gallons of possible rainwater catchment (Grafman and Watkins, 2012).

For example, the calculation for a 24x30 cabin, would have a 720 square foot roof, given a yearly rainfall of 38.25 inches (Weather Underground, 2014) is calculated as follows:

720 sq ft * 38.25 inches / 12 * 7.48*80% = 13,733.28

The calculation results in 17,166.6 possible gallons (maximum estimate) of catchment for the year for that building. For Dancing Rabbit, we factored in systems which we knew were not functioning at full capacity. The rainwater estimate was then multiplied by a factor of 50 to 80% in an attempt to get a more accurate assessment of possible rainwater collection. For 2013, an estimated 11.62 gallons of rainwater were consumed per capita per day. Comparisons to US data are below.

3.2.5.3 Total Per Capita Daily Water Flow

Total per capita daily water flow is a combination of the previous two indicators. For 2013, a total of 19 estimated gallons of water consumed per person year, per day. This puts Dancing Rabbit at 19% the consumption of the average American's 98 gallons.

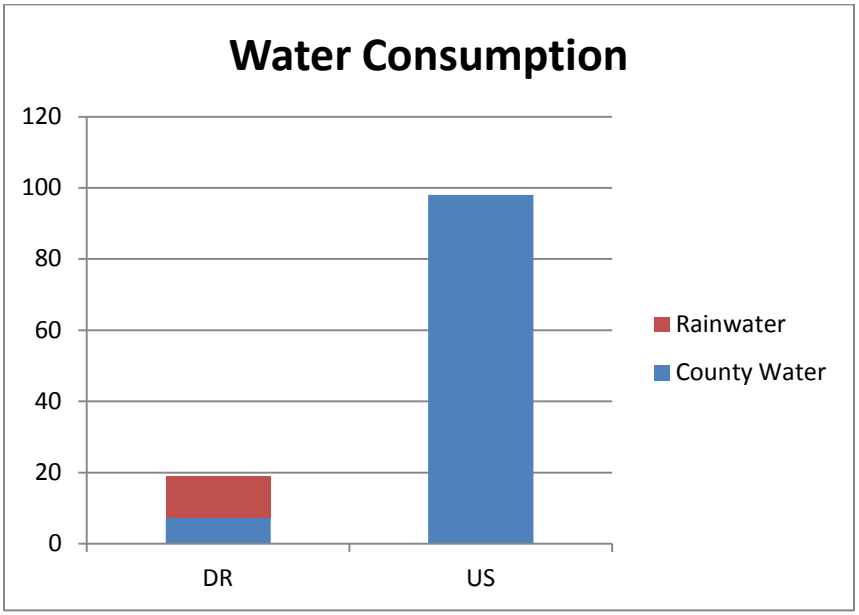

Figure 12. Water consumption chart.

Again, this includes all indoor and outdoor consumption, as well as agriculture and business consumption at Dancing Rabbit, where the average American number is per household

residential usage. This means that residential consumption at Dancing Rabbit is actually reduced further than this measure shows given that it also includes business use where the US number does not.

3.2.5.4 Suggestions for Improvement

Monitoring of the greywater system to see how effectively this resource is used would be an interesting addition to this theme. Can the greywater system be more effectively used to water plants (or set up hydroponic systems) instead of just sitting in the wetlands? Development of bacteria and other organisms possibly present in the water would need to be assessed and considered before implementing systems such as hydroponics. Additionally, monitoring rainwater catchment systems would provide more accurate data for the rainwater estimate and total per capita daily water flow indicators. It could also allow members to implement more effective catchment systems by bringing attention to faults in the system due to reduced collection. If a member knows they should be collecting x amount of gallons of water given the applicable rainfall, and they only collect 60% of that, this is a good sign there is a malfunction in the system that needs to be assessed. However, it is possible that malfunctions in the system could be obvious without technological monitoring. Implementation of more effective monitoring systems will also allow the community to more accurately assess business versus residential consumption of water as well to more accurately assess water usage in the community.

3.2.5.5 Connections to Other Themes

Water consumption links to several other indicator themes including quality of life, energy consumption and food consumption. Water is one of the most vital substances for survival, one of the basic physiological needs for human survival. Water quality, conservation, and reuse affect environmental and personal health, directly affecting well-being and quality of life. Water consumption links to energy consumption because rainwater provides a water source which does not require energy for extraction, treatment or transportation, reducing the amount of energy consumed by the community. This theme also relates to food consumption given that many residents use water to grow their own gardens and provide water for animals. Increased food production and agriculture at Dancing Rabbit will likely lead to increased water consumption.

3.2.6 Perceived Quality of Life (QOL)

As discussed in Chapter 1, QOL has many qualitative and quantitative elements. This theme covers more of the qualitative elements and many quantitative elements are measured within the other indicator themes or within the demographic survey information discussed in section 2.2.1. The demographic survey was distributed to and completed by all twenty-six participants. Elements from the survey include financial security or income level, education level, employment information, and elements from other indicators include air quality, water and food quality and consumption, etc. It is important to show that residents are happy and meeting their needs within the community, as well as reducing ecological impact, if mainstream America is to perceive any value in the Dancing Rabbit lifestyle. Almost every indicator report

reviewed in preparation for this project included a quality of life measure of some sort. Sustainable Seattle (Palmer, 2004) measures QOL directly, and although no direct indicators are developed to assess quality of life within the City of Hamilton Vision 2020 Report, its importance is mentioned several times within the goals section (McCabe, 2008).

Although significant data was collected, we did not have time to develop QOL into its own index over the summer. I will suggest that the community develop this further over time. The perceived QOL theme qualitatively and quantitatively assesses happiness and well-being of Dancing Rabbit member participants. Similar to water consumption, this theme does not directly relate to any of the covenants but it does relate to the mission of 'creating socially rewarding lives' which is an important goal of the community. Nonetheless, as demonstrated in Chapter 1, QOL is important, especially when trying to bridge the gap between mainstream culture and sustainable culture. Given Dancing Rabbit's desire for outreach and education, it is important to show members are happy and fulfilled living an alternative lifestyle on a significant reduction of resources. Even a 100% environmentally sustainable community would be of no benefit/use to humanity if no one could be happy living within it.

Data was collected through the interview and survey process (see Appendices A and B). Interviews were coded and analyzed qualitatively, using ATLAS.ti based on ability to meet ones needs and overall feelings of happiness and fulfillment. Two quantitative questions are included in the interview questionnaires which were also analyzed quantitatively in excel and SPSS along with survey data. I interviewed twenty-six members at Dancing Rabbit and analyzed twenty of those interviews. Interviews were selected for analysis based on the level of participation in the research process. I analyzed interviews from participants who had

completed the most significant pieces of data collection (with the most full data sets) in order to try and keep data consistent across members. The interview questions included topics such as basic needs, healthcare, happiness, fulfillment, satisfaction with community government and processes, factors which contribute to QOL, influence of outside forces, improvements that could increase QOL, and feeling valued within the community decisions and processes.

3.2.6.1 Happiness

Happiness assesses participant's individual feelings of satisfaction and fulfillment with life. Happiness was measured through in-person qualitative interviews, which also included two quantitative questions: 1) On a scale of 1 to 10, how happy are you with life at Dancing Rabbit right now? Why do you feel it is at that level? 2) Do you think Dancing Rabbit is a good place to live? Answer choices provided include, not at all, somewhat, neutral, good, and extremely good. I quickly learned that some people in the community are sensitive to the 'good versus bad' dichotomy, so a neutral option seemed necessary. However, in hindsight, I think the word "somewhat" is ambiguous as to whether it is good or bad and could affect results. Only one person chose somewhat, so for this round of research I do not think it is a significant problem but I would change it for future use.

When asked, "How happy are you with life at Dancing Rabbit right now?" 81% of participants reported a level of 7 or above, on a scale from 1 to 10. When asked, "Do you think Dancing Rabbit is a good place to live?" 88% of participants believe it is a good or extremely good place to live. Sustainable Seattle (Palmer, 2004) asked a similar question in the Indicators of Sustainable Community 1998, and found 91% of residents claimed the city is a "good" or

"better" place to live. Dancing Rabbit members are relatively as happy as Seattle residents while living on 10% of the resources of the average person. This is especially interesting given the interviews were completed during a time of exceptionally high tensions within the community as explained in Chapter 2.

Figure 13. Happiness chart.

3.2.6.2 Well-Being

Well-being considers the ability of Dancing Rabbit residents to meet their basic needs within the community. Data gathered through the demographic survey as has been described showed positive trends in areas such as financial security, education level, employment, and water quality. I asked participants to identify what basic needs are for themselves, instead of suggesting any particular areas. Everyone identified food, water, and shelter, and many mentioned social or emotional needs as well. Many participants were clear that accessing the resources is not always easy, in a lot of cases it requires significant legwork, such as physically

hauling water from the community pumps, or common house, to their residence. Several participants also made clear that food needs are met *at* Dancing Rabbit but not necessarily *by* Dancing Rabbit. Significant portions of food are shipped in from UNFI, but the ability to meet the need is there. Several participants also mentioned the need for shelter was met but challenging and not necessarily adequate to their preferences. From the information gathered in interviews and surveys, and through participant observation, quality of life at Dancing Rabbit is more than adequate. All basic needs are met, or able to be met at Dancing Rabbit, and members are generally happy within their lifestyles.

Figure 14. A child with her chicken. Photo by: Dancing Rabbit Ecovillage.

3.2.6.3 Other Observations

The most common need not met, or able to be met, as reported within the community,

is healthcare, with many holding out hope that the Affordable Care Act would improve access to health services. As mentioned, most community members do not hold corporate jobs with benefits so very few in the community actually have adequate insurance. Community members frequently treat themselves (often with alternative medicine) and rely on onsite medical professionals (a nurse, two midwifes and an emergency medical technician) when issues arise. If needed, there is a clinic in Memphis, Missouri about 15 miles away with sliding scale payment options. Healthy lifestyle and preventative care were also frequently reported, along with inner sustainability, or focusing on mental health to improve physical health.

During the interview process I learned many things about participants, their reasons for living and staying at Dancing Rabbit, their challenges and frustrations with their lifestyle and both positive and negative factors on QOL. Fulfillment stems from personal values aligning with Dancing Rabbit mission and vision, and being surrounded by a group of like-minded and supportive peers. Working on environmental or ecological issues, a sense of meaning or purpose, and having a positive influence on the world were also frequently noted. Many noted that although Dancing Rabbit is not a utopia, it is the best known place to be.

Personal responsibility came out as strong theme in the interviews, with participants overwhelmingly taking responsibility for their own happiness and not placing blame on the community. Those who reported lower levels of happiness, and even those with very high levels, repeatedly mentioned that Dancing Rabbit is not responsible for their happiness. To them, it is an internal state driven by personal emotional health and inner harmony. Other themes include social connections, freedom and autonomy, community and a healthy environment, and are major positive contributing factors to quality of life.

Negative factors affecting QOL, or areas of frustration mentioned, include, loneliness/isolation, health, environmental pests, lack of social connections or overwhelming lively social scene, community bureaucracy and power dynamics. Several people admittedly struggle with loneliness, as the community is geographically and culturally isolated. Romantic options are not in abundance and it is hard to get away from those you are in conflict with. Several people have Lyme disease or other tick borne illnesses which reduce QOL. Ticks, chiggers, and poison ivy are seasonal challenges at Dancing Rabbit and rodents are a problem as well.

Frustrations over the amount of bureaucracy were mentioned frequently in the interview process. One member reported, "I think that it's unfortunate how much bureaucracy we seem to be caught in right now…there is just a lot of process and we have to worry about precedent…it seems nice to envision an ecovillage that doesn't have so much bureaucracy and I feel like Dancing Rabbit has a lot". Certain members noted they do not participate in the political process for various reasons, including the level of frustration it carries and negative effect on quality of life. "I by rule, by self imposed rule do not participate. We're reflecting our personal values and that leads to a huge amount of conflict, and it's very easy for me to get caught up in that too, and I just don't want to," explains a member. Along the same lines, there were many reports of burn out from constantly being busy, stressed and overwhelmed with both personal and community responsibilities. As one person described, "I've been disappointed at our bureaucracy at a lot of times and I happen to be at a point right now where I feel particularly burnt out on a lot of the administrative stuff that I've taken on here".

Even in a consensus-based community, where there is no leader and in theory no one has more power, power dynamics were extremely evident. Long standing members and those in leadership positions, or with more social and financial resources, do have more influence to some extent and are often mistrusted whether this is warranted or not. Mistrust of those in leadership creates hardships on them, and the community as a whole, as it creates tension within the political realm. It also creates discomfort for those who are suspicious and possibly affects their QOL negatively. Long-term and founding members had a certain vision for the community and not all current members are in line with that vision, regardless of their commitment to sustainability. Particular members definitely feel targeted or singled out within processes and policy decisions. Those in leadership positions experience frustration over mistrust, regardless of intention. As a member explained, "it's hard to get people to value governance when the examples they have in the wider culture of governance are so piss poor…there is sort of knee jerk mistrust of governance and it doesn't have to be that way, but for some people it is".

Furthermore, several people mentioned discord between established members and newer incoming members, and the lack of understanding between the two. Some newer members seem to feel those who are established at Dancing Rabbit do not understand their struggles, and forget what it is like to leave everything you know, give up your car, and adjust to an entirely new culture without your usual social support system. Some of those who are established seem to feel that incoming members lack the ecological commitment they would prefer, with many coming primarily for social reasons or because it is cheap, and that this might water down their ecological commitment and have a long-term impact on community values.

During qualitative interviews, many participants noted differing opinions and views of sustainability among community members, which are both a benefit because it creates diversity and a hardship when decision-making becomes difficult and time consuming. Differences in these views or values of sustainability are evident in the conflict over the new green community center, where evidence occurs of diverging values surrounding money. As one community member explained, "we definitely have a diverse array of opinions and perspectives and finding agreement on anything, especially that affects fees or relates to money, is very challenging."

Similarly, several people also explained there is no 'right' or 'wrong' and that 'good' and 'bad' are subjective as well. This exemplifies the community norm of non-judgment and honoring diversity. Community members also explained that Dancing Rabbit is not the answer, not utopia, and not the right place for everyone. It takes strong values alignment and a certain kind of person to be happy at Dancing Rabbit, for the hard work and responsibility of community life to be worth it. A community member stated, "my impression of this, which is not unusual in intentional communities as far as I can tell, is…either you're aligned with the mission or you're not and if you're not you might not work out here".

Outside forces, such as the global capitalist system within which ecovillages reside, can also cause frustrations over life situations (Baker, 2013). Baker (2013) discusses how these forces are often not recognized as factors within communities; this proved the case at Dancing Rabbit. Feelings of frustration over these forces were not as prevalent within the community as I expected. Most acknowledged the existence of outside forces, such as capitalism and mainstream culture, and explained that their lives are a response to that. If those outside forces did not exist, they would be doing something else. Participants reported feeling their

lives were not negatively affected by such factors, partially because they have isolated themselves from outside influences, and partially because they are already doing all they can in response to globalization, and also because they actively choose not to think about such things. When asked if they felt outside forces affected their QOL, a participant reported, "only so much as a culture that doesn't believe in climate change… yeah, that sucks and we'd get a lot more traction if people actually believed in science, but I feel like that's just the context I wouldn't be blaming anything on it". Another explained,

> I don't feel that. The only thing I can think of is some of the regulations like for the new common house we have to bring in county water, and some of those kinds of regulatory things that don't allow us to be as sustainable as I would like us to be. But generally, I think Dancing Rabbit is situated in a place that we don't have building codes…because we live in this country, we live in this world, there are forces out there you know, banks and multi-nationals and wars and all those things that obviously impact us probably more than we allow them to. I think we kind of live with our heads in the sand a bit and we're sort of on this island and aren't feeling the impacts as much as maybe we need to be. Maybe we should be more outraged and active, you know, but I don't see that, I don't feel it directly.

A sense of safety was also mentioned as a factor that enhances QOL several times in the interview process and evident within the community. There are no locks on doors and most people have an open door policy at their homes and children are allowed to run free throughout the community—all signs of a sense of security. Several members mentioned the benefits of safety in raising children at Dancing Rabbit, along with children having the freedom to run around, play and learn in nature, and interact with various types of adult role models. Adults take it upon themselves to redirect children and set boundaries when necessary and this is not always left up to the parents. It really does take a village to raise a child in community at Dancing Rabbit.

3.2.6.4 Suggestions for Improvement

If this same questionnaire is used in the future, it would be beneficial to change answer choices for the quantitative question 'do you think Dancing Rabbit is a good place to live?' as follows: Poor, fair, neutral (it's not good or bad), good, or excellent. The choices given in my survey made analysis a bit difficult because they are somewhat ambiguous. One participant said "between somewhat and good," so I had to determine how to qualify that answer as somewhat, neutral or good. I chose the middle value of neutral and moved on, making note of this for future development. I recommend developing this theme further to get a more holistic view of QOL and possibly use it to proactively address underlying community issues. It could be beneficial to formulate a survey with some standard and likert scaled questions to continually assess QOL without the need to perform in-depth interviews. If the community is to continue this assessment on their own, the lack of time and the prominence of intimate relationships between community members likely will not allow for the lengthy interviews, openness and honesty necessary to assess the qualitative piece of this indicator.

3.2.6.5 Connections to Other Themes

QOL overlaps all areas of sustainability, as increasing sustainability itself tremendously increases future QOL. Increasing QOL in turn increases sustainability as social sustainability is an important part of the big picture of sustainable living. QOL links with other indicator themes as previously explained in each themes 'connections to other themes' section, including food consumption, solid waste and recycling, transportation, fuel consumption, energy consumption, and water consumption.

3.2.7 Food Consumption

Within the theme of food consumption, we decided to develop indicators of food miles, organic food consumption (organic versus non-organic), processed food, and meat consumption. Food consumption is a relevant theme for Dancing Rabbit, coinciding with ecological covenant number three, "all gardening, landscaping, horticulture, silviculture, and agriculture conducted on Dancing Rabbit property must conform to the standards set by OCIA for organic procedures and processing. In addition, no petrochemical biocides may be used or stored on DR property for household or other purposes" (Dancing Rabbit, 2014).

Food choices greatly impact greenhouse gas emissions. Healthy food choices not only positively affect personal and environmental health, but vegan and vegetarian options are particularly beneficial because they create biodiverse and resilient diets which increase food security and lower carbon footprint (Center for Sustainable Systems, 2013). Local and healthy food choices are generally more sustainable; promote current and future environmental, personal, and community health, and protect farmers. The Center for Sustainable Systems, out of the University of Michigan (2013), reports that the greenhouse gas equivalent of driving 1,000 miles could be saved by eating local food for one year. Further, by eating one vegetarian meal a week we could save 1,160 miles worth of greenhouse gas production (Center for Sustainable Systems, 2013).

Organic foods attempt to eliminate chemical fertilizers, herbicides, and pesticides which contribute to pollution, increased greenhouse gases, climate change and global warming. Although it requires about one-third more manpower hours than the usual farming practice (making it more expensive), organic food practices reduce energy input by 30-50% (Center for

Sustainable Systems, 2013). Processed food requires more energy and resources for production and packaging. Additionally, the effects of eating meat are particularly damaging to the environment. The Environmental Working Group explains that eating meat increases exposure to toxins and has been linked to several diseases such as cancer and obesity (EWG, 2014). Further, "eating one less burger a week is like taking your car off the road for 320 miles (EWG, 2014, Meat Eaters Guide, At-A-Glance).

Measuring food production and consumption was the first and greatest challenge of the project. I quickly learned food measurement is a project, or three, in itself. Most community members participate in food co-ops, where food is bought in bulk and cost, cooking, processing, preserving and cleaning chores are shared. I asked that members fill out a food log for eight days to track details of personal food consumption. For each food item several pieces of data were requested such as food category (coffee/tea, bread and pasta, vegetables, etc.), source for food miles (United Natural Foods, Inc. or UNFI, Tri-communities, Grown at DR), type of production (certified organic, not certified organic, non organic, etc.), and packaging (bulk, individual pre-packaged, etc.). Frequency and type of meat consumption (concentrated animal feeding operation or CAFO, local, wild caught, etc.) were also studied. This was a cumbersome and confusing process for participants. I did not understand enough about foodways at Dancing Rabbit to come up with a more effective system upon arrival. With many meals cooked from scratch by other people in the co-op, participants had difficulty filling in logs accurately and categorizing food appropriately. Many people did not complete the log, and of those who did, the data was not consistent enough to be reliable. I have not yet been able to extract any useful data from these logs.

However, through participant observation and participatory action research, I did eventually learn a lot about foodways at Dancing Rabbit throughout my stay. As mentioned, most people are members of food co-ops, where costs and chores are shared. Most of these co-ops order bulk dry goods, oil, vinegar, and other products through UNFI (United Natural Foods, Inc.) and supplement from the community 'Grocery Store,' an army tent with bulk dry goods managed and housed by a community member. Co-ops and individuals often supplement with food from stores in neighboring towns as well, frequently from Zimmerman's, a locally owned and operated Mennonite retail food store three miles away in Rutledge, or HyVee (a regional chain grocery store) in one of the bigger towns nearby. Zimmerman's carries many products used within the tri-communities; specifically carrying organic, biodegradable body care products friendly to the greywater system, essential oils, and natural remedies. Community members often go to Zimmerman's for coffee in the morning or a home-style cooked lunch (they serve burgers, vegan burgers, a daily special often consisting of a casserole, soup or corned beef, and other options). The prepared food is likely not organic, local or sustainable but I do not have factual evidence of this, just my observations.

Co-ops vary in regards to eating preferences, some omnivores, vegetarians, vegans, and others, like the co-op I participated in, are more rigorous—eating vegan, local, seasonal, organic, and sometimes gluten and sugar-free to accommodate members and guests' diets. Much time and attention goes into preserving food for the winter for some co-ops, a testament to the amount of thought and preparation that goes into every aspect of life at Dancing Rabbit. The survey included a question about dietary choice, with examples of vegan, vegetarian, omnivorous, raw, organic, local, etc. and a blank to fill in other choices. Out of 26 surveys

(some of these categories could of course overlap) reported choices are as follows: 42% omnivorous, 27% vegan, and 23% vegetarian; 42% local, 35% organic, and 4% Paleo.

Figure 15. Winter food stock. Photo by: Dancing Rabbit Ecovillage.

After the week in preview meeting each week, a farmers market is held outside the common house where members of Dancing Rabbit and other local communities come to sell their produce, kombucha tea, tinctures, salsas, homemade soaps and other local products. Many community members supplement their diet with food from their own gardens or other gardens and farms. One community member works with UNFI to provide the 'Common House Market,' organizing, billing, and distributing bulk organic produce orders for the community. One family produces goat milk and eggs for their own consumption and many members get milk from the local raw organic dairy three miles down the road. At least one person makes

cheese from the milk for sale at the community farmers' market. This same cheese is used on the Mercantile's pizzas. Eggs are available from many sources; a small amount of eggs are produced on-farm at Dancing Rabbit and some are also produced at neighboring Red Earth Farms. Other local farmers sell eggs to the Mercantile who in turn makes them available for purchase by other community members. A few members at Dancing Rabbit intend to increase their egg production in the coming years to help support themselves and provide eggs within the community. The market for eggs at Dancing Rabbit is seemingly endless.

Due to the challenges incurred during data collection, lack of data provided, and inconsistency of data, the indicators for food are not fully assessed pending implementation of better data collection methods. The data collected is also a small snapshot of one season of consumption. Consumption varies drastically seasonally at Dancing Rabbit. We learned what not to do in this case and gathered some data which could possibly be used later but I it is not accurate enough to make any claims at this point. Though data collection means that indicator values are not reliable, the process of indicator measurement and meaning are explained below as best they can be at this stage of development.

3.2.7.1 Food Miles

Food miles measures how far food travels from production (the farm) to Dancing Rabbit tables. The goal is to measure how much food is grown on-site, how much is grown in the tri-communities (within three miles including the local dairy), how much is purchased from the local foodshed (under 100 miles), and how much is purchased from retail food stores or shipped in from UNFI (more than 100 miles). Retail food store goods likely travel long distances

prior to arriving on supermarket shelves; all retail food store purchases and all food shipped in from UNFI will be categorized in the 100 mile plus category and assumed at a 1,400 mile average; 1,300 for processed food and 1,500 for produce (Hill, 2008). Food that is produced within the local foodshed, or within 100 miles of Dancing Rabbit will be considered local food.

3.2.7.2 Organic Food Consumption

This indicator is set up to measure the amount of organic versus non-organic food consumed at Dancing Rabbit. I use this information to determine frequency of organic versus non-organic food consumption and assess impact of food choices in the community. There are choices in the log form for “certified organic” and “not certified organic,” since many growers in the area are considered "no spray" because they do not have enough money to complete the governmental certification process in order to officially label their produce organic.

3.2.7.3 Processed Food

Processed food is a measure of the mount of non-processed, raw food versus processed and packaged foods consumed at Dancing Rabbit. Within the log is a section for food process level where options are to select from: Homemade/Home Processed, e.g. things which are not raw but pickled, canned, dried, preserved, etc. themselves; Pre-packaged (individual/ready to eat); Pre-packaged (bulk), e.g. bulk beans, grains, etc., e.g. canned soup, candy bars, beer, sodas, etc.; Pre-Packaged (multi-serve/family size); Wild Harvested; Whole Foods (raw/unprocessed), e.g. farm or garden to table with no processing or manufacturer packaging, etc.; Restaurant Prepared; N/A; Don't know; and Other (please specify). Homemade, wild

harvested, and whole foods will be considered non-processed food, and all others will be considered processed food. The home processed category was added because participants were confused regarding what constituted processed food. Participants process much of their own food into pickles, salsa and the like (which is not raw but not processed in a facility either), so this category became necessary.

The information gathered for this indicator in the future will be used to determine frequency of processed versus non-processed food consumption and to look at the carbon footprint of food consumption at DR.

3.2.7.4 Meat Consumption

This measure is treated as a subtheme of food consumption. The individual indicators within this sub theme are frequency, amount, and type of meat consumption at Dancing Rabbit. All of these factors separately affect the impact of food choices within the community given that CAFO meat has a much larger impact than local wild caught game; once a week meat consumption has a different affect than once a day meat consumption; organic meat has a different impact from meat pumped full of antibiotics, etc. Food consumption logs include choices for meat consumption, types of meat—including CAFO, grain fed, pasture fed, or wild game. The categories for organic and non-organic still apply. Each of these indicators will be evaluated separately to help assess the carbon footprint of food choices at Dancing Rabbit.

Meat is consumed at Dancing Rabbit from a variety of sources. Meat raised on-farm at Dancing Rabbit consists mostly of chicken and duck, other sources include road kill, and wild

caught rabbits, raccoons and other game. Occasionally members cooperatively buy a whole pig or part of a cow from a local organic farm and split it among themselves.

3.2.7.5 Suggestions for Improvement

I suggest that Dancing Rabbit residents track and gather purchasing records from individuals and food co-ops to get an accurate picture of food purchases to assess food miles more appropriately. Self-reported data has its flaws and could be less accurate than purchasing records. If the food consumption logs are used again, they should be modified to better fit available food options in the community and include a category for junk food. Another source of information could be in-person interviews focusing solely on food to assess community values, feelings and choices regarding food consumption. It could also provide useful to have food producers at Dancing Rabbit log all food produced and sold within the community, to get a more accurate picture of food production at Dancing Rabbit. One community member (who was very excited about this study) recommended asking how much people spend on food per month because it has been a hot topic in the community for a while. Some people on food stamps have a hard time affording co-op prices and also could not find a way to pay co-ops with food stamps. This information could be valuable for the community to valuate economic access to food within the community and also valuable to this study as an example of how Dancing Rabbit keeps cost-of-living low and what portion of members income is spent on food. However, I do not see its value in assessing carbon footprint or environmental impact of food choices as the suggested indicators do. This section of indicator development needs individual

attention to find effective data collection methods and analysis techniques. This could easily become a project, or a few projects, within itself.

3.2.7.6 Connections to Other Themes

The food consumption indicator theme links to various other indicator themes, including quality of life, solid waste and recycling, energy consumption, transportation, and water. Food is linked to quality of life because food consumption affects personal and environmental health and enhances one's wellbeing. Food consumption is also directly linked to solid waste and recycling given that less packaging and processed food will result in less waste produced. Food also links to energy consumption, both for cooking and for energy required in production and packaging of processed food. Additionally, transportation is linked given that a significant amount of food comes from outside the community and most dry goods are shipped in from UNFI. Water consumption is required to produce food on-site, assessing food produced at Dancing Rabbit will give some insight into water use in the community. Further, water is used to cook and clean up after cooking as well, all factors which link food consumption with water consumption.

CHAPTER 4

ECOVILLAGES AND THE TRANSFORMATION OF VALUES

4.1 Reflections on the Research Process

The methods used in research design and implementation at Dancing Rabbit proved to be effective in facilitating a participatory process to create an indicator list for the community. The seven step Systemic Sustainability Analysis (SSA) process I designed, through the combination of the Imagine (Bell and Morse, 2008) and MESMIS (López-Ridaura et al., 2002) frameworks, frame the project served to guide me appropriately through indicator design and development. The resulting indicator list is easy to understand, implementable, relevant to the community's worldview and values, as well as comparable to other local level indexes found in the literature. Additionally, participatory action research (PAR), through its reflexive process of inquiry between researcher and client, proved to be the most valuable anthropological method used throughout this project.

PAR facilitated a relationship with and deep understanding of the community. Many times during the indicator development process I was challenged on an indicator or measurement suggestion because someone in the community felt it would not work given their circumstances. In the end, this saved me a lot of time and led to the creation of much more relative and effective indicators than I could have produced on my own. The main difficulty presented by this methodology was that I was constantly challenged to rethink my ideas. This is one of the benefits of the PAR methodology. "In PAR the researcher is constantly challenged by events and by ideas, information, and arguments posed by the project participants" (Whyte et al., 1989, p. 537). This has proved true in this project every step of the way.

The indicator report developed for Dancing Rabbit will not only serve as a self-evaluation tool for the community, but also as a tool for outreach and education, aiding the community in mission fulfillment. Indicator results can be used to demonstrate the effectiveness of lifestyle choices at Dancing Rabbit in reducing their impact on the environment in the face of global warming and climate change. This data can be effective in presentations to visitors and guests in the community, presentations to the public, and even in an attempt to influence policy makers, etc. Although I am very satisfied with the research process and results, there are definitely areas where improvements could be made as discussed in the next section.

4.2 Suggestions

4.2.1 Expand Research into Additional Tabled Indicator Theme Areas

Suggestions for expanding or improving the current indicator list are identified in the previous sections. Moreover, I suggest that the community give attention to creating more effective processes of internal data collection with regards to population and division of business from residential use and number of patrons for both the common house and Milkweed Mercantile. As suggested in Chapter 1, it will be beneficial for Dancing Rabbit to expand this indicator list, and categorize indicators into overarching categories of economic, ecological, and social dimensions. Fully developing these three sections of indicators would give a more complete picture of sustainability. Further, I suggest expanding the indicator list to include the three tabled indicator themes which are consumer goods, building structures, and toxicity. Much exploration is needed to find additional measures and feasible data collection methods. Expansion suggestions for these three indicator theme areas are identified below.

4.2.1.1 Consumer Goods

The consumer goods could be measured through consumer goods expenditures. This theme does not directly relate to one of Dancing Rabbit's covenants, but one of the Sustainability Guidelines is, to "try and understand and minimize its negative impact on global ecological systems" (Dancing Rabbit, 2014, Ecological Covenants). Overconsumption due to globalization has largely led to the overproduction of waste and greenhouse gases as a result of production and transportation of consumer products. Greenhouse gases are a huge contributor to climate change and global warming. Agenda 21 calls for a change in consumption patterns in order to reduce unnecessary waste (United Nations Sustainable Development, 1992). Consumption patterns at Dancing Rabbit are markedly different from mainstream US patterns. Community norms encourage less consumption of personal grooming products, new clothing, appliances, and other consumer goods. It would be interesting to research how these patterns affect environmental impact.

Consumer goods expenditures should include all purchased consumer products such as household items, personal care products, clothing, and electronics. This can be measured in yearly spending on consumer goods products per capita. Members could log details of consumer goods purchases for a specified period of time to get accurate data. This can be compared to the US average per capita expenditures on consumer goods. While looking for useful data on consumer goods expenditures in the US Department of Labor, Bureau of Labor Statistics, I found data from the Consumer Expenditures Survey (CES). Additionally, the community would have to determine whether or not used goods count differently than new goods, those shipped from far away count differently than local, whether fair trade counts

differently than sweatshop materials, whether toxic products count differently than non toxic, etc. None of the local indexes reviewed in preparation for this project included any similar indicators to have comparable examples. Despite this lack of attention in the sustainability literature, trying to pursue consumer goods as a future comparative theme was mentioned by Dancing Rabbit members as an area of interest.

Consumer goods consumption links with the solid waste and recycling theme. A large amount of waste production is due to overconsumption and purchasing of processed and packaged goods. Reducing consumption of these products will reduce the amount of waste produced within the community. Consumer goods consumption also relates to perceived quality of life. Perceived quality of life is a largely subjective measure, and mainstream US culture links it directly to consumer goods purchases and material wealth.

4.2.1.2 Building Structures

During the initial indicator development phase, I suggested the indicators of building materials and energy efficiency for this theme. The building structures theme relates to Dancing Rabbit's ecological covenant number five, "no lumber harvested outside of the bioregion, except reused and reclaimed lumber, shall be used for construction at Dancing Rabbit" (Dancing Rabbit, 2014, Ecological Covenants). Renewable, local, and recycled materials decrease the costs of building and living and can usually be self-constructed and repaired. These materials are also derived from sustainable sources and do not use unnecessary energy to transport building materials across the country or around the globe. Overharvesting wood from non-renewable resources is destructive to the environment and contributes to the

problem of deforestation. Deforestation is an important factor in climate change and global warming and general environmental degradation.

The building materials indicator should assess all materials used for construction at Dancing Rabbit. All materials should come from recycled or renewable sources per Dancing Rabbit Ecological Covenant #5. Renewable or recycled materials can be calculated as a percentage by weight of total building materials used. Data exists within the community, to some extent, especially concerning common buildings. However, several buildings were built by people no longer living in the community so existing buildings may be difficult to assess. Members could be asked to log information on all new buildings to begin assessment of this indicator going forward. Toxicity of materials could also be considered as another factor in environmental impact and personal health. Building materials is a topic up for discussion in the community and clarification will need to take into account differing views of sustainability.

Energy efficient building techniques—such as living roofs or passive solar design—need to be considered by such an assessment. The process of actually assessing energy efficiency requires scientific expertise and specialized equipment. This is going to take significant time, research and collaboration with appropriate experts to get a true assessment of building performance. However, measuring the amount of fuel used for heating and cooling (e.g. firewood) could be measured in an attempt to get a general idea of energy efficiency of buildings. A few members are already collecting this data.

Energy efficiency of building construction could be considered within the energy consumption theme as a factor in reduced consumption of fuels for heating and cooling. This theme is also linked to quality of life, since recyclable and local, renewable sources reduce the

cost of construction and overall cost-of-living as most repairs can be completed by residents. Energy-efficient building techniques also reduce the amount spent on utilities, which aids in lower cost-of-living. Residents constructing their own houses can also be an empowering experience, which enhances perceived quality of life.

4.2.1.3 Toxicity

Toxicity (including building materials toxicity and product toxicity) was brought up by Dancing Rabbit as an additional priority theme on top of the ten originally identified. This is the least developed of my indicator theme suggestions; however, toxicity is important to measure because toxic building materials and products cause both environmental pollution and individual health problems. Toxicity is also important because toxic personal care products can disrupt the greywater system; although I rarely saw such products used at Dancing Rabbit and when they were it was mainly by visitors or guests. Other local level indexes, such as Sustainable Seattle's Indicators of Sustainable Community 1998 (Palmer, 2004), include toxicity measures as well.

Building materials toxicity is the level of toxicity in all building materials used at Dancing Rabbit. Some data should already exist at Dancing Rabbit, or can be figured out, regarding materials used to build structures in the community. Such data may need to be explored going forward. Once materials and levels of toxicity are examined, it can be determined what percentage of building materials at Dancing Rabbit are considered toxic by their standards. It is important to note that Dancing Rabbit uses a substantial amount of recycled materials to build their structures. Toxicity of these materials may not be known and companies are not typically

keen on revealing this type of information about their products. We can use an average toxicity level for the various recycled materials if that data can be obtained. I did not find substantial extant data regarding building materials toxicity in the US.

Product toxicity also includes chemicals in hygiene or personal care products such as soap, shampoo, lotion, conditioner, and cleaning products. This indicator would measure the level of toxicity within some of the most commonly used hygiene and personal care products at Dancing Rabbit. Toxicity can be calculated as the level of toxicity within the most commonly used personal care products at Dancing Rabbit. The community would have to decide what is considered toxic and what level is acceptable by their standards. Toxicity could be assessed by taking an inventory or survey of products used by residents and then searching for those products within the Environmental Working Groups, Skin Deep (2014) cosmetics toxicity database to determine the level of toxicity of the most commonly used products.

The product toxicity indicator links to several others, including water consumption since toxins pollute the water system which degrades ecological and personal health, and can cause major problems with the greywater system. Toxins in personal care products can directly pollute one's body as well. This also links to QOL because a toxic environment will decrease well-being and QOL accordingly.

Potentially the most difficult and tedious indicator theme to assess, product toxicity was extremely important to and suggested by a community member who wanted to manage this portion of the research but has since left Dancing Rabbit. Someone with comparable interests and dedication to investigating toxicity would be an asset to this part of indicator development if Dancing Rabbit wants to assess this going forward. Toxicity of building materials, household

products, and personal care products are the three areas discussed in initial conversations about this theme. My observation is that these products are not frequently used in comparison to mainstream US society, and products that are used at Dancing Rabbit are almost always organic or environmentally friendly. It could prove interesting to look into the environmental impact, or reduction of impact, due to such alternative product choices.

4.2.2 Indicator Report

Once the list of indicators is fully developed and implemented at Dancing Rabbit the results can demonstrated in a final summary report complete with visual representations (similar to the style of reports exhibited by City of Hamilton (McCabe, 2008) and Sustainable Seattle (Palmer, 2004)) both for internal and outreach and education purposes. Each indicator should have a description sheet complete with indicator definition/description, rationale or justification for use of that indicator, value of the indicator, target, linkages, current trend information, a representative visual, challenges, assumptions, limitations, data sources and collection methods, literature resources, additional comments, and possibly recommendations for further assessment. A visual, such as the AMOEBA diagram mentioned in Chapter 1, would be useful as a simple representation of each indicator's status. S. K. McMahon (2002) illustrates the use of a traffic light indicator, which is a simple, quick and concise way to visually display the current status or trend of an indicator within the community. This traffic light visual uses a green happy face, a yellow neutral face, or a red sad face, moving up or down a staircase to represent the current state of each indicator and can also be used as a public display next to trash receptacles or within the individual indicator reports. For each indicator the community

will have to decide the cut-off values for green, yellow, and red, if they want to use such a visual. Green could be target level of performance, yellow within a certain percentage of target level, and red could be within a certain percentage away from target level, indicating substandard performance and that serious reevaluation is needed.

4.2.3 Carbon Footprint

Carbon footprinting can be an extremely useful tool to examine environmental impact. Although calculating a precise carbon footprint for the community as a whole is virtually impossible, carbon footprint of particular elements could be extremely useful to monitor progress and assess the impact of various indicators, such as carbon footprint of food, carbon footprint of travel, carbon footprint of energy consumption, etc. It could prove exceedingly interesting to coordinate carbon footprint with the indicator report, or include within the report, once it is fully developed to demonstrate the community's impact.

As Lockyer notes in his chapter on low carbon communities, "a small number of studies suggest that [intentional communities] have found effective ways to take positive climate change action" (2010a, p. 198). These communities are reducing carbon footprint through economic localization—including local and organic food systems, alternative local currency systems, using locally derived and produced consumer goods and products to whatever extent possible, and aligning themselves with the bioregional movement. Many ecovillages, like Dancing Rabbit, also employ renewable and alternative energy, energy efficient housing and building design, and reduced overall consumption by sharing resources. (Lockyer, 2010a).

4.3 Personal Experience

4.3.1 Transition to Dancing Rabbit

Free, friendly, open, accepting—all these elements became apparent upon walking into Dancing Rabbit. Two residents sitting on the hammock swings leading to the footpath into the village greeted me warmly as I walked up and lead me to the EARL or Eco-Audit Research Liaison (Eco-Audit is the term used internally for this study at Dancing Rabbit), who would help integrate me into the community and understand its norms. The EARL took me on a brief tour of the village to get acquainted. Walking into the common house, the smell of food and natural body odor filled the air, while the sound of chatter, moving chairs and children laughing filled my ears. "People wear whatever they want, showers, deodorant, personal grooming and clothing are definitely optional to an extent," reads one of the first notes in my field journal. I have never been interested in fashion, extreme makeup, or other cosmetic aspects of popular culture but a shower, a little mascara, and several sprays of sweet smelling perfume were definitely part of my daily routine. Unfortunately, the corporate job I had for most of my twenties required that I look 'professionally groomed' so I did not feel that I could get away with wearing absolutely no makeup or at least grooming my hair to some extent.

Despite the differences in initial personal grooming routines, I quickly felt I had finally found 'my people' at Dancing Rabbit. Soon enough I adapted to community norms and found an acceptance for my natural self I had been not sure was possible. Sure, I always loved who I was personally, internally, but outwardly? I do not have a super model figure or conform to the beauty standards set in popular media and therefore struggled with unhealthy body image issues off and on over the years. I never hated myself, but I never truly loved myself or even

knew what that meant. On the path to self-awareness, self-acceptance, self-love and spirituality already, my personal growth experience during my time at Dancing Rabbit was tremendously accelerated.

More of a jeans and t-shirt or hippie sun dress kind of girl, I have always hated going to swimming pools or anywhere I was expected to wear minimal clothing. Needless to say, going to the pond at Dancing Rabbit, where swimsuits are not even the norm did not come easily for me. Once I made my first trip to the water, I was hooked. Not only insanely refreshing in the muggy Missouri heat, it was an experience of self-acceptance and freedom I never imagined. A neighbor at Red Earth wrote an article in communities magazine about body image in the tri-communities and explained in a email describing her article "how awesome it is that we routinely see naked bodies of all shapes and sizes in a non-sexual setting when we're 'down at the pond'" (personal communication, 2013). A good dose of healthy body image, without mainstream sexualization of every ounce of nudity and unrealistic expectations of women's bodies in particular, was one of the most transformational experiences of my life.

Initially, the sound of birds in my window at 5am each morning was torturous. Before long, waking up to the sound of birds, work equipment, communitarian chatter, and children playing was a morning delight. Walking outside, or even outside of my room, guaranteed interaction with people generally happy to see me, complete with greetings and hugs. Everyone is generally genuine and nice, open and nonjudgmental, and seemingly happy. I have not encountered this in my experience in mainstream US culture. I have never seen a group of people interact in a way so open, honest, real and raw with one another. Even in heated political situations, I witnessed people on opposing sides of an issue start out a dinner

conversation upset with each other, discuss the situation and their opposing perspectives, admit their own fault in the situation, ask how they could help bridge the gap, and end with a long sincere hug. To be in a culture so genuine and caring created a level of peacefulness I had never experienced. A level of freedom to be myself—exactly who I am, no holding back, no need to put on a professional face, just be myself and everyone wants nothing from me but exactly that—was amazing. Dancing Rabbit didn't change my worldview, but solidified it.

4.3.2 Culture Shock - Back to the Mainstream

The first time I returned home from Dancing Rabbit, I absolutely loathed it. Reverse culture shock was much harder to deal with than adjusting into the community. I felt judged and criticized for my natural appearance and lack of concern for 'fashionable' clothing, misunderstood, like I did not fit in. I longed to go back to Dancing Rabbit as fast as I could. Walking back into a culture that does not necessarily believe in climate change, where cars are everywhere and roadways are congested with generally angry and aggressive people, where a lack of concern for others is consistently displayed, and unnecessarily lavish displays of wealth and body obsession are the norm was incredibly disheartening. Negativity reigned on the news and out of the mouths of most people I encountered daily and I was suddenly much more aware of and sensitive to it.

It is rare that I encounter people who truly understand the value of anthropology, climate science, or sustainability and the major changes needed in our society. People deny climate change but not on any empirical basis; solely based on a belief (often religious) with no evidence of fact or any desire to do research to find out the facts. Upon my return, I

encountered an unexpected amount of difficulty in relating to my family and friends (and vice versa). I was told that some think I am brainwashed, too critical of society, or just plain crazy. Realizing that the people I thought knew me best may not understand me at all was hard to swallow. This was easily the most difficult aspect of going home after the research process.

I lacked intellectual stimulation on a daily basis and immediate free access to nature. Heightened awareness of society's problems began again on a daily basis; I just wanted out. It was not until I went back to Dancing Rabbit for a few more months, and then returned to Texas again, that my perspective changed and it became less difficult to transition between the two. I think the process got easier largely due to just getting used to it and knowing what to expect. I know I am going to get back home to be slapped in the face with materialist consumer culture, negativity, judgment, etc. so I mentally prepare for it. However, I still question my desire to be a part of mainstream culture on a daily, sometimes hourly, basis. Yet, I feel the need to be in mainstream society, trying to create positive change, at the same time. So, here I am, living in Dallas, Texas.

4.3.3 Transformative Value

To say the least, my time at Dancing Rabbit transformed me fundamentally; both my relationship with myself and the world around me. I developed friendships, connections, and knowledge that will continue to inspire my life for years to come. Learning something new almost every day from the wealth of knowledge that is the Dancing Rabbit community was personally enriching, rewarding, and intellectually stimulating. I learned many ways of modifying my lifestyle to live more sustainably, how to communicate nonviolently, how to

really love and take care of myself, and how to accept others exactly as they are—even those who deny the existence of the global socio-environmental crisis situation that I am devoting my life to changing. I also learned more about myself than I could have ever imagined. I am more conscientious of every decision I make and the ripple effect that follows. The personal growth I experienced while in the community was invigorating, life changing, and I am most certainly a better person for it.

This type of personal transformation is a valuable aspect of ecovillages (Dawson, 2010) and central to Dancing Rabbit's mission of outreach, education, and to live "ecologically sustainable and socially rewarding lives, and to share the skills and ideas behind that lifestyle," (Dancing Rabbit, 2014, Homepage). Visitors, wexers, interns, and other guests often have similar transformational experiences during their time at Dancing Rabbit. In turn, they carry this knowledge and perspective with them back into the real world and often continue spreading the message.

4.3.4 Anthropological Value

Required coursework for the MA of Applied Anthropology degree facilitated the development of a framework for the project and prepared me for qualitative and quantitative data collection and analysis—including research design and ethnographic interviewing methods. Additionally, the independent study course I co-designed, along with Dr. Sarah Fredericks, guided me through the review of relevant literature on ecovillages and sustainability indicators. This course provided me with ample theoretical background in the realm of sustainability and examples to help me design the project and use for comparison. Through

this course and discussions with Dr. Fredericks, I established the appropriate background knowledge of issues surrounding the development of sustainability indicators and indices, bottom-up participation models, and SSA.

Anthropology taught me the importance of community participation in all stages of a project in order to ensure buy in, cultural relativity, and community empowerment. Understanding the context, and community background/worldview, aided in the development of a list of indicators that is useful and relative to the values of Dancing Rabbit Ecovillage. My training in anthropology also helped in facilitating rapid assimilation into and gaining trust from the community. Participant observation and participatory research played important roles in all aspects of project development and implementation and allowed me to delve deeply into community life and dynamics. However, additional time living in the community before implementing the project could have allowed for development of more successful indicator measurement methods in areas such as food consumption and long distance travel. Two weeks in the community before starting research did not allow enough time for me to fully understand how the community operates in these areas in order to develop more useful measurement techniques.

Training in qualitative and quantitative methods also facilitated data collection and analysis. Survey and interview documents were developed and implemented using skills learned throughout my graduate anthropology career. Knowledge of programs such as SPSS and ATLAS.ti assisted in compiling and analyzing survey and interview data. Anthropology, environmental anthropology in particular, is extremely useful in projects when studying interactions between people and their environment and the effects one has on the other.

Furthermore, anthropology is especially useful when trying to bridge the gap between cultures such as that of Dancing Rabbit and mainstream American culture, facilitating understanding of one another and demonstrating the value in and similarity between both worldviews.

4.4 Ecovillages and Anthropology: A Symbiotic Relationship

> *If we must know more in order to live in a changed world, if we must know more so we can act with clear reason rather than with prejudice, with humanity rather than with inhumanity, with wisdom rather than with folly, all of us must undertake the task of understanding in order to learn and of learning in order to understand.*
>
> Wolf

Anthropologists have the capacity to be instrumental in studies such as the one performed at Dancing Rabbit, which have the potential to be transformative in our society. This study serves as confirmation of many the claims made in literature surrounding the value of ecovillages. In line with all four of Dawson's (2010) claims of transformational value, the Dancing Rabbit study demonstrates that well-being and economic growth are not inextricably linked. Members' well-being at Dancing Rabbit is demonstrated to be equivalent to that of mainstream communities while living on a fraction of the financial and natural resources. Further, this study demonstrates that ecovillages can connect people with the place they live. Dancing Rabbit members show deep connection to and appreciation for the land they live on, many noting this as a positive factor in their quality of life. Members make many attempt to reduce negative impact on the ecosystem around them. In addition, Dancing Rabbit offers a 'holistic and experiential educational ethic' (Dawson, 2010) as has been demonstrated

throughout this thesis, especially in relation to my own personal experience. This is a powerful message to take to the wider culture.

We are at a critical moment in human history. Drastic changes are needed in human behavior in order to mitigate the impact of global warming and climate change. Ecovillages provide valuable examples of alternative political ecologies as discussed by Burke and Arjona (2013). Anthropological understanding of the strategies used in the creation of ecovillages and sustainable culture and the types of shifts in values that are necessary in order to bring the wider culture into a position to live out these alternatives as (Burke and Arjona, 2013) can prove to be invaluable in this societal shift. Ecovillages are in a constant process of self-evaluation and self-actualization, striving to be responsible global ecological citizens. Illustrating that 'sustainable is possible', as the title of a TEDx talk by Dancing Rabbit member Ma'kwe Ludwig explains. From ecovillages we can learn how to reduce our impact on the environment, unlearn mainstream norms of competition and individualism, and live communally (Burke and Arjona, 2013). "Through these communities they are trying to create a future of greater harmony, peace, and sustainability in a country—and world—in need" (Burke and Arjona, 2013, p. 365).

This is exactly the kind of shift needed in western society. "If anthropology is to maintain a valuable identity and gain recognition in the twenty-first century, it must do things beyond analyze and critique – it must accomplish things, which I understand to mean produce useful knowledge and results" (Fiske, in Wasson 2012, p. 165). My hope is that my research produces useful knowledge and results and also allows us to explore the effectiveness of ecovillages in creating societal change. Dancing Rabbit is not an ecotopia, but it is a novel

community of generally happy people living on roughly 10% of the resources of the average American, actively working to change the world in the best way they know how, and that is in itself is an accomplishment.

Further plans for research seek to enhance the knowledge gained through the Dancing Rabbit project through visits to ecovillages throughout the world to create a global 'Transformative Knowledge Network'. The principal investigator for future research recently applied for a grant from the International Social Science Council in an attempt to gain funding to visit various other ecovillages throughout the world. The ultimate goal is to design a "methodology for assessing progress toward sustainability that is flexible enough to be applied in a diverse array of ecotopian contexts" (Lockyer, 2014, Personal Communication, ISSC Grant Proposal). Dancing Rabbit is a North American model of sustainability adapted to its local environmental and social context; researching ecovillages in other countries, surrounded by different social and political situations will give further insight into community building strategies and sustainable lifeways across various socioeconomic contexts. This research will provide us with knowledge to help conceptualize how to construct more sustainable societies within various social and environmental contexts.

Through academic research such as that conducted at Dancing Rabbit and future research plans, anthropologists can help disseminate the knowledge gained through ecovillage experiments throughout academia where this type of research has been up to this point largely overlooked. Demonstrating the effectiveness in creating sustainable lifeways through this type of academic evaluation can draw attention to these communities by wider society and policy makers alike and help further their mission of outreach and education. This symbiotic

relationship demonstrates both the value of ecovillages within the discipline of environmental anthropology and environmental anthropological research in societal and communal studies; putting environmental anthropology at the forefront of current issues and demonstrating the disciplines effectiveness in assess human-environmental relations (human-climate relations).

4.5 Conclusions

My original hypothesis that Dancing Rabbit significantly reduces resource consumption and negative environmental impact compared to average US communities while maintaining community member's quality of life, equal to or exceeding average US communities, proved true. Research results demonstrate that the community is moving toward ecological goals, in line with the ecological covenants and sustainability guidelines. This study demonstrated that Dancing Rabbit is creating a more sustainable culture within their community.

Indexes can be adapted to fit virtually any situation—ecovillages, cities, neighborhoods and businesses alike. Through constant development, assessment, review and reporting of indicator or index results, we can continue to educate society regarding methods of creating more sustainable lifestyles and hopefully reduce the human impact on climate change. The possibility for influence on the world continually increases with more assessments of sustainability within communities providing evidence of their success. The index developed for Dancing Rabbit, if shown to successfully monitor progress, could contribute to this possible influence and the continual growth of ecovillages and sustainability research as discussed in the previous section.

As demonstrated in the debate between Trainer and Fotopoulos (2000, 2002), there are many ways to work towards a sustainable future and significant debate surrounds the influence of ecovillages within this process. Ecovillages are an effective way (not the *only* way) to experiment with many of these sustainability ideals in one place. Whether it is an ecovillage creating completely new ways of living, a big city aiming to reduce negative environmental impact and trying to ensure high quality of life for future residents, or a corporation working to reduce their negative environmental impact through more sustainable business practices, any improvement is movement in the right direction. Sustainability assessment tools, such as the list of indicators in-progress at Dancing Rabbit, are fundamental to monitoring progress and motivating individuals to improve their lifestyles and environmental impacts through a process of constant self-evaluation and improvement of practices.

If societal values are to change, we must provide viable alternative sustainable living models such as those demonstrated within the tri-communities. In an article about folk remedies in Mexico, Trotter states that, "it is difficult or impossible to get people to stop using a product for which there is a felt need, regardless of the known potential for harm for that product, unless one provides an acceptable alternative" (1987, p. 148). Trotter's observation is true for sustainable lifestyle change as well; ecovillages are living experiments in more socially and ecologically just culture, demonstrating viable alternatives to mainstream consumption patterns and demonstrating that lack of material wealth and luxury items does not equate to unhappiness, lack of fulfillment, or diminished quality of life. We can continue to learn new ways of reducing consumption and implementing sustainable practices in our everyday lives

through these experimental radical communities for years to come. David Holmgren (co-creator of the permaculture concept) explains,

> …part of the problem in the current psychology that prevails in our [Western] culture is that we are separate from Nature and not constrained by its limits. Clearly, energy peak and descent will smash once and for all that mistaken view. What is also necessary is to realize that we are not some contradiction of Nature, a destroyer of it, but that we have a place in Nature, and can reclaim that place. (Holmgren as quoted in Gaia Education, 2012)

Second generation ecovillagers—children raised in nature, with attention to environmental values systems, and sustainability, have the ability to carry forward these ideals. Living sustainable lives—whether they continue to reside in ecovillages or move into mainstream lifestyles—ecovillage children will carry important knowledge bases with them wherever they go. If we want to change the world and our societal values system long term we must educate the children. The drastic effects of climate change and global warming likely will not be felt until after our generation is gone. Children of today are our future, our chance to reclaim our place within nature and preserve our relationship with it and life as we know it. Children who grow up in ecovillage experiments as well as visitors who leave with a transformed perspective and expanded knowledge of sustainable community will continually disseminate this knowledge outward. This is one way the existence of ecovillages will continue to fulfill their mission of education and outreach in the world for years to come.

Some may contend we will eventually "know all there is to know about sustainability and how to get it," but as Bell and Morse (2008, p. 200) counter, this notion is impossible. To think anyone will ever know all there is to know, especially regarding something as subjective as sustainability, is foolish. The earth and all of its elements are continually changing and evolving, therefore, we are inherently constantly learning. As Bell and Morse relay, "the only human

being that ceases to learn is a dead human being" (2008, p. 204). The sustainability concept will continue to change across communities, institutions and environments throughout the world. Sustainability is a largely reflexive process and each scenario will encompass different elements than the one before it. Attempts to codify sustainability into one single interpretation can lead to the fallacy of misplaced correctness (Daly and Cobb, 1989).

What is needed, Bell and Morse argue, is global culture change and a move toward a view of sustainability encompassing: "an appreciation that 'different' does not mean 'wrong'; a recognition that variety is the basis for sustainability; and an understanding that time spent understanding other people's viewpoints is time saved later when the project starts" (2008, p. 201). Open-mindedness and tolerance are virtues lacking in the world in general, largely evident in religious extremism that leads to terrorism across the globe. Clearly, global paradigm shift is necessary in more than just the technical sustainability arena. Dancing Rabbit exemplifies a culture of valuing diversity and understanding that 'right' and 'wrong' are subjective and culturally relevant viewpoints.

As evidenced in Lindegger's (2003) article on Crystal Waters Ecovillage in Australia, ecovillages have tremendous potential to reduce ecological footprint and continue to meet more and more of their resident's needs. For example, Lindegger explains, Crystal Waters is "proof that human waste can be processed safely and effectively, and used to support agricultural production" (2003, p. 31). The possibility for influence on the world continually increases with additional endeavors and scholarly assessments of sustainability within these communities; although limited by the dominant unsustainable culture within which they exist and relatively small number of members among other considerations. Regardless, "ecovillages

are not places to hide away. We are very much part of a changing world. We may even be able to have some very modest influence about how this world of ours will develop. Now, that would be just about revolutionary" (Lindegger, 2003, P. 32).

APPENDIX A

SURVEY INSTRUMENT

Survey

Title of Study: Toward Sustainable Community: Assessing Progress at Dancing Rabbit Ecovillage

Student Investigator:

Kayla "Brooke" Jones, Master's Candidate

University of North Texas

Department of Anthropology

Supervising Investigator:

James R. Veteto, PhD Faculty

University of North Texas

Department of Anthropology

Verify the person being interviewed was the person who completed the survey. If not, have them complete a survey. Verify the survey number and the interview number match. Be sure this number is also included on the informed consent form.

Please fill out the following survey to the best of your ability. You can leave any question unanswered that you do not feel comfortable with or are not able to answer. Please feel free to ask questions if there is confusion.

1) **Where do you live? (name of building, in a tent, etc.):**_____
2) **Food Coop or Kitchen:** _____
3) **Age:**_____
4) **Gender Identification (please circle one):** male female other
5) **Hometown & State:**_____
6) **Have you lived in an intentional community before DR? (please circle one)** Yes No
7) **How long have you lived/been a member at Dancing Rabbit?**_____
8) **Current Occupation or Occupations (if you have multiple jobs or income sources please list them—for example: part-time farmer, carpenter, logger, plumber, retired, odd jobs, any other source of income or financial support):**_____
   _____
9) **Highest Level of Education (for example: 6th grade, high school, associate's degree,**

bachelors degree, masters degree, PhD) and discipline if applicable:_____

_____

10) Religious or Spiritual Practice:_____

11) Ethnic Heritage:_____

12) Political Affiliation/Persuasion: _____

13) Approximate personal earned income for last year (please circle one):

a. less than $5,000 b. $5,000 - $10,000 c. $10,000 - $15,000
d.$15,000 – $20,000 e. $20,000 - $25,000 f. $25,000 - $30,000
g.$30,000 - $40,000 h. $40,000 – $50,000i. $50,000 - $60,000
j. $60,000 - $70,000 k. $70,000 - $80,000 l. $80,000 - $90,000
m. $90,000 – $100,000 n. more than $100,000

14) Approximate household earned income for last year if applicable (please circle one):

a. less than $5,000 b. $5,000 - $10,000 c. $10,000 - $15,000
d.$15,000 – $20,000 e. $20,000 - $25,000 f. $25,000 - $30,000
g. $30,000 - $40,000 h. $40,000 – $50,000i. $50,000 - $60,000
j. $60,000 - $70,000 k. $70,000 - $80,000 l. $80,000 - $90,000
m. $90,000 – $100,000 n. more than $100,000 o. Not applicable

15) Please describe any other forms of subsistence or financial support (inheritance, savings, trust fund, personal assets, net worth, other investments etc.):_____

_____

_____

16) What is your primary dietary choice? (vegan, vegetarian, omnivorous, raw, organic, local, etc.)

_____

_

17) Household makeup:

a. individual b. partner c. nuclear family c. multi-family d. Co-housing e. Other (Please describe):_____

_____

_____

18) Number of people in household/dwelling._____

MATERIAL CULTURE

19) Dwelling size in sq. ft._____

20) Building construction/Energy efficient building techniques & systems: ***Please circle all that apply.***

Foundation: gravel bag, frost protected shallow foundation, rubble trench, urbanite, slab on grade, concrete piers, wood piers, concrete stem wall, other

Insulation: straw bale, light clay straw, cotton insulation, wool, other natural material, rigid foam, blow in foam, blow in cellulose, fiberglass, other

Doors and Windows: single pane, double pane, triple pane, other

Materials: Roughly what percentage of materials in your building are:
New ____% Reclaimed _____ % I Don't Know ____%

Electricity: Solar, wind, BEDR, none, other

Home heating, cooling, ventilation, and humidity control: manufactured wood stove, rocket stove, other home built stove, electric heat, electric air conditioning, dehumidifier, Heat/Energy recovery ventilation, air source heat pump, ground source pump, air tight construction, greenhouse, passive solar design, earth contact floor, earth-bermed walls, other thermal mass, outdoor/screened social areas, other

Building Structure: stud frame, timber frame, load bearing straw, load bearing cob, earth bags, other

Other Natural Building Techniques: earthen floor, cob, earth bags, earth plaster, lime plaster, living roof, wattle and daub, other

Other:

_____
_____
_____
_____
_____
_____

21) **What purchases, besides food, do you make regularly? Please indicate category of product and approximate amount spent in the last year.** (Examples: personal care products, household products, electronics, clothing, shoes, books, tools, office supplies, pharmaceuticals/supplements, etc.)_____
_____
_____
_____
_____
_____
_____
_____

OTHER INFO.

22) **Are you willing to monitor or provide information on propane use, wood use, and/or rainwater catchment data?**_____

APPENDIX B

INTERVIEW INSTRUMENT

Quality Of Life Interview Guide

Title of Study: Toward Sustainable Community: Assessing Progress at Dancing Rabbit Ecovillage

Student Investigator:	Supervising Investigator:
Kayla "Brooke" Jones, Masters Candidate	James R. Veteto, PhD Faculty
University of North Texas	University of North Texas
Department of Anthropology	Department of Anthropology

Verify the person being interviewed was the person who completed the survey. If not, have them complete a survey. Verify the survey number and the interview number match. Be sure this number is also included on the informed consent form.

Intro: As you know we are here to assess progress toward sustainability at Dancing Rabbit. We think that people's satisfaction with their life is an important component that we hope to get at in this interview process. Can we just start by getting you to explain a little about what brought you to Dancing Rabbit?

1) What brought you to Dancing Rabbit?
    a. *Probe* – what made you come here?
    b. *Probe* – what were you seeking?
    c. *Probe* - what were you missing in your previous community or lifestyle that you thought you could find here?
    d. *Probe* – did you find it? Is it what you thought it would be?

2) Have your expectations been met?
    a. *Probe* - Did you find what you were looking for here?
    b. *Probe* – Did you find happiness?
    c. *Probe* – Is anything missing in your life?
    d. *Probe* – Do you feel fulfilled?

3) On a scale of 1 to 10, how happy are you with life at Dancing Rabbit right now?
    a. *Probe* – Why?

4) Do you think Dancing Rabbit as a good place to live?
   Not at all, somewhat, neutral, good, extremely good

5) Are your basic needs met within the Dancing Rabbit community?

a. *Probe* – Do you have access to adequate services and facilities (to meet daily needs)?
b. *Probe* – How often do you have to travel outside the community to meet your needs?
c. *Probe* – What do you consider basic needs? (food, water, shelter, clothing, companionship, etc.)

6) Do you have adequate time for social activity and time with friends and family?
    a. *Probe* - Do you feel that this affects your overall quality of life and happiness?

7) Do you have access to affordable and adequate healthcare coverage or medical services?
    a. *Probe* - What type?
    b. *Probe* - Are you satisfied with coverage/does it meet your needs?
    c. *Probe* – How do you meet medical needs and treat minor or chronic conditions?
    d. *Probe* – How do you handle medical emergencies?
    e. *Probe* – Do you feel mentally and physically healthy?

8) Are you able to able to make a comfortable living for yourself (your family) at Dancing Rabbit? Why or why not?

9) Do you feel that community decisions and processes reflect your own personal values?
    a. *Probe* – Are you satisfied with the village council process?
    b. *Probe* –Do you feel that your opinions are valued within decision making processes as a whole?
    c. *Probe* – Do you feel like your opinions are valued in decisions made regarding the direction of the community?
    d. *Probe* – Do you feel there are effective conflict resolution measures? Why or why not?

10) Overall, do you think DR is moving in the right direction or the wrong direction?
    a. *Probe* – Why is that?

11) Do you think DR is a good model of sustainability for others?
    a. *Probe – Why or why not?*

12) How do you feel that growth at DR will affect your quality of life?

13) What factors do you feel enhance your quality of life at Dancing Rabbit?
    a. *Probe* - What is preventing you from being happy or from having a better quality of life at Dancing Rabbit?

14) Do you feel that outside forces prevent you from being as satisfied in this lifestyle as you could be? (capitalism/globalization/politics)

15) What would need to change within the community for you to reach an optimal level of happiness?

16) Is there anything else you want to say regarding your current quality of life at Dancing Rabbit?

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