BARRIERS TO SUSTAINABILITY: A QUALITATIVE CROSS-NATIONAL COMPARISON

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DISSERTATION ABSTRACT

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In this dissertation, I make an argument for strong sustainability, which emphasizes environmental and social justice concerns, by distinguishing it from weak sustainability. I critique the global neoliberal sustainable development project, a weak form of sustainability that prioritizes economic growth, using Marx's theory of metabolic rift. However, I find this theory lacking in its ability to engage forms of oppression outside of class, such as gender. Because of this, I employ theories on gender and environment and environmental justice to explore systemic and cultural aspects of oppression. I use qualitative cross-national comparative methods to examine two alternatives to neoliberal sustainable development. The two cases working toward strong sustainability are an urban ecovillage in the United States and an urban farm in Havana, Cuba. I assess the viability of these projects and their strengths and weaknesses toward a rigorous theory of strong sustainability.

I find that the structure of society matters in determining the opportunities for equity and sustainability projects. As postulated by metabolic rift theory, my cases suggest that capitalism is a structural barrier to sustainability, but eliminating capitalism is an insufficient condition for nations attempting to attain equity or environmental protection. While structural change is necessary, any discussion of structural power

dynamics that fails to consider real people embedded in on-the-ground social power dynamics would be incomplete. Specifically, I find that in Cuba—a nation where capitalism was disbanded over fifty years ago in favor of more equal economic relations—gender equity is limited by cultural expectations of gender roles and government suppression of democratic processes.

My findings suggest that if the goal is to create socially just environmental change, it must be done deliberately. The instituting of laws is important but insufficient because cultural factors may restrict minorities' participation in democratic processes. Inequality and disregard for the environment are culturally entrenched social processes that must be addressed simultaneously and with specialized attention in order for lasting change to occur. Goals toward economic restructuring, equality, and environmental reform should be methodically phased in with constant democratic discussion and progress assessment.

This dissertation contains previously published and unpublished co-authored material.

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CHAPTER I

INTRODUCTION

In an article that I co-authored with Professor Richard York, I wrote a section on the Jevon's paradox and the Netherlands fallacy that I use in this chapter (York et al. 2011, 106-108).

As a testament to the transformative powers of our modern global economic system[1], more than 50 percent of the world's population now lives in urban settings,[2] and the United Nations predicts that this number will continue to grow (UN 2009). Urbanization, or the process of the spatial densification of people, industry, politics, and culture, contributes to severe global environmental problems, including climate change, deforestation, food insecurity, and other environmental injustices. Given the gravity of these global environmental problems and the trajectory of urbanization, it is increasingly

[1] This iteration of global economics is known as neoliberalism, which is defined as, "originating in supply-side economic theory of the Chicago school in the 1970s, as an economic policy neoliberalism is most commonly associated with the Reagan-Thatcher period of the 1980s. It can be understood as the ideology of a new phase of capital accumulation, the linchpin of which is 'the belief that open, competitive and unregulated markets, liberated from all forms of state interference, represent the optimal mechanism for economic development'" (Brenner and Theodore 2002 as cited in Brand and Thomas 2005, 16)

[2] It is important to note that definitions of urban areas are disparate in different countries and regions. Definitional differences include disagreement on size and density of a population (Penna 2010; Koont 2011).

important to find ways to develop sustainable human habitats.[3] Since cities are now the prevailing organizational structures of human societies, researchers should be asking more questions about the prospects for socially just and sustainable urban environments. We should be asking: How can we organize to create socially just and sustainable urban environments where we live? What are people doing elsewhere that we can tailor to fit our local culture and bioregion? How can we create an economy based on ecological and social restoration?

Cities drastically change local environments, and are sites prone to air, water, and land pollution, heat islands, and concentrations of greenhouse gas emissions (McNeill 2000; Intergovernmental Panel on Climate Change [IPCC] 2007; Melosi 2010). In addition, cities are loci of mounting social and economic inequalities (Molotch 1976; Davis 2006). Specifically, about half of all urban-dwellers live in poverty, and a third live in slums worldwide (UN-HABITAT 2003; Davis 2006). Yet, the prevailing global paradigm of sustainable development retains the capitalist imperative of economic growth, and it primarily benefits elites (Milanovic 2005).

This paradigm highlights technological fixes, green marketing, non-binding environmental agreements, and market-based regulation of pollutants, rather than taking real steps toward environmental change. For example, organic seals and certifying bodies are not always independent and are often hired by the companies they regulate. As

[3] I use the term sustainability only because I am trying to bring different groups of people, urban planners and policy makers (purveyors of sustainable development) and environmental sociologists, in conversation. These two groups use different languages to talk about a similar idea, and they have very different perspectives on how to achieve it. In the following sections, I make the distinction between weak sustainability, or the economic sustainable development paradigm, and strong sustainability, or metabolic restitution.

a result, environmentally destructive practices like deforestation, perennial monocropping, and the use of nonorganic fertilizer remain common practices (Rogers 2010). In addition, racial and economic inequalities are often perpetuated or exacerbated. The case of recycling in Chicago is indicative of this problem. The city of Chicago introduced recycling centers in low-income communities of color. While the centers helped reduce the amount of waste going into landfills, they exposed employees from the local community to dangerous and toxic working conditions (Pellow 2002).

Modern cities have been built with the economic growth dictate, but not all are equally destructive (McNeill 2000), nor are they necessarily constrained to the dominant paradigm for survival. Havana, Cuba, though built under a colonial model, demonstrates that urban space can be reorganized for agriculture and reforestation (Koont 2011). In addition, Owen (2009) demonstrates how places like Manhattan are home to some of the most energy efficient people in the nation because they drive less, live in smaller dwellings, and live closer to amenities. Some theorists argue that cities are not inevitably waste-sinks overrun by pollution (McNeill 2000). Paradoxically, they can be sites of potential solutions and change by harnessing the spatial density of people for energy efficiency and social movements (Rees and Wackernagel 1996; Mol 2001; Portney 2003; Mazmanian and Kraft 2009; Satterthwaite 2009, 2010; Glaeser 2011).

This dissertation seeks to address this paradox, but its purpose is multilayered. First, I identify urban agriculture and the urban ecovillage as potential sustainability solutions that may abate urban pollution and food insecurity. Second, I engage the contradictions in policies of traditional and weak sustainable development that pursue economic growth before equity and strong ecological sustainability (Beauregard 2003;

Parr 2009; Rogers 2010). I engage Marx's theory of metabolic rift, as extended by Foster (1999, 2000), to expose the internal contradictions and deficiencies in sustainable development theory and practice. Metabolic rift describes a cleavage in any cyclical life sustaining process. I pay particular attention to the concept of restitution, the mending of metabolic cleavages. However, I find that this theory lacks clear connections to interactions happening on the ground between people. I fill these gaps with environmental justice theories and theories outside of sociology in fields like geography, such as feminist political ecology and gender and development, to integrate culture and inequalities based on other systems of oppression, like gender. I synthesize critical theories of capitalism and development to strengthen their analytical potential toward a robust and encompassing theory of sustainability.

Several researchers have exposed how international governmental policies and corporate "greening" are insufficient in curbing the numerous environmental problems detailed above (Foster 2008; Parr 2009; Rogers 2010; Zehner 2012). However, they have not focused on what solutions to these problems look like nor have they evaluated current efforts people are making toward strong sustainability, based on social and ecological restoration. My research fills this gap by unearthing lessons from two urban sustainability projects that I chose because they are model sites for what they are attempting to achieve. I explore the model cases to highlight the need for critical assessment of potential solutions along the lines of the ecological and social, as well as economic and political dimensions of such projects. I examine what urban sustainability looks like in these different contexts and ask the question: Given the particular social, political, and

economic context of a place, what are the limitations of urban sustainability projects? And what insights about this broader question can I glean from my case studies?

My goals are to develop a theoretical understanding of urban sustainability and to develop the under theorized concept of restitution. This concept originates from Justus von Liebig's work on soil nutrition, and, more specifically, it means "giving back to the fields the conditions of their fertility" to insure "the permanence" of soil fertility (Foster 2000, 153). Here, I use restitution more broadly to mean restoring any metabolic processes in which capitalism has created a rift, including humans' relationship to nature, human economic relations between each other, and the relationship between town and country. All three of these processes are interrelated. While some people have written on the concept of restitution, they have either looked specifically at problems with agrarian capitalism (Wittman 2009), macro-structural theoretical issues (Foster, Clark, and York 2010), urban agriculture broadly (McClintock 2009), or at the ecological aspects at one particular site of urban agriculture (Clausen 2007). I examine the social components of restitution at two different sites.

To address these concerns, I explore two examples of people attempting urban sustainability in two different political and economic contexts—Havana, Cuba and a city in the Pacific Northwest, USA. By examining two different political and economic contexts where people have attempted to mend metabolic processes, or who profess to attempt urban sustainability, I can assess certain barriers to urban sustainability in exemplar conditions. The examples of efforts toward sustainability that I present are local, cooperatively-run projects that utilize consensus decision-making—as a form of direct democracy—for all major decisions. The first project is a grassroots urban

ecovillage, a community housing and garden space, in the Pacific Northwest, United States. The second project is a government-subsidized, but cooperatively run, urban farm in Havana, Cuba. Both examples integrate local community and environmental concerns as part of their missions. Featuring these cases allows us to synthesize their strengths and evaluate their weaknesses, not to create universal solutions, but to reveal the varied paths to urban sustainability.

Ecovillages are intentional communities committed to social and ecological living and are a relatively new and burgeoning social movement. The ecovillage I study was established during the conception period of ecovillages in the early 1990s, and still retains some original residents who experienced the emergence of this movement (Gilman 1991; Smith 2002). In addition, a stated goal of individuals at this site is to spread their vision of sustainability through community outreach projects, like educational tours, and media venues, including television shows and local newspapers (Ergas 2010).

Havana, Cuba is an ideal site to conduct research on urban organic agricultural practices, and it is theoretically interesting for two clear reasons. First, in 2006 the World Wildlife Fund deemed Cuba the only sustainable nation.[4] Second, Cuba is "recognized as a world leader in alternative organic agriculture and [urban agriculture]" (Premat 2005). In Havana, locals grow 60-90% of the produce consumed in the area (Campanioni et al 2002; Premat 2005; Stricker 2007). The farm I observed is the model site featured in

[4] The Sustainability Index Report put together by the WWF utilizes a combination of the United Nations Human Development Index and the Ecological Footprint, or natural resource use per capita (Hails, Loh, and Goldfinger 2006)

movies on Cuban urban agriculture and is a site where tourists come to observe urban agricultural practices in Havana.

In my work, I draw on insights from different academic traditions. Sociology lacks breadth in theoretical and empirical works on urbanization and nature (Clement 2010). To address this gap, I utilize the work of urban sociologists, historians, geographers, and planners as well as environmental sociologists, and scholars of social movements, gender and the environment, and environmental justice. To this end, I engage a tension in the urban environment literature that positions cities as both drivers of environmental destruction and loci of environmental protection as well as places that both heighten social inequalities and facilitate social movements and change. In addition, I mean to challenge the false dichotomies of human culture vs. nature, town vs. country, and quality of life vs. steady-state economies. Given that cities house more than half of the world's population, I aim to advocate urban development that is not predicated on economic growth, as most proponents of sustainable development pursue, but rather where the focus is on quality of life, whether it be human, plant, or animal, and synergisms between overlapping ecosystems.

In the following sections, I give a brief history of urbanization, define sustainability, discuss some structural limitations to sustainability, and describe my cases. I also outline sustainable development and modernization theories, metabolic rift theory, gender and environment theories as they relate to environmental justice, and theories on mending the metabolic rift. Finally, I outline the chapters to follow.

History of Urbanization

The ancient remains of the precursors to modern cities date back to 3000 BCE (Mumford 1961), and include the Sumerian city of Uruk and other Mesopotamian cities like Lagash and Umma (Ponting 2007; Mosley 2010; Penna 2010). Early cities share in common with modern cities social hierarchies that prescribe the distribution of and access to resources and the exploitation of the natural environment. The main difference between these early cities and their modern iterations in human and environmental exploitation is scale. Dichotomous ideologies about culture-nature, prevalent since the scientific revolution, likely affected the proliferation of exploitation, as the architects of industrial cities saw society above nature and society and culture as separate (Merchant 1980). Modern cities mastered the exploitative practices that have given rise to their prominence, as modern cities ravenously consume resources from all over the globe at accelerated paces. In addition, when workers organize for better pay and working conditions in one factory, corporations move their production facilities elsewhere in the world to find people who will work for less. Enhancements in transportation and communication technologies have facilitated the global movement of resources and people (Ponting 2007; McMichael 2010; Mosley 2010; Penna 2010). In the last two centuries, the global urban population has increased 107-fold, with the majority of that happening in the last half-century (Ponting 2007). In this section, I briefly outline the history of preindustrial cities, industrialization, and the processes of urbanization that have brought human society to a mostly urban world.

Mumford (1961) describes the evolution of cities as an emergent coalescence of the Paleolithic tribal society and the Neolithic town centered society. He argues that the

modern city grew out of a combination of cultural norms from both societies but with a predominance of exaggerated tribal hunting values. He contends that the values that propelled the creation of cities are an expression of "a desire to tame and control nature, to dominate and master strong or mettlesome animals, ass, horse, camel, elephant, above all, to exercise, partly by command of weapons, a predatory power over other human groups. Neither Paleolithic nor Neolithic culture was capable of doing itself what both actually succeeded in accomplishing by a union of their complementary talents and functions" (Mumford 1961, 21). While some researchers contest his historical analysis of the development of cities, many researchers agree that the desire to dominate and control nature and certain groups of people remain prominent features of cities today (Merchant 1980; Waring 1999; Davis 2006; McMichael 2010).

Preindustrial cities share some characteristics with modern and industrial cities, but they also have distinctive features. All cities have some form of social hierarchy or system of inequity and rely on rural land and trade for food and resources. Preindustrial cities generally had populations of less than a couple hundred thousand, barring a few notable examples like Hang-chou, China, which by 1200 CE had a population of two million, and Rome, which in 150 CE had a population of about 500,000 (Ponting 2007). They often had religious origins and were ceremonial centers, as well as serving as administrative centers for trade and commerce. They generally had walls around them for protection, nearby agriculture and forests (or hinterlands) to draw resources from, public spaces accessible by foot, and rich elites who lived in the urban centers while the poor lived on the fringes (Ponting 2007; Mosley 2010; Penna 2010). Preindustrial cities often included agriculture. Specifically, in Sumer, residence continued to practice

agriculture on a large scale (Mumford 1961, 31). These cities often needed more than nearby hinterlands could accommodate and had to supplement food, fuel, and fodder with trade. Indeed, they experienced similar internal and external ecological problems as industrial cities, though not near approaching the scale (Mosley 2010). Through a process of primitive accumulation, the enclosure of communal land, the rise of the division of labor, and the rise of industrialization, cities underwent a transformation. Town and country began to separate, rapid population growth occurred, trade became increasingly necessary to sustain the growing populations, manufacturing became central to the local economy, and religion lost prevalence as the main organizing principle (Ponting 2007; Mosley 2010; Penna 2010).

The Industrial Revolution began in England around 1760 CE. This revolution is marked by significant changes in energy production, manufacturing, technology, agriculture, mining, and transportation and had significant effects on the economy and culture of the time (Ponting 2007; Mosley 2010; Penna 2010). The production of goods for consumption and trade expanded rapidly with advancements in energy producing technologies, like steam power and coal burning, and the creation of machinery. Cities began organizing around manufacturing and trade rather than religion. Average population size began to grow rapidly. For example, in 1851, Britain's population was about 40 percent urban, but by 1900, 75 percent of the British population was urban (Ponting 2007). This style of production soon spread through Europe and the United States and later throughout the world.

The process of industrialization and widespread urbanization began in England through a combination of the enclosure of the commons and agrarian capitalism

(Williams 1973). The commons refers to land and resources "owned, managed, and used by the community" and "embodies social relations based on interdependence and cooperation" (Shiva 2005, 21). Shiva argues that community members democratically made decisions on what crops to grow, which trees to cut, where to graze cattle, etc. However, some caution that we should not idealize the social structure of the pre-enclosures era as the social structure to follow enclosures was already basically outlined in the hierarchy of the communal village (Williams 1973, 102).

Under English common law, peasants had rights to resources from forests and pastures and could deny enclosure of these resources. However, as the royalty of England gained power and commercial interests pressured Parliament, peasants' rights eroded, and their land was seized (Shiva 2005). Unofficial enclosures, or a process by which the dominant elite seized and controlled common rural lands without parliamentary approval, in England began as early as the thirteenth century through conquest (Williams 1973, 96-97). Elites and warriors gained common land that peasants cultivated and lived on by killing, repressing, and politically bargaining, albeit coercively, with them. The duration of parliamentary enclosures, where representatives of the beneficiary class seized land from the peasantry through legal means, lasted from the second quarter of the eighteenth century to the first quarter of the nineteenth century in England. Thousands of Acts allowed politically dominant landowners to appropriate "more than six millions acres of land," or about a quarter of all cultivated acreage (Williams 1973, 96).

European colonization began encroaching on commons all over the world, displacing peoples in parts of the Americas, Africa, and Asia. Shiva (2005) argues that a

neocolonial version of enclosures is continuing today under the rhetoric of sustainable development. This consists of the depeasantization of the developing world through internationally funded development projects, trade liberalization, and the spread of industrial agriculture (Shiva 2005). The new dominant elites are financial institutions, such of the World Bank and International Monetary Fund, multinational corporations, and political leaders of the developed world, who in the current iteration of globalized enclosures have transformed countries, economies, landscapes, and the way people live (Shiva 2005; Davis 2006; McMichael 2010). This global transformation is, in part, the reason why more than half of the world's population now lives in urban areas (Davis 2006; United Nations 2009; McMichael 2010; Glaeser 2011).

Another reason for the shift from rural villages to urban living was the rise of capitalism. Primitive accumulation is the precursor to capitalist expansion, and it operated on multiple geographical scales simultaneously (Ponting 2007). For example, on a local scale there was the manorial estate, nationally, the creation of national debts, and globally, the African slave trade. The original accumulation of capital happened in the world market and financial markets, while the new social relations and division of labor began in rural areas. Thus, these two moments account for original accumulation, one in the world market and the other in agrarian locales (Moore 2000).

Moore (2000) argues that the current global ecological crisis is rooted in "the transition to capitalism during the long sixteenth century," or 1450-1640 (123). During the transition to capitalism, a distinct division of labor between town and country began to form "whereby the products of the countryside… flowed into cities, which were under no obligation to return the waste products to the point of production" (Moore 2000,124).

This caused a rift in the metabolic nutrient cycle. Moore (2000) suggests that the distinction between feudalism and capitalism is the liberation of both capital and peasant producers from the land. He characterizes capitalist development as the "victory of the commercial town over the countryside" whereby "agriculture more and more becomes merely a branch of industry, and is entirely dominated by capital" (Marx and Engels as cited in Moore 2000, 126). Marx identifies that "the peculiarity of capitalism is the dominance of the cities. In precapitalist civilizations, the city was 'ruralised,' whereas capitalism effects 'the urbanization of the countryside'" (Marx as cited in Moore 2000, 125). Industrial cities function through a division of labor between town and country and through human and environmental exploitation (Mumford 1961; Harvey 1985; Moore 2000). Harvey (1985) defines post-industrial urbanization as the process of capital:

> as it unfolds through the production of physical and social landscapes and the production of consciousness. The study of urbanization is not the study of a legal, political entity or of a physical artifact. It is concerned with processes of capital circulation; the shifting flows of labor power, commodities, and money capital; the spatial organization of production and the transformation of space relations; movements of information and geopolitical conflicts between territorially-based class alliances; and so on (xvi-xvii).

Modern cities are often built on the backs of exploited labor and are segregated, with the elites living on the most desirable land (Davis 1990; Colten 2005). Elites are more likely to live in areas secure from flooding and far from waste disposal sites and industry. The poor are often the last to receive effective drainage, sewage, and water services, if they do at all throughout the world (Colten 2005; Ponting 2007). Colten (2005) examined how inequity was built into environmental modifications in New Orleans. Specifically, public utilities were first allocated to white affluent neighborhoods and deliberately bypassed African American neighborhoods as a result of racism and

segregation (Colten 2005). Before New Orleans built extensive sewage systems, poor laborers were paid to empty the contents of privies and ditches, and the contents were emptied into the local waterways (Colten 2005). In addition, Davis (1990) argues that developers designed aspects of Los Angeles to exclude racial minorities and the poor, like zoning for upscale single-family residences.

Urbanization also has many environmental consequences that both arise within cities and extend well beyond their limits. Specifically, urban dwellers are often exposed to air, water, land, and noise pollution as well as overcrowding and traffic congestion (Ponting 2007; Mosley 2010; Penna 2010). Large concentrations of people in small areas lead to increased local environmental and health hazards. While most cities of the Global North, like New York and London, found ways to pipe in clean water, treat sewage, and dispose of garbage by the early 20th century, many cities in developing nations are experiencing population growth rates that exceed the capacity of infrastructure to manage the corresponding growth in waste. Thus, poor urban populations in many developing cities experience health problems associated with industrial effluence, sewage, and trash (Ponting 2007; Mosley 2010; Penna 2010). The lack of sanitation services in slums accounts for 1.6 million deaths per year worldwide. Some industrial cities, like Lanzhou in China, burn coal for fuel, which causes air pollution from smoke emissions. The resulting smog causes respiratory problems among other negative health outcomes. Air pollution kills an estimated 1.5 million people worldwide annually, and the residents of Lanzhou are exposed to over 100 times the limit set by the World Health Organization (WHO) (Davis 2006; Mosley 2010).

Anti-pollution legislation has historically been difficult to pass because state policy is often designed to protect developing industries even at the expense of people's health and the environment (Molotch and Logan 1984; Mosley 2010). In Ruhrgebiet, Germany the rhetoric of nationalism accompanied people's willingness to endure smog in the early 1900s because, they claimed where there was smog, there was work (Mosley 2010). Currently, urban transportation, commercial buildings, and homes in developed nations consume fossil fuels for energy and are among the highest emitters of greenhouse gases. In the developing world, industry and manufacturing in cities are still the major emitters. While China recently exceeded the United States as the highest greenhouse gas emitter, affluent nations, like the United States, produce far more greenhouse gas emissions each year per capita. Residents of the United States emit about 19 tonnes of carbon each year, while developing nations like China and India emit 5 and 2 tonnes of carbon per capita respectively (Mosley 2010; York et al. 2011).

Industrialization and the ensuing spike in population growth are largely responsible for the devastating affects that cities have on the global environment. While all urban populations always relied on hinterlands for resources, pre-industrial cities were more closely tied to local land surrounding the city. The demands of industrial cities drove the quest for resources beyond the reach of peripheral land to expanses across the globe. While cities only cover three percent of land on Earth, the land area required to sustain urban populations is significant (Ponting 2007; Mosley 2010; Penna 2010). One way to assess the reach of urban areas is to evaluate their ecological footprints, or the area of land and water necessary to produce the resources consumed and absorb the waste created (Mosley 2007). All major cities import resources, and even export waste, from

global hinterlands to sustain the urban populations and industry within them. Researchers have shown that more highly urbanized nations have higher footprints than less urbanized nations (York et al. 2003a, 2003b; Dietz et al. 2007; York et al. 2011). Specifically, Cronen (1991) traced how resources flowed through Chicago, like wood, livestock, and wheat. These resources were processed in sawmills, granaries, and slaughterhouses in the city and were then sent to urban markets elsewhere via railways (Mosley 2010). In the hinterlands of Chicago, farmers cleared dozens of species of native grasses and began growing a handful of crops, eradicating biodiversity. Nearby forests were clear-cut, and Chicago timber industries had to import timber from across the nation. In addition, settlers and ranchers in the region killed off bison to open up grazing land for domesticated cattle (Cronen 1991).

Urban enthusiasts claim that cities are the initial culprit, yet eventual answer to our environmental and concentrated poverty problems (Rees and Wackernagel 1996; Owen 2009; Satterthwaite 2009, 2010; Melosi 2010; Glaeser 2011). They acknowledge the urban exploitation of hinterlands, the extent of slums, the potential for pollution, and social hierarchies, yet are convinced that these are current but unnecessary conditions for cities. Rees and Wackernagel (1996) show the variation in emissions from highly urbanized nations, pointing to the potential for high standards of living with less pollution. Melosi (2010) argues that cities are as natural as human beings themselves and are subject to the same limits as all ecological systems. Glaeser (2011) claims that cities are centers for the spread of ideas, that urban poverty is a sign of a thriving city that is inviting to people who need work, and finally that we should stay in cities because "if you love nature," you should "stay away from it" (201). While others point to the

destructive nature of cities (Mumford 1961), the growing number of slums (Davis 2006), and how unnatural the process of creating a city is (Cronen 1992; Colten 2005) as major problems to contend with into the future. One thing on which they agree on is that cities have dramatically changed societies, landscapes, economies, and ecologies, whether or not for the better. In the subsequent sections, I expand on the arguments of these competing theories, but first I define sustainability.

Sustainability Defined

The term sustainable development is vague, heavily debated, and rife with contradiction (Portney 2003; Larsen 2009; Mazmanian and Kraft 2009). The UN Brundtland Commission (1987) put forth the most commonly cited definition of sustainable development, which means development that "meets the needs of the present without compromising the ability of future generations to meet their own needs." Sustainability, as conceived of by the UN Brundtland Commission and *Agenda 21,* is comprised of three overlapping and mutually reinforcing goals: 1. to live in a way that has long-term environmental viability; 2. to live in a way that maintains economic living standards now and into the future; 3. and to live socially just and equitable lives into the future (UN 1987; UN 1992; Moore 2007; Dillard, Dujon, and King 2009). Developers and planners call this the three Es: environment, economy, and equity (Moore 2007; Dillard et al. 2009).

While these three goals can be mutually reinforcing, it is often the case that one is prioritized to the detriment of one or both of the other goals. Specifically, there are cases where environmental conservation efforts negatively affect indigenous communities by

displacing them and denying them access to ancestral lands (Neumann 1998; Carruyo 2008) and cases where toxic polluting industrial practices are overlooked or deregulated despite the known negative consequences on human and environmental health (Carson 1962; Lubitow and Allen 2013). In addition, development projects in poor nations often uproot indigenous subsistence agriculturalists and pastoralists without adequate compensation, relocation strategies, or alternative employment opportunities (Shiva 2005; Davis 2006; Pellow 2007; Braun 2008). In cases where individuals are promised compensation, it is not uncommon for corruption among local authorities, in partnership with international development agencies, to interfere with the affected parties' ability to receive full compensation (Davis 2006). The above examples demonstrate the links between the social aspects of sustainability and the ecological.

The definition of sustainability has its roots in biology and ecology, particularly the notion of ecological carrying capacity. "Carrying capacity focuses on the idea that the earth's resources and environment have a finite ability to sustain or carry life, particularly animal life. Similarly, a particular ecosystem has a finite ability to sustain the life contained there. When the demands move beyond the carrying capacity of the earth or a particular ecosystem… species collapse will occur" (Portney 2003, 5). Therefore, for human societies to survive and thrive, human activities, both individual and collective, must consider carrying capacity.

One method that measures carrying capacity is the ecological footprint. The ecological footprint "is the total area of productive land and water required continuously to produce all the resources consumed and to assimilate all the waste produced, by a defined population, wherever on Earth that land is located" (Rees and Wackernagel 1996,

228-9). The footprint estimates the area of land and ocean required to assimilate the waste of a given population and support their consumption of food, goods, services, housing, transportation, and energy (Rees and Wackernagel 1996; Center for Sustainable Economy 2013). Bio-capacity refers to the Earth's available ecologically productive land, measured in global hectares (gha) (Wackernagel, Monfreda, Moran, Wermer, Goldfinger, Deumling, and Murray 2005). When a given population exceeds bio-capacity, then they are running on an ecological deficit. This deficit means that either they are importing resources or that productive ecosystems are in decline, and it is not sustainable over time. Human society has been running on an ecological deficit since the 1970s, where forests, cropland, pastureland, marine fisheries, and built space are being depleted and carbon emissions are higher than can be reabsorbed by the environment (Wackernagel et al. 2005; WWF 2012).[5] According to the Living Planet Report (WWF 2012), there are 12 billion global hectares of bioproductive land. In 2008, humanity's footprint was 18.2 billion gha, an average of 2.7 gha per person, 50 percent more than the Earth's biophysical capacity. To live within limits, an equitably distributed share of this amounts to 1.8 gha per person.

[5] "Globally we identify 11.2 billion hectares of distinct bioproductive areas—cropland, forest, pasture, fisheries, and built-up land—that provide economically useful concentrations of renewable resources. These 11.2 billion hectares cover a little under one quarter of the planet and include 2.3 billion hectares of marine and inland fisheries and 8.8 billion hectares of land. The land area is comprised of 1.5 billion hectares of cropland, 3.5 billion hectares of grazing land, 3.6 billion hectares of forest, and an additional 0.2 billion hectares of built-up land assumed to occupy potential cropland (EEA, 2000; FAO, 2000; SEI, 1998; WRI, 2000). These areas concentrate the bulk of the biosphere's regenerative capacity. We have not yet been able to estimate how much of the total usable annual biomass generation… is concentrated on these 11.2 billion hectares, but would be surprised if it were less than 80 to 90 percent." (Wackernagel et al. 2005, 8).

To be sure, the 18.2 billion global hectares of productive land that humanity is using are not equitably distributed. People in the United States average over seven gha per person while people in Cuba average just under two gha per person (WWF 2012). The disparity in productive land used per capita is significant with the biggest consumer, Qatar, at under 12 gha and several nations close to about one gha per person, like Madagascar (WWF 2012). It is also the case that there are disparities of consumption within nations. These results illustrate that affluent nations consume the most resources and produce the most waste (WWF 2012).

Dietz, Rosa, and York (2007) found that the two main drivers of anthropogenic environmental problems are population size and affluence, controlling for a number of other factors including urbanization. They reformulate the IPAT formula into STIRPAT, "a stochastic model that can be used to empirically test hypotheses," to analyze human society's affect on the natural environment (Dietz et al. 2007, 353). The IPAT formula specifies that environmental impacts are the product of three driving forces: size of "population, affluence (per capita consumption or production) and technology (impact per unit of consumption or production), hence I=PAT" (York, Rosa, Dietz 2003a). Their cross-national data analysis reveals that nations with higher GDP per capita also have higher ecological footprints. The significance of affluence demonstrates that the impacts of population on the environment cannot be fully understood without considering the scale and mode of production and consumption particular to different societies.[6] These

[6] Environmental feminist theorists caution against interpreting these results as a need to control the fertility of vulnerable populations of women. Dubious programs from the past serve as a lesson. After World War II, Western policymakers attributed environmental degradation and poverty to overpopulation. As a result, global population control programs sought to limit population growth and treated the fertility of women of color

findings and ecological footprint calculations above also have implications for the economic and social aspects of sustainability in relation to the environment, and I discuss these implications in more depth below.

In terms of ecology, Sadler (1999) posits that strong sustainability entails "maintaining natural capital at current levels (no net loss). The resource losses and ecological damages resulting from development must be replaced or offset." This includes four conditions:

> 1. Substances from the earth's crust, like fossil fuels and metals, must not systematically decrease in nature, or be extracted faster than their slow redeposition. 2. Substances produced by society, like molecules and nuclides, must not be produced at a faster rate than they can be broken down and reprocessed. 3. The productivity and diversity of nature must not be systematically deteriorated, and human use of resources and ecological processes should not exceed nature's capacity to reprocess waste and convert them to ecological functions (Sadler 1999, 21-22).

Finally, he argues that "basic human needs must be met everywhere." These conditions are vague and impractical. The social aspects of sustainability prove to be similarly difficult to delineate.

Social Sustainability

The first principle of the Rio Declaration (1992) states, "human beings are at the centre of concerns for sustainable development." The social aspect of sustainability is the least theoretically developed and empirically studied of the triad, and therefore is weakly articulated (Larsen 2009). However, it draws on a cultivated tradition of research on

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and women of the Global South as the cause of environmental problems (Pellow and Brehm 2013). These programs used coercive means to sterilize and force contraception on certain groups of women (Hartmann 1987; Bandarage 1997; Watkins 2000). Thus, the finding that affluence also has negative effects on the natural environment suggests the need to curtail production for and consumption in affluent nations.

social wellbeing (Magis and Shinn 2009). It includes both intra- and intergenerational equity—improving the wellbeing of all people worldwide, especially the poor, so that they *thrive* now and for generations into the future (Sadler 1999; Magis and Shinn 2009). In fact, the poor should be development's primary beneficiaries. If development is human-centered, then indicators of human wellbeing should be central to all indicators of progress; however, growth in GDP is still the most valued indicator of development (Waring 1999; Milanovic 2005; Magis and Shinn 2009). Here I review the literature on social sustainability.

Harris and Goodwin contend, "A socially sustainable system must achieve fairness in distribution and opportunity, adequate provision of social services, including health and education, gender equity, and political accountability and participation" (Harris and Goodwin 2001 as cited in Dillard, Dujon, and King 2009, 3). Dillard et al. (2009, 4) add two aspects: "a. the processes that generate social health and well-being now and in the future, and b. those social institutions that facilitate environmental and economic sustainability now and for the future." These definitions move beyond societies direct relationship to the environment, like property rights, environmental knowledge and ethics, and land and resource tenure, to a discussion on how society can be sustained in its own right. Magis and Shinn (2009) discuss the four interrelated principles that emerge out of international discussions of social sustainability—these principles are human wellbeing, equity, democratic government, and democratic civil society. I examine each of those four principles.

Equity means accessible economic and political opportunities for all people through redistributing power and wealth and eliminating inter- and intra-generational

disparities within and between nations (Magis and Shinn 2009, 22). Magis and Shinn (2009) charge inequality with environmental damage and argue that "sustainability absolutely requires a concerted focus on eradication of inequities" (33). IPAT and ecological footprint analyses show the environmental consequences of affluence, but scholars argue that poverty has a unique effect on the environment as well (UN 1987; UN 1992; Moore 2007; Dillard, Dujon, and King 2009). The UN (1987, 55) highlights how poverty negatively affects local environments:

> Many parts of the world are caught in a vicious downwards spiral: Poor people are forced to overuse environmental resources to survive from day to day, and their impoverishment of their environment further impoverishes them, making their survival more difficult and uncertain… Environmental stress has often been seen as the result of the growing demand on scarce resources and the pollution generated by the rising living standards of the relatively affluent. But poverty itself pollutes the environment, creating environmental stress in a different way. Those who are poor and hungry will often destroy their immediate environment in order to survive: They will cut down forests, their livestock will overgraze grasslands; they will overuse marginal land; and in growing numbers they will crowd into congested cities. The cumulative effect of these changes is so far-reaching as to make poverty itself a major global scourge.

While research suggests that indicators like increasing affluence, or GDP per capita, is correlated with environmental degradation, other human development indicators like access to education and increased life expectancy show no relationship to environmental harm (Dietz el al. 2007). These findings suggest that development oriented at increasing quality of life rather than GNP or GDP will serve the stated goals of sustainable development.

Magis and Shinn define human wellbeing as "the fulfillment of basic needs and the exercise of political, economic, and social freedoms" (2009, 16). Basic needs include those important for physiological function, food, water, shelter, and sanitation. These are

basic human rights and are requisite for instrumental reasons, as humans can't function without them (Magis and Shinn 2009). Others add that people should be able to achieve self-actualization, or the realization of one's full potential (Stricker 2007). Wellbeing and equity are closely related to democratic participation because populations need adequate provisioning and access to political processes in order to participate. As an example, Polayni (2001) exposed how discarding systems of social welfare in conjunction with liberalizing the market in Britain undermined societal wellbeing and led to a declining civil society.

Magis and Shinn (2009), posit that democracy requires human rights and "access to information, full inclusion, participation, and collaboration" (34-35). A democratic government is one that "ensures that governance is oriented to the people," or "the rule of the people, by the people, for the people" (Magis and Shinn 2009, 34-35). It should ideally consist of "government institutions that are open, transparent, accountable, and supportive of community action." Magis and Shinn argue that government should serve a protective function, ensuring basic needs, rights, freedoms, public goods, and regulating against economic externalities and harmful market fluctuations. Correspondingly, civil society serves the primary purpose of "ensur[ing] that government is functioning according to the will of its people" (Magis and Shinn 2009). It accomplishes this by creating civic space and empowering people to use the space for democratic practice, i.e. interaction, coalition building, collaboration, activism, volunteerism, etc.

The link between democracy and sustainability is a bit unclear. Some research shows that democratic participation is correlated with certain positive environmental outcomes (Norgaard and York 2005; Winslow 2005; Boyce 2008; Ergas and York 2012).

However, there have also been authoritarian and top-down environmental initiatives that have had beneficial outcomes (Moore 2007; Dillard, Dujon, and King 2009; Klein 2013). One study found that "the higher the level of democracy, the lower the ambient pollution level" (Winslow 2005 as cited in Moore 2007, 188-189). Ergas and York (2012) found that nations with higher women's representation in parliament tended to have lower CO_2 emissions, controlling for urbanization, GDP per capita, and other factors. Moore argues that democracy and social equity are good for the environment because "not only do multiple perspectives see the landscape more thoroughly, but they challenge each other to be more innovative" (Moore 2007, 188).

However, some research demonstrates that democratic governance is not a necessary precondition to sustainable development, as the case of Brazil illustrates. Under a military dictatorship regime from 1964-1985, the mayor Jaime Lerner of Curitiba enforced a technocratic and authoritarian approach to urban sustainability (Moore 2007). During his incumbency, Curitiba built fifty-square meters of green space per citizen, created a high-speed bus transit system utilized by 28 percent of car owners daily, which lowered pollution and respiratory problems compared to elsewhere in Brazil, and created a highly regulated and thriving industrial district (Moore 2007). Others have highlighted the benefits of top-down regulatory approaches to environmental legislation, particularly the United States banning of DDT during the 1970s—perhaps as a response to the demands of civil society (Klein 2013).

Despite prominent counter examples, Moore (2007, 108-109) argues that participatory democracy is better equipped to maintain urban sustainability for a multitude of reasons. Specifically, elites often insulate themselves from environmental

burdens and hazards. Problems that require collective action are more efficiently solved by democratic horizontal networks rather than autocratic vertical networks. Elites tend to suppress conflict to maintain social order; however conflict is necessary as it provides the feedback loops that identify problems and solutions. Citizen's plans better reflect their needs. If citizens plan it, they will insist on implementation, and they will push officials to stay the course. Finally, Moore contends, "environmental degradation is simply an indication that the interests of some stakeholders are being ignored" (Moore 2007, 110).

At the conception of sustainable development, The Brundtland Commission (1987) neglected to include an analysis of global power relations and accepted economic growth as the path to improved human wellbeing. In the wake of criticisms, the UN (2013) developed the Human Development Index (HDI)—"a composite statistic of life expectancy, education, and income indices used to rank countries into four tiers of human development"— in 1990 to measure human progress. They did this to ascertain the quality of development, improved social wellbeing, in addition to the standard practice of measuring the quantity of economic growth, like GNP. This index is missing a number of variables and specifically leaves out democracy indicators (Magis and Shinn 2009). Even with these attempts to address quality, our global ecological footprint keeps expanding beyond the Earth's capacity to sustain human society, now and into the future, and inequitable wealth distribution continues to grow (Dietz et al. 2007; Magis and Shinn 2009). Indeed, Milanovic (2005) demonstrates that international inequality began a sharp ascendance in 1982 and continued to grow into the next century, where poor countries did worse on average than rich ones. Additionally, the UN (1999) observed that income inequality has increased during the post-World War II era, "The income gap between the

fifth of the world's people living in the richest countries and the fifth in the poorest was 74 to 1 in 1997, up from 60 to 1 in 1990 and 30 to 1 in 1960" (3). While the 2013 UN report indicates that income inequality is still on the rise, HDI shows progress in health and education access (Clement 2008; Yates 2012). Disparities within nations are rising as well. Specifically, researchers reveal "wealth inequality in the United States is at historic highs, with some estimates suggesting that the top 1% of Americans hold nearly 50% of the wealth, topping even the levels seen just before the Great Depression in the 1920s" (Norton and Ariely 2011). Consequently, sustainable development has fallen short on some important goals.

Sustainable Development and Modernization

Sustainable development as a practice was conceived of and articulated through neoliberal economic policy, commonly associated with the Reagan-Thatcher period of the 1980s (Brand and Thomas 2005). As such, neoliberal policies pervade development. International development agencies and multinational corporations mainstreamed the rhetoric of sustainable development with Agenda 21 (UN 1992) and purport to consider equity and the environment in their projects. These international organizations work together to finance development that attempts to integrate Global South populations into the global economy. Neoliberal policies include the "deregulation of trade and finance and privatization of public and environmental goods," particularly social services like education, health, and water services (McMichael 2010, 3). Such policies are designed to expand the free market and opportunities for more development. Sustainable development, particularly for developing countries, is supposed to be the answer to

problems of poverty and the environment (Portney 2003, 7). However, as previously stated, society has been running on an ecological deficit since the 1970s, and the trend is toward a worsening of these problems, not toward bettering (Wackernagel et al. 2005; WWF 2012). In addition, markets are unequal in ensuring access to resources, and development since the mid 20th century is largely responsible for the massive urban migration patterns that perpetuate urban poverty that we see in the Global South today (McMichael 2010).

Since the 1992 United Nations Conference on Environment and Development (UNCED) published the "Rio Declaration on Environment and Development" as a guide to sustainable development, sustainable urban development has become institutionalized as part of general urban planning. While they acknowledge that cities are loci of waste as a result of over-production and consumption, some urban researchers argue that "cities and their inhabitants can play a major role in helping to achieve global sustainability" (Rees and Wackernagel 1996, 223; Satterthwaite 2009, 2010). In this section, I will critically engage the work of urban sustainability enthusiasts, the underlying modernization theory that sustainable development employs, and the critiques to this approach.

Development partially entails urbanizing certain regions for commerce and building the supporting infrastructure, like large-scale farms to feed urban populations. Industrial projects, like agriculture, often displace subsistence agriculturalists and pastoralists. Thus, our modern global economic system shifts human populations from rural commons to privatized urban areas. Push-factors, which partially account for why people leave rural areas and move to urban centers, like the mechanization of agriculture,

subsidized food imports as a result of free trade agreements, civil war, drought conditions, and competition with large-scale agribusiness, outpace urban pull-factors, like employment, because developing cities are strapped with debt and economic depression (Davis 2006, 16-17). As a result, urban poverty and slum conditions proliferate. Specifically, slums—or settlements characterized by overcrowding, poor housing, inadequate sanitation, and insecurity of tenure (Davis 2006)—are growing faster than cities and the infrastructure necessary to abate abject poverty. Slums are now home to more than one billion people, which is about 33 percent of the world's urban population (UN-HABITAT 2003; Davis 2006). However, about half of all urban dwellers live in poverty even if they do not live in one of the over 200,000 slums worldwide (Davis 2006).

While the UNCED inspired optimism and direction for many environmentally conscious planners and policy-makers, sustainable development largely became a business enterprise to be spearheaded by capital (Brand and Thomas 2005). Corporate interests and economic elites have hijacked current rhetoric and policy on sustainable development, prioritizing economic gain at the expense of ecological and social justice concerns. To ecological theorists (Catton and Dunlap 1978; Commoner 1992; Foster 2000) the interests and goals of capital, namely accumulation, growth, and expansion, are antithetical to environmental sustainability given that natural resources are finite (Brand and Thomas 2005). However, ecological modernization, the academic tradition that theorizes and empirically investigates the neoliberal capitalist form of sustainable development, suggests that technological innovation driven by competition can overcome

the limitations of the environment (Mol 2001; Friedman 2008). Indeed, these theorists argue that modernization and development are necessary for ecological sustainability.

Environmentalism under this capitalistic economic paradigm ignores nature's intrinsic value and instead reduces it to market logic and exchange value. Beyond privatizing land for property, transnational corporations privatize and commodify resources that sustain human's basic needs. Examples include water, through sewerage services and hydroelectric stations, air pollution and carbon trading, biodiversity, patenting genetic resources, and ecosystems, ecotourism and conservation efforts (Brand and Thomas 2005, 13). To modernists, major avenues for advancement include developing renewable energies, increasing efficiency, implementing market-based carbon cap and trade policies, and curbing individual consumption (Friedman 2008). Critics of modernization theories point to the Jevons paradox, the Netherland's fallacy (which I discuss in detail below), and capitalism's logic of growth as the main limits of modernization on environmental sustainability[7] (Molotch 1976; Gould, Pellow, and Schnaiberg 2008; York, Ergas, Rosa, and Dietz 2011).

A central argument put forward by modernization theorists (e.g., Grossman and Krueger 1995; Mol 2001) is that as nations "develop" and technologically "advance," they reduce environmental impacts due to increases in the efficiency of resource use. However, critics contend that most environmental improvements that occur within a nation as it modernizes are typically due to shifting environmental impacts beyond its borders. Rather than engaging in genuine environmental reforms, nations in the process of modernizing import natural resources and export pollution. This phenomenon is called

[7] Critics also discuss how capitalism ignores natural laws such as entropy. For an extended discussion of entropy and capitalism, see Rees and Wackernagel (1996).

the "Netherlands fallacy," or the assumption that environmental degradation is geographically confined within the boundaries of the nation responsible for extraction, production, and consumption (Ehrlich and Holdren 1971). The name of this phenomenon is a reference to the observation that while the Netherlands is known for its internal decline in overall environmental impacts, it imports most of its natural resources, so the environmental impacts it causes occur in other (typically developing) nations. The Netherlands fallacy exemplifies a process common in affluent nations.

Proponents of technological development have long assumed that improving resource efficiency during production naturally leads to resource conservation. However, a body of empirical research has shown that a phenomenon known as the Jevons paradox, or the paradox of dematerialization (Jevons 2001 [1865]; Polimeni, Mayumi, Giampietro, and Alcott 2008), is a common phenomenon at the national level. This paradox describes the association between the declining ecological intensity (i.e., rising efficiency) of the economy, which refers to the resources or energy consumed per unit of economic output, and the rising total resource or energy consumption (York, Rosa, and Dietz 2003, 2004, 2009; York 2006, 2010; York et al. 2011).

William Stanley Jevons, a pioneer ecological economist, made a significant observation that proponents of technological development virtually ignore. England's industrial revolution in the 19th century was fueled by large quantities of coal. Jevons noted that while technological advances increased coal use efficiency during production (i.e., less coal was used per unit of goods produced), this increase in efficiency paradoxically correlated with an increase in overall coal consumption, rather than a decrease. He also observed a particular string of events that occurred when production

became more efficient. Increases in efficiency made coal-dependent technologies more attractive to producers, since higher efficiency lowers the per unit cost of production. In addition, the profits gained by lowering the costs of production were often reinvested in further increasing the scale of production. The lower costs that came with increasing efficiency also made goods affordable to more people, and latent demand increased commodity consumption. Thus, improvements in efficiency often led to an overall increase of resource consumption because the scale of production increased more rapidly than efficiency improved (York et al. 2011).

Rees and Wackernagel (1996) propose that for urban development to be sustainable, advocates must ensure a "strong sustainability" that stands in contrast with the "weak sustainability" that current neoliberal policies propagate. They use the term "weak sustainability" to refer to the ideas put forward by modernization theorists and the current economic paradigm, which operate on the assumption that "manufactured capital can substitute for natural capital (Rees and Wackernagel 1996, 226). Weak sustainability programs or policies tend to stress economic gain, while neglecting either, or both equity and ecology, which are two of the three crucial elements of sustainability.

Corporations regularly propagate weak sustainability solutions, and intergovernmental development organizations often partner with multinational corporations to advance these projects. Corporations prioritize profits even when social equity and ecological restoration are among their stated goals (Stiglitz 2003; Davis 2006; Foster 2008; Parr 2009; Rogers 2010). This happens because they are serving the interests of their investors who expect short-term returns. These investors are often disconnected from, and their interests are in conflict with, the population the business

serves, the poor, and the accompanying natural environment. The result is "green-washed" consumerism—unsustainable business practices disguised as eco-friendly.

As an example of weak sustainability, a large company in Paraguay called Azucarera Paraguaya provides two-thirds of all organic sugar consumed in the United States and distributes to big names like Imperial Sugar and Whole Foods. Unwittingly, North American consumers contribute to environmentally destructive practices in order to make this ostensibly environmentally friendly organic sugar. Azucarera employs monocropping methods, which scientists argue diminish soil nutrients, cause soil erosion, and deplete groundwater. They also rely on the deforestation of one of the most biodiverse and threatened forests in the world—the Upper Paraná Atlantic Forest—where only 8% of its ecosystem remains. In addition, this company uses the manure of industrially raised chickens, which are given antibiotics and feed laced with arsenic to promote growth (Rogers 2010).

While recognizing that the affluence of a population and their potential for overconsumption creates barriers to urban sustainability, some urban theorists further argue that there are key features of cities that allow for opportunities towards urban sustainability. For one, because of urban density, high standards of living are possible with lower greenhouse gas emissions (Satterthwaite 2010). This can happen if residents have access to public transportation, convenient walking or biking paths, live in close proximity to goods and services, and live in energy efficient high-rise apartments. Specifically, 82 percent of Manhattanites in New York commute to work via public transit. The average New Yorker emits 7.1 tonnes of greenhouse gases, while the average American emits 24.5 tonnes (Owen 2009). Their lower emissions are not just a result of

forgoing car use for public transit, but also most people live in apartment buildings. Their smaller housing units necessitate less energy to heat and limit space for things like superfluous appliances. In addition, Rees and Wackernagel (1996) posit that cities can more readily provide treated and piped water, sewer systems, waste collection, material recycling and remanufacturing, and less demand for occupied land. Satterthwaite (2010) contends that urbanization does not drive environmental degradation, but economic and political activities pushing development and economic growth do.

Nevertheless, Molotch (1976) refers to cities as "growth machines." He focuses on the political and economic forces guiding land use in urban settlements. By analyzing social structure, power, and class hierarchies, Molotch identifies economic growth as the primary driving force of political will. In this view, the main goal of each city is to attract as much business as possible to grow the city and the economy. As engines of economic growth, cities are energy and materially dependent on resources from hinterlands; thus, they are dependant on regional or global trade (Rees and Wackernagel 1996). The people who choose to lead tend to have a vested interest in growth as well and are not representative of the people who make up the city. These leaders are commonly propertied elites, businessmen, lawyers, and realtors, who benefit from economic growth by attaining more resources and capital. Thus, social issues, like social justice, environmental protection, and labor issues, are treated as "symbolic" and auxiliary.

In addition to this, Molotch and Logan (1984) identify a tension that exists in cities between exchange value and use value (Jonas and Wilson 1999). Many urban developers see the potential for exchange value in each parcel of land. That is, they buy

land based on its potential for commodity production and profit generation. Moreover, local politicians generally establish city zoning laws and codes to facilitate that exchange. Conversely, because the city is also a dwelling space, urban residents often see the potential use value of urban lots. Instead of an industrial site, residents may prefer a park or community center, which are spaces that do not generate profit. Because sites like these run counter to the growth machine logic, they are often difficult to obtain or maintain without constant struggle, or the help of social movements. But if we could reimagine cities predominantly around use value and quality of life rather than exchange value and growth, we can conceive of socially just and sustainable urban environments.

Cities should strive for "strong sustainability" by operating under ecological principles that include adhering to biophysical limits and recognizing that "biophysical capital perform[s] critical functions that cannot be replaced by technology" (Rees and Wackernagel 1996, 226). Strong sustainability differs from weak sustainability in terms of emphasis, specifically stressing the equity and ecology aspects of sustainability as an indication of economic gain. Although the enduring health of an ecosystem is never a guarantee, strong sustainability includes prioritizing the needs of the most vulnerable populations of people while maintaining or restoring the natural environment (Rees and Wackernagel 1996; Kellogg and Pettigrew 2008). This may involve figuring out the most effective and socially just use of local land and resources through democratic processes. Concurrently, communities must make efforts to support interrelated ecosystems and minimize pollution by maintaining closed-loop systems, like nutrient cycles. Economic gain can be reenvisioned to include increases in quality-of-life indicators and the health of the ecosystem. Relocalization is a necessary condition of

sustainability, as it promotes local community participation in every step of the production, consumption, and waste disposal process. This keeps the community aware of the effects of their activities because they can see, and adapt to, changes in their local environments.

Policy for sustainable development should include sustainable use of hinterlands, which means ensuring that "natural capital stocks are adequate to provide the resources consumed and assimilate the wastes produced by the anticipated human population into the next century, while simultaneously maintaining the general life support functions of the ecosphere" (Rees and Wackernagel 1996, 226). This should be done while ensuring that resources are distributed evenly and in a socially just manner. While current iterations of cities are not sustainable on their own, researchers argue that cities can be maintained if urban areas do not exceed the ecological limits of their corresponding hinterlands (Rees and Wackernagel 1996).

To date, there is little evidence that cities with high standards of living can in fact be sustainable, and there are no contemporary examples of such cities (Satterthwaite 2010). Most current examples of cities with high standards of living operate under the capitalist, pro-growth model of "weak" sustainable development (Rees and Wackernagel 1996). Since there are no examples of cities with high standards of living operating under a "strong sustainability" development plan, it is yet to be seen how sustainable any city can actually be.[8] I will now turn my focus to the unsustainable features of capitalism and growth-oriented economic systems.

[8] Some proponents of sustainable urban development believe that we can achieve urban sustainability through non-growth steady-state economies (Commoner 1992; Daly 1996). Daly defines a steady-state economy by maintaining that "the aggregate throughput is

Metabolic Rift

Metabolic rift theory offers a means to critique the premise of sustainable development by exposing the internal contradictions of capitalism. In this section, I turn to how these economic activities affect equity and environment, specifically, the rift generating mechanisms of industrial capitalism. This theory highlights how exploitation of peoples and the environment are an essential characteristic of capitalism. The project of sustainable development, increasing human wellbeing and maintaining the environment while growing the economy, is undermined by its very foundation—capitalist processes. To be sure, there are examples of other political and economic systems as well as societies that have created irreparable ecological rifts and have collapsed as a result of these rifts (McNeill 2000; Moore 2000; Diamond 2005; Mosley 2010). However, industrial capitalism has greatly expanded rifts to an unprecedented global scale and is the current economic system advancing global rifts (Burgess, Carmona, and Kolstee 1997; McNeill 2000; Moore 2000). Here, I outline Marx's theory

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constant, though its allocation among competing uses is free to vary in response to the market. Since there is of course no production and consumption of matter/energy itself in a physical sense, the throughput is really a process in which low-entropy raw materials are transformed into commodities and then, eventually, into high-entropy wastes. Throughput begins with depletion and ends with pollution… Qualitative improvement in the use made of a given scale of throughput, resulting either from improved technical knowledge or from a deeper understanding of purpose, is called "development." An SSE therefore can develop, but cannot grow, just as the planet earth, of which it is a subsystem, can develop without growing… The other crucial feature in the definition of SSE is that the constant level of throughput must be ecologically sustainable for a long future for a population living at a standard or per capita resources use that is sufficient for a good life." (31-2). This falls inline with the idea of "strong sustainability" as a non-growth oriented economy should only be concerned with maintaining the livelihood of the population. Again, we have no examples of cities with high standards of living and steady-state economies.

of metabolic rift as extended by Foster (1999, 2000). Then I discuss other theorists who highlight different aspects of metabolic rift (McClintock 2010; Salleh 2010) and deficiencies in the theory.

History of Metabolic Rift

Marx utilized the concept of the metabolic rift to describe "the material estrangement of human beings within a capitalist society from the natural conditions which formed the basis for their existence…" or "nature-imposed conditions" (Foster 2000, 163). Marx developed his understanding of metabolic rift by studying Liebig's work on the degradation of soil. Liebig found that large-scale agriculture diminishes soil nutrition and necessitates imported fertilizer in order to remain productive. He contended that a "rational" agricultural system is based on "restitution," or the idea that in order to ensure permanent use of the land the farmer must give nutrients back to the soil (Foster 2000, 153). Agricultural and human waste is an integral aspect of soil nutrition. However, this waste began its separation from the soil during the industrial revolution. Capitalists needed to mass-produce commodities for more profits, which in turn created demand for human labor. Thus, laborers were pulled into city industrial centers to produce commodities instead of working the soil for food. This initiated a chain of events that included importing food from the country to urban centers so that laborers could then purchase it. Agricultural and human waste, instead of going back to the soil in a reciprocal metabolic process, polluted the cities – thus creating the antagonistic relationship between town and country. As such, the town is the consumer of nutrients while the country is the producer. This division of labor between town and country only intensified as capitalist production expanded (Moore 2000).

Also integral to Marx's conception of "rift" is capitalist exploitation, or the failure of capitalism "to maintain the means of reproduction" for both the soil and the worker. Without a system of "restitution" for labor or soil, a "rift" is created in both of these metabolic processes (Foster 1999, 2000). The contradiction in exploitation is that failing to maintain reproduction is economically unsustainable because production is reliant on cheap labor and consumers. Whereas the need for continuous accumulation is ecologically unsustainable because commodity production is reliant on finite energy and natural resources; therefore, the system cannot exist indefinitely[9]. However, capital has been able to extend its life through trade liberalization and globalization, which have effectively turned the developing world into the hinterlands (or country) for the developed world.

Layers of Rift

Salleh (2010) elaborates on reproduction, social metabolism, and ecological metabolism. For her, another part of the process that requires emphasis is the regenerative, reproduction work that subsidizes the capitalist economy, which she terms meta-industrial labor. This is the unpaid work from caregivers, peasants, and indigenous gatherers that propels metabolism, has rift-healing properties, and sustains metabolic value. Anthropocentric economic measures of value like use value, or material utility, and exchange value, or market worth, do not account for metabolic value, or a flourishing ecosystem that is the basis of life itself. Salleh (2010) uses debt to mean an unequal exchange or "nonreciprocal material transfer," as part of the process of the associated

[9] Diamond (2005) suggests a five-point framework to societal collapse. The key elements to either survival or death of societies in this framework are "environmental damage, climate change, hostile neighbors, friendly trade partners" and, most significantly, "society's responses to its environmental problems" (11).

rifts created by capitalism (211). While capital is ecologically indebted to global peasants and indigenous groups who have lost their land and livelihoods in the face of industrial development, capital also creates an embodied debt to women and mothers who lose their intergenerational livelihoods, that take the form of handing down tradition or safe natural environments to their progeny. She also describes the social debt that capitalism owes to exploited workers who experience a social rift and give their lives and labor to capitalist production.

McClintock (2010) further clarifies the additional metabolic processes that capitalism creates rifts in. Specifically, he highlights three components of metabolic rift: 1. Ecological – the biophysical and spatiotemporal elements of metabolism; 2. Social – the commodification of land, labor, and food; and 3. Individual – alienation of humans from nature and the products of their labor. The ecological component is the break in the soil nutrient cycle and the antagonism between town and country. The social aspect of his formulation points to how capitalism turns the necessary aspects of everyday life, like work, food, and land, into fictitious commodities that are bought and sold in the market. In the final component, the individual rift, McClintock refers to Marx's theory of alienation wherein individuals are estranged from the products of their labor. They do not own what they produce. In this formulation, a fully rational agriculture would mean that an individual farmer, or group of farmers, would work on a piece of land that no one owns to produce food for their personal consumption. Their waste would go back to the soil to nourish it for future production.

There are historical examples of other economic systems, such as the communist Soviet Union (McNeill 2000), and urbanization processes that have had similar rifting

effects on metabolic cycles (Moore 2000). Cities built prior to the rise of capitalism experienced similar divisions of labor between town and country and spatial and temporal divisions in nutrient cycles. However, industrial capitalism has greatly expanded rifts to an unprecedented global scale (McNeill 2000; Moore 2000; Salleh 2010). On this scale, peripheral or developing nations serve as resource extraction sites or the hinterlands (or the "country"), while cities, especially in the core or developed world, consume and cultivate an ever increasing desire for these resources, further entrenching rifts (Moore 2000). Given the scale of global rifts created by the current phase of capitalism, which has pushed over half of the world's population into cities that are still growing with no sign of abatement, the questions we should be asking are can we create sustainable and socially just urban environments and how?

Mending the Rift

According to Foster's interpretation of Marx, in order for restitution to occur to mend the metabolic rift, the associated producers, or the collective of laborers and free farmers who own their means of production, must rationally plan agriculture to eliminate the antagonism between town and country, or the ecological rift (Berry 1977, 169). Foster specifies that eliminating the antagonism between town and country includes three processes: first, the integration between industrial and agricultural production, second, a more even dispersal of the population between town and country,[10] and finally, the return

[10] Rees and Wackernagel (1996) suggest that redistribution of the population may not be necessary; however, it is an unknown. They assert that "the real issue is whether the material concentrations and high population densities of cities make them inherently more or less sustainable than other settlement patterns. What is the materially optimal size and distribution of human settlements? We cannot say on that basis of the mixed

of waste from both human and industrial production and consumption to the soil as nutrients (Foster 2000, 169). Fosters' steps towards restitution are informed by Marx, who wrote in Capital volume 3, "Freedom in this sphere can consist only in this, that socialized man, the associated producers, govern the human metabolism with nature in a rational way, bringing it under their own collective control instead of being dominated by it as a blind power; accomplishing it with the least expenditure of energy and in conditions most worthy and appropriate for their human nature." However, Foster does not go into detail about what each step towards restitution entails. While a political economy perspective is critical to understanding the link between social inequality and environmental dynamics, it is inadequate at addressing how patriarchy and racism affect the division of environmental costs and benefits (Pellow and Brehm 2013). On account of this, I turn my discussion to other theories of the environment.

Environmental Justice and Gender and the Environment

Environmental justice is ultimately at the core of restitution, or a means to mend social and ecological rifts. According to the EPA (2012):

> Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across this Nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

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evidence to date. Until we know the answer to this question, we cannot know on ecological grounds whether policy should encourage or discourage further urbanization " (Rees and Wackernagel 1996, 244-5).

In *The Ecological Rift*, Foster, Clark, and York (2010) assert:

> This ecological rift is, at bottom, the product of a social rift: the domination of human being by human being. The driving force is a society based on class, inequality and acquisition without end. At the global level it is represented by what L.S. Stavrianos in *Global Rift*—a history of the third world—described as the imperialist division between center and periphery, North and South, rich and poor countries. This larger world of unequal exchange is as much a part of capitalism as the search for profits and accumulation (47).

Though their focus is on class and divisions between developed and developing nations, these injustices are also perpetuated against most historically marginalized groups within nations based on racial and gender hierarchies as well as divisions in nationality, age, religion, and sexuality (Capek 1993; Bullard 2000; Taylor 2000). Empirical research suggests that ecological degradation and social inequality work in tandem. Specifically, cross-national research indicates that women's status within nations corresponds with CO_2 emissions per capita and environmental treatise ratification (Norgaard and York 2005; Ergas and York 2012). Other research shows correlations between greater income inequality and higher rates of biodiversity loss (Mikkelson, Gonzalez, and Peterson 2007; Holland, Peterson, and Gonzalez 2009). Greater racial segregation in the United States is correlated with worse environmental and health outcomes for all groups (Morello-Frosch and Jesdale 2006). Cross-national studies have found that a more equitable distribution of power, measured by democratic engagement, political and civil rights, and literacy, is correlated with better environmental quality, even when controlling for per capita income (Boyce 2008). Even in the United States, states with more equitable distributions of power have more stringent environmental policies (Boyce 2008). This suggests that greater social equality may lead to greater environmental quality.

Environmental justice scholars identify urban areas as the loci of environmental injustices committed against different historically marginalized groups (Taylor 2009). Urban slums and neighborhoods that house predominantly people of color are more at risk of being situated near or on waste facilities, toxic industries, incinerators, and any number of unwanted land-uses (Bullard 2000; Pellow 2007). Women, as the majority of the world's poor (UN Women 2011), are particularly vulnerable to these injustices and experience distinct types of environmental injustices based on cultural positioning and gendered divisions of labor (Rocheleau et al. 1996).

Shiva (2005) and Waring (1999) outline some of the environmental injustices imposed on women by the neocolonial capitalist project throughout the world. Shiva (2005) posits "women have been the primary producers in the sustenance economy." Additionally, she says that women "are the providers of food and water, of health, and social security" (130). When a World Bank development project and partnering transnational corporation develop an area, it can be devastating for both the poor men and women who may experience displacement and loss of food and water sources, among other resources. However, women usually suffer amplified burdens (Rocheleau et al. 1996; Momsen 2010).

The Lesotho Highlands Water Project (LHWP) in South Africa is an example of how women have been displaced (Braun 2008). Funded by the World Bank and other international banks, they initiated a dam development project in order to generate profits from water, the one abundant natural resource in the region. The dam building project was associated with natural water springs changing course or drying up, the dislocation of wild vegetables and medicinal herbs, and the displacement of rural communities. Local

women relied on these springs and wild plants for subsistence for themselves and their families. When these resources disappeared, women had to walk further each day to find them. If women found no replacement supplies, then they were usually the first to go without food and water. Contracts mandated some remuneration; however, women had no legal rights to compensation and had to rely on men in their households.

Feminist theorists argue that the conventional definition of development is universalist, masculinist (Shiva 1997), heterosexist, economically deterministic, modernist, and violent (Waring 1999). According to McMichael (2008, xxxviii), "the conventional definition of development is 'nationally organized economic growth,'" but he argues that in the era of globalism, in which the international development industry is a significant set of actors, a better definition of development is "globally organized economic growth." This vision of development originates in the United States and an underlying assumption is that this form of development is good for all peoples regardless of culture. In *Feminist Futures*, the authors attempt to change the dialogue around development to center women, who traditionally do not benefit from development, and to put "culture on par with political economy," focusing on "critical practices, pedagogies and movements for social justice" (Bhavnani, Foran, and Kurian 2003). They advocate an approach to development that is holistic and particularly benefits the marginalized, including the environment.

The universalist frame of traditional development lacks consideration of the particularities of place, society, and culture, defined as everyday practices. It also neglects inequalities based on caste, race, gender, and sexuality. The gender and development, or GAD, approach to "development" as defined by Young is "a complex

process involving the social, economic, political and cultural betterment of individuals and of society itself" (1988, 52). If "development" is even necessary to begin with, it should be mutually agreed upon and should positively impact the lives of all individuals involved, both human and nonhuman. This definition of development breaks with the traditional definition in that it does not center economic growth.

Critics of growth-oriented development demonstrate that growth is a quantitative increase while development is a qualitative change. The consequence of the growth model is disparate development. Magis and Shinn (2009, 17) address the corollary dynamics of extreme wealth and abject poverty:

> Wealth is expanding for an extremely small proportion of the world's people, causing excess and inequitable consumption and deterioration of democratic institutions (United Nations Development Programme 2002). Meanwhile, a rising number of people are becoming permanently superfluous to the world's economy, adding to the persistently high numbers of extremely poor and malnourished people.

Further, the combined affects of market liberalization and the elimination of social safety nets, like universal health care programs, undermine social wellbeing and lead to the decline of civil society because impoverished people must spend all of their time trying to make ends meet (Polanyi 2001)

It is with both ecological and social justice considerations in mind that I develop a theory of restitution, as a strong sustainability that is concerned with equitable distribution and decision-making, use value, quality of life, and attention to overlapping ecologies. Both of my case-studies highlight aspects of this formulation, but neither is ideal. They both face challenges dependant on different social, political, and economic contexts.

Methods and Cases

I use a cross-national comparative case study design to examine two case studies—one an urban ecovillage in the Pacific Northwest and the other an urban farm in Havana, Cuba—to assess the barriers to social justice and ecological, or radical, sustainability in urban settings. By examining two cases of people attempting urban radical sustainability in different cultural, political, and economic contexts, I determine the different barriers to these projects. Further, I gauge the constraints and opportunities that both top-down and grassroots approaches pose in different political, economic, and cultural milieus to engage questions about the necessity of democracy for social sustainability and challenge assumptions that capitalist economies are actually necessary for democracy. The project in the Cuban context developed in response to a centralized, governmental program while similar projects in the United States tend to arise out of frustration with, and in opposition to, governmental policies. The reason I chose these two sites to look at urban sustainability is that they are both model sites for what they are attempting to achieve. If these are model projects, what do they still lack, and what can we learn from their strengths and weaknesses?

Ecovillages are intentional communities committed to social and ecological living and are a relatively new and burgeoning social movement. Ecovillagers at this site use perma-culture designs—architectural and food-growing techniques modeled from ecosystems—to grow food in their gardens, build earthen structures, and maintain their compost. They also develop tools for things like food preservation (e.g. solar fruit dryers), out of recycled materials on and around their property. I was impressed by their ingenuity and the elegance of their designs that made typically labor-intensive practices,

like gardening, seem effortless and sensible. However, ecovillagers experience many setbacks to their work. They do not own their property and must pay a monthly mortgage payment that is always a struggle to make. In addition, they are up against city zoning laws that impose many restrictions on the types of buildings and practices they can have on their property. Specifically, greywater recycling is illegal where they live; regardless, they choose to use their greywater to keep a decorative pond.

Havana, Cuba is an ideal site to explore urban organic agricultural practices. I worked on an urban farm in the winter of 2011 on the eastern periphery of Havana. There, I conducted participant observation and semi-structured interviews with farm-workers. I saw them utilize their plant waste for compost and their livestock manure to feed their worms. With this waste, they create a nutrient-dense soil mixture with the compost, worm humus, and rice shells. Aside from recycling organic waste materials, the farmers are adept at fixing old machinery by mixing and matching parts from different broken down machines. Items like garlic paste, which are made and sold at the site, are stored in recycled glass bottles farmers obtain from the local community. Most everything on site was recycled, reused, or repurposed. Nonetheless, farmers are frustrated by the lack of resources, as there are times when machines breakdown that must be replaced. Since governmental approval must precede the purchase of large items, bureaucracy slows them down, and in turn, hurts potential sales.

Synthesis and Plan

In sum, there are urban researchers who believe that, even though cities have at once been the primary drivers of resource extraction from hinterlands and the ensuing

polluters, cities are key to sustainability (Rees and Wackernagel 1996; Satterthwaite 2009, 2010). Nevertheless, the project of sustainable development has been taken over by business interests and those with capital. Some call their model "weak" sustainability because the current agenda is to grow the economy and address environmental problems through technological fixes and the market rather than through ecological principles. Market solutions have been shown to create more rifts in human and nature metabolic relationships (Foster 1999, 2000). Many believe that within the context of global capitalism, this co-opted model cannot achieve "strong" sustainability, or sustainability based on ecological principles (Rees and Wackernagel 1996; Foster 1999, 2000; York et al. 2011).

The cases I chose to examine are potential examples of "strong" sustainability projects, that I believe have rift healing properties. However, both cases are situated in a global capitalist context and have unique barriers to the proliferation of their visions. My goals, through my data analysis, are to highlight each case's move towards restitution, or how they mend some aspects of metabolic processes, and to explore the cultural, political, and economic barriers that each case faces towards achieving "strong" sustainability. Finally, I think it is important to call attention to potential cases of "strong" sustainability in cities because, for better or for worse, over half of the world's population lives in them (United Nations 2009). The infrastructure is built, and despite the problems associated with cities, this is the context in which we must work towards mending human and environment relations.

In my research, I attempt to outline steps toward restitution by looking at real world cases of two urban sustainability projects. I analyze the ways in which they mend

metabolic processes, not only ecological but social and individual as well, and, given their cultural, political, and economic contexts, their limitations. Towards this end, I examine the ecological, social, and embodied debt that capitalism creates. I borrow from Rees and Wackernagel (1996) an optimism for the potential of a socially just strong sustainability in urban settings, although I maintain a healthy skepticism and awareness of the challenges. Cases like Cuba, a predominantly urban nation with a sustainable ecological footprint, demonstrate the potential for sustainable urban environments, but also demonstrate the strides we must take before we achieve a socially just society with a high quality of life.

Chapter Summaries

This dissertation is organized into seven chapters. The introduction sets up the paradox of urbanization, the problem of weak sustainable development, and the definition of strong sustainability. I present my cases as an alternative to sustainable development and as potential examples of strong sustainability. In an article that I co-authored with Professor Richard York, I wrote a section on the Jevon's paradox and the Netherlands fallacy (York et al. 2011, 106-108). I include some of this discussion in my "Introduction" chapter of my dissertation.

The methods chapter offers meticulous explanations of interview protocol, questions asked, note-taking strategies, and personal reflections from the field. I discuss qualitative cross-national comparison and ethnographic field methods, highlighting challenges like power differentials. I address these challenges by reflecting on my social location in relation to my interviewees. Because I am partially expanding on field

research that I conducted for another paper, I use portions of the published methods section and the appendix (Ergas 2010, 37-39). The appendix includes my interview protocol (Ergas 2010, 51). The methods portion will be included in my "Methods and Cases" chapter, and the appendix will be included in my dissertation "Appendix."

In the third chapter, I dig into the first example of strong sustainability, the case of the ecovillage in the Pacific Northwest. I utilize Foster's (2000) discussion of restitution, as conceived of by Marx and Liebig, as a theoretical lens to analyze the efforts toward strong sustainability that ecovillagers attempt to achieve. I grapple with the structural challenges associated with capitalism in their city, like land use versus exchange value and land ownership and rent. I also identify some ways in which town and country dichotomies have been institutionalized in codes, zoning laws, and eminent domain—as an example, the outlawing of activities like animal husbandry. I find that ecovillagers engage in a similar process as Foster's articulation of associated producers rationally planning agriculture and disrupting town and country dichotomies. They do this by collectively working to spread their vision of sustainability by being a "model," employing consensus decision-making techniques on village issues, growing food for subsistence on their urban property, reusing waste both from their scraps and the larger city, and attending eco-fairs to share environmentally friendly innovations. They are constrained by paying a mortgage and rent, working jobs that are not inline with sustainable goals, and maneuvering around city codes that restrict things like grey water usage. The section on the ecovillage movement is similar to work I published in *Organization and Environment* (Ergas 2010, 34-35).

The fourth chapter, focuses on an example of strong sustainability in the Cuban context, where top-down governmental policy subsidizes urban agricultural food production. Following a severe economic downturn, the Cuban government began encouraging urban farming to feed the highly urbanized Cuban population, relocalizing food production and prioritizing the needs of the urban population. Metabolic rift theory posits that the primary structural barrier to restitution is capitalism. I find that in Cuba, eliminating capitalism and attempting to create an economy based on more lateral and cooperative labor, did not automatically bring about environmental reform or gender equity. Cubans still participated in large-scale monocultures for export, a destructive agriculture method, until they lost access to the petroleum inputs that make this form of agriculture viable. It took an economic catastrophe to change their agricultural practices. However, since their economy is not based on exploitative practices and is in service to their people, they were able to make many necessary environmental reforms to mitigate these problems. However, economic downturn negatively affected Cuban women, who had, before the crisis, obtained a relatively equitable status in comparison to other Latin American countries, especially in parliament.

The Cuban economic crisis in conjunction with politically and culturally entrenched gender divisions of labor placed disproportionately heavier domestic burdens on women. Salleh (2010) argues that women experience an embodied rift as a result of capitalism and that capitalist economies are subsidized by the non-waged domestic labor that women are usually expected to perform. I find that patriarchal government institutions, like the Cuban government, perpetuate women's reproductive labor subsidy even in a communist state-run economy. As an example, a political constraint, or

obstacle, to social sustainability in Cuba is the way in which the Cuban government stifles democratic processes and civil society, specifically inhibiting Cubans from establishing organizations unapproved by the government, inner party debate, and dissenting viewpoints. This negatively affects women's ability to address deeply ingrained socio-cultural forms of sexism, like demanding domestic roles, that impede their potential to participate in local, or neighborhood level, democratic decision-making. In order to deal with food shortages as a result of the economic crisis, women, as the primary food preparers, had to stand in long lines at grocery stores to see if food items were available. Other household resources were scarce as well, placing more domestic burdens on women. Women's limited ability to participate further entrenches gender divisions. Other problems they encounter include needing to implement an educational campaign to convince Cuban people to use vegetables as culturally appropriate food in their daily diet. Urban farms are not equally available to all urban dwellers, and gender divisions of labor keep women from participating to a large degree.

In the fourth chapter, I include a portion of a literature review that Hannah Holleman and I wrote together. She included some portions of this literature review in her dissertation chapter entitled "The Political Economy of Energy Justice in Cuba," and she cited me at the beginning of this chapter. I wrote some of the literature on Cuba with her because we had both gone to Cuba together to do environmental research, and we were both writing a portion of our dissertations on Cuba. However, my focus was different than hers, and I collected different data. Thus, I will only use overlapping information like the history of Cuban environmental reform from the 1990s on and information on gender and racial inequality. I also include a brief discussion of gender

and the environment (Ergas and York 2012, 966-968) that is similar to something I wrote in a co-authored article published in *Social Science Research*. I include a brief discussion of the history of Cuban agriculture (Ergas 2013, 46-51) that is similar to something I published in the *Monthly Review*. I agreed to write this book review and the history of Cuban agriculture as a setup for my dissertation. The rest of my chapter is based on my data and is my original analysis.

The fifth chapter is a synthesis chapter that compares and contrasts the two cases to assess the cultural, political, and economic barriers that each context poses to socially just ecological sustainability. In addition, I highlight the advantages and disadvantages of each project and their context to reveal how change actually happens, as well as the barriers to change. Ecovillagers often cite monetary resources, urban zoning, and slow moving government bureaucracies as the biggest obstacles to change. However, many ecovillagers choose to act despite these challenges by sometimes doing things that are illegal, like piping greywater into their fountain, and asking for "forgiveness" later. Cuban urban farmers, on the other hand, are residents of the local community who provide food to their neighbors. Urban farms sell their produce at a low-cost on site to passersby. The main challenges they face are a lack of material resources for new equipment so that workers can sit at ergonomic and private workstations or buy a new sugarcane-juicing machine. In addition, work traditionally done by women continues to be trivialized, diminished, and increasingly demanding.

While juxtaposing the United States and Cuba contexts, I also examine U.S. cultural conflicts between sustainability culture and consumer culture and the exclusive, upper-class, white nature of the local food movement in the United States context

(Molotch 1976; Parr 2009; Alkon and Agyeman 2011). The monetary and time constraints associated with growing local, organic food has largely turned it into an elite phenomenon in the United States, such that it is relegated to those with the disposable income, luxury of time, and education to grow produce for personal consumption. In fact, urban gardening is often cited as a first step to gentrification in urban communities (Guthman 2008; Quastel 2009; Checker 2011). Though, there are notable examples of groups in the United States, like in Detroit and The South Central Farm in LA, where people of color made impressive strides toward food self-sufficiency. Tragically, the South Central Farm faced challenges from a developer who evicted the farmers and bulldozed the site. Grassroots social movements in the United States, like those mentioned, have yet to create systemic and widespread change, particularly in the face of economic prioritization, and continue to replicate social inequalities.

The concluding chapter offers two key findings, practical solutions to the problems of sustainable development, and offers hope for people to organize and begin implementing grassroots solutions to local problems, rendering large-scale technologies obsolete. From macro and micro layers of analysis, I extrapolate two key findings from my cases. First, the structure of society matters in determining the opportunities for sustainability projects to occur. As postulated by metabolic rift theory, my cases suggest that capitalism is a structural barrier to sustainability, but eliminating capitalism is an insufficient condition for nations attempting to attain equity or environmental protection. Second, any discussion of structural power dynamics that fails to consider real people embedded in on-the-ground social power dynamics would be incomplete. While Agenda 21, metabolic rift theory, and ecological gender scholars argue that social inequalities and

environmental degradation are interrelated and mutually reinforcing, my research findings complicate this.

A macro analysis directs discussion in the ways in which capitalism is a barrier to strong sustainability globally, but especially in the United States. Capitalist goals of short-term wealth accumulation dis-incentivize long term planning. Often environmental policies lag because of business resistance. An example of this is since the creation of the Business Roundtable, which I discuss in more depth in chapter five, in the 1970s, a policy group made up of top corporate CEOs, environmental groups have not been able to pass any environmental legislation that the Roundtable opposes (Domhoff 2005). In addition, capitalist goals of wealth accumulation affect ecovillagers in their everyday lives as parcels of land are imbued with potential exchange value. Thus, ecovillagers constantly struggle to make rent or the mortgage payment in order to live and work the land.

Metabolic rift theory posits that capitalism is a major structural barrier to environmental protection and equity. The Cuba case offers a glimpse of the potential for different economic and political structures that may bring societies closer to restitution. Because Cuba's economy is oriented toward meeting human needs, unlike capitalist economies, and is less connected to hegemonic neoliberal trade, Cubans were able to reorient their food production system toward self-sufficiency. They did this by relocalizing food production, producing food through organic and labor-intensive means, reusing waste, and utilizing vacant urban lots. As a result of these endeavors, they became world renowned for their environmental stewardship. However, Cubans face their own sets of challenges regarding the social aspects of sustainability. Specifically,

the government has gone through waves of silencing debate and opposing viewpoints. This has served to limit civil society. While concomitantly squelching debate, socio-cultural sexism impedes women's ability to engage in democratic decision-making processes. The Cuba case offers hope and illustrates how societies can move closer toward achieving the goals of Agenda 21 while it also illustrates the potential challenges and limitations to these projects, particularly with regards to gender equity.

The connection between equity and environmental sustainability remains unclear. My research suggests that there are likely other variables beyond capitalism and democratic decision-making that affect equitable social relations and environmental protection. More research should be done to parse out the specific mechanisms between these two aspects of sustainability.

CHAPTER II

METHODS AND CASES

The description of the ecovillage case and methods in the following chapter is already published in *Organization and Environment* (Ergas 2010, 37-39).

Qualitative Comparative Methods

I did field research at two sites, each of which is described below. At each site, I employed an ethnographic approach, which is defined as "firsthand participation in some initially unfamiliar social world and the production of written accounts of that world by drawing upon such participation" (Emerson, Fretz, and Shaw 1995, 1). The method I used was a qualitative cross-national (or cultural) comparison. This entails "studying certain phenomena in different cultural settings… beginning from the level of local practices, people's everyday life and experiences" (Gómez and Kuronen 2011, 685). I use this method in order to identify the real world limitations to urban sustainability, especially in different cultures and political and economic contexts. This way, I can get a better picture of what is culturally specific and how to plan for the different problems that can occur under different political systems.

The specific phenomena that I focused on are the attempts at developing urban sustainability at each site, the urban ecovillage and the urban farm. The first case I examined was an urban ecovillage in the Pacific Northwest United States. For my second case, I worked on an urban farm on the eastern semi-periphery of Havana, Cuba. Many

researchers have utilized the cross-national comparative case-method to get at what is generalizable about the phenomena under study, what is culturally specific, and how the cases relate to one another (Gómez and Kuronen 2011). As an example, Rudel (2009) examines two international cases to show how people transform landscapes and the interrelated problems associated with deforestation in the Ecuadorian Amazon and suburbanization in New Jersey.

I applied a variety of techniques in each of my cases. Specifically, I conducted participant observation, semi-structured in-depth interviews, informal interviews, and observations. I analyzed media related to my cases from newspapers, television, art, and documentaries, and I read each site's official and unofficial documents. I kept detailed field-notes of my observations, jotting them down at the site and typing them up later the same day. I recorded semi-structured interviews on a recording device, and I uploaded all interviews onto my password-protected computer and transcribed them for analysis. My interviews generally ranged from 30 minutes to three hours.

Dorothy Smith (1987) contends that in order to understand constraining institutions and power relations, it is important to ask respondents about their everyday actions to see how institutions organize these actions. Thus, in my interviews I asked respondents to describe their daily activities (see Appendix). I go into depth about each case below. First, I outline some advantages and disadvantages to qualitative cross-national comparative research.

Methodological Challenges

Because of the richness of data that qualitative case-studies generally, and cross-national comparisons in particular, afford we can gain a deeper understanding of a phenomenon that is difficult to achieve with quantitative methods. The case method allows researchers to examine the particularities of certain phenomena in their unique cultural context. When comparing cases, researchers can glean what is specific to each context and what transcends cultural differences (Gómez and Kuronen 2011). Systematically analyzing case-studies can help to develop theory by uncovering patterns, nuance, and latent features of a phenomenon. Immersive techniques give the researcher holistic insights by allowing him/her to experience what subjects experience in real time and space (Berg 2007). We learn through language what is culturally meaningful, prioritized, dismissed, or absent (Gómez and Kuronen 2011). In addition, we can parse out the discrepancies between normative prescriptions and everyday practices to reveal internal contradictions or legacies of colonial intrusion (Burawoy 1998; Gómez and Kuronen 2011).

As a foreign researcher to Cuba, some challenges I faced included understanding the idiosyncrasies of a new culture and participants' conceptual frameworks, which affect both how they interpret and answer interview questions (Øyen 1990; Gómez and Kuronen 2011). I attempt to get around these problems by using a comparative case-study from the United States to examine the different forms of language that respondents use, word choices, and priorities in each context, as well as the meanings of words, concepts, and phrases.

Cases

Significance of Each Case

If we are to critique the global project ironically called sustainable development, and argue that another way is necessary, we should be looking to emancipatory projects already underway to highlight alternatives (Wright 2010). And, if we are to undertake emancipatory projects, we must be aware of the types of problems that people encounter so that we can strategically plan accordingly. Thus, in my work I assess the barriers to urban sustainability projects to uncover the ongoing challenges the people engaged in these projects face. I chose exemplary cases, or model sites, because it is through the most innovative projects that we can begin to see how far we still need to go to achieve sustainability. Model sites can impart important lessons not only by providing examples and inspiring ingenuity. They can also provide glimpses of systemic deficiencies or day-to-day activities that undermine their own progress. My goals are to develop a theoretical understanding of urban sustainability at a local scale through comparative case-studies representing two different political and economic contexts. Model sites are the only examples we have of best practices, and they still face barriers, both institutional and interactive.

Ecovillage: Pacific Northwest United States

The first case-study I investigate is an urban ecovillage located in a city in the Pacific Northwest United States. Ecovillages are a relatively new and burgeoning phenomenon internationally. The particular ecovillage in which I conducted interviews and participant observation is ideal to study because it was established during the conception period of ecovillages, the early 1990s. It still retains some original residents

who experienced the emergence of this movement (Gilman 1991; Smith 2002). A stated goal of the individuals at this site is to spread their vision of sustainability through community outreach projects, like educational tours, television shows, and local newspapers (Ergas 2010). The ecovillage is strategically located within an urban area where residents can attempt to change local city housing regulations, raise environmental awareness, and be "a model" of sustainable living for the local city. Sites like these challenge city and nature dichotomies that inform traditional urban development policies (Čapek 2010). Villagers often find themselves constrained by the larger community because of slow-moving bureaucracies and some citizens' resistance to change. Regardless of these constraints, the village has persevered. Although there are limitations to this case-study, for example, it is not generalizable to all ecovillages or social movement groups, my data reveal everyday challenges that people in the United States face when trying to live sustainably.

I spent slightly more than two months, from July 2007 to September 2007, visiting and living in the ecovillage community; interviewing, observing, and participating in community activities; and engaging villagers in discussion. In exchange for my sleeping arrangements on a futon mattress in a teenager's living room, I was involved in work trade, which included moving compost, cleaning rabbit cages, doing domestic chores, and becoming absorbed in some individuals' environmental awareness projects. After my stay there, I continued to visit the community about once a month for the next 6 months. I promised interview subjects confidentiality. To honor this, I use pseudonyms for people and places throughout my analysis.

I was able to gain access because I had previously spent a summer visiting the community on occasion. My first experience with this community occurred in the summer of 2004. Reentering the community years later was not difficult. Even after three years, the property owners and original conceivers, as well as residents of this community, still recognized my face and met with community members to reassure them that my presence would not be intrusive.

My 24 interviewees included 23 of the 27 adults, older than 18 years, who lived at the ecovillage at the time I entered the community in early July. I also interviewed a woman who had moved off the property a year earlier but had lived previously at the ecovillage for a total of three years. The ecovillage population is constantly changing but is consistently a multigenerational community. My interviewees' ages ranged from 19 to 77 years with a mean age of 36 years. Fifteen interviewees were female, and nine were male. Every interviewee was white, mostly Western European ethnics, a few Eastern Europeans, and a few individuals who claimed to have small parts of Native American ancestry. Of the 24 people I spoke with, 12 had lived there for at least a year or more.

For triangulation purposes, I conducted semistructured, in-depth interviews and participant observation, and I analyzed written community materials. Interviews were recorded and later transcribed, and field observations were jotted down in a field notebook and typed up at the end of each day. Interviews lasted anywhere from 45 minutes to 3 hours, and questions, which I explain in more depth below, focused on personal values, everyday actions including work and play, and reasons for living in an ecovillage (see the appendix). These questions, informed by the movement culture literature, gave me insight into personal and movement goals that ecovillagers strive to

accomplish and how they work toward achieving these goals in day-to-day life (Melucci 1995; Smith 1987; Burawoy 1998; Wood 2002).

I investigated interview data, field notes, and some written materials to decipher respondents' understanding of meaning and action and how meaning and actions are constructed within a dominant society that arranges their opportunities and constraints. I also asked questions about how individuals viewed the city and dominant culture to understand their critique better. Specifically, to interpret ecovillagers' perceived opportunities and constraints in their city, I asked, "What does a typical day look like? Is the larger community conducive to maintaining the ecovillage? And, what resources do you utilize from the city?" Often, personal goals are interconnected with movement goals such as choosing the ecological brand of soap to use or specifically buying local produce. Respondents' answers allowed me to see what they perceived as favorable conditions, such as access to bike lanes, or structural impediments, such as having to pay for land and therefore work in the formal economy, to their goals. Their answers also elucidate instances of agency where they found ways to go around or confront impediments to their goals, such as in an instance with one resident, Ears, who went door to door in his neighborhood in an effort to build more support and community.

I analyzed interview data, a welcome pamphlet, and villagers' everyday actions to distinguish ecovillagers' goals. The co-owner, Emily, wrote and edited a four-page, typed welcome pamphlet. Villagers agreed to new rules during meetings, and newcomers were given the pamphlet during their initial entry and interview process. When coding interviews, I first determined recurring themes from interview subjects' responses to questions regarding ecovillage community values, personal values, their understanding of

dominant cultural values, and problems they see both in the ecovillage and in dominant culture. Then, I evaluated how this understanding of values translates into everyday action by examining responses individuals gave to questions regarding what a typical day looks like, what a typical day might look like if they did not live at the ecovillage, and how individuals' feel the ecovillage is affected by its location in a city. Finally, I used the welcome materials and my observations in my field journal to confirm, disconfirm, and contextualize interviewees' responses to my questions. Through these responses and notes, I disentangled the ecovillagers' most prominent goals and how they understand these goals translating into everyday action within the confines of the dominant culture.

Entrée and Power

A discussion of power dynamics is an important part of my reflection on how I gained entrée during my fieldwork. I was very aware of the power dynamics in my interactions with interviewees, more so in Cuba than at the ecovillage. Burawoy (1998) argues that effects of power are the biggest limitation to qualitative case-study research. Power relations are ubiquitous but this does not mean that we should abandon the qualitative case-study method because of our concerns about the effects power will have on our research.

In particular, researchers cannot avoid dominating or being dominated by our participants. Indeed, Burawoy (1998) contends, "Entry is a prolonged and surreptitious power struggle between the intrusive outsider and the resisting insider" (22). Hierarchies based on gender, race, class, nationality, and position in relation to authority affect ideologies, interactions, and access to resources. Power effects can come up in respondents purposely silencing themselves by leaving out contentious information.

Finally, Burawoy (1988) cautions against normalization, or fitting cases and participants to theory and vice versa, which molds participants into our academic frameworks. He suggests that to temper this problem requires that we more closely embed our analysis in "perspectives from below, taking their categories more seriously, and… working more closely with those whose interests the study purported to serve" (24). However, researchers can learn from their interactions with participants; through these conversations, a reflective interviewer can uncover how local processes relate to social forces, like power dynamics based on systems of oppression and differences in understanding or meaning based on different statuses (Burawoy 1998; Gómez and Kuronen 2011). In order to deal with power effects, I give a detailed account of these dynamics, including a description of my positionality.

I want to acknowledge that my understanding of things that happened at the ecovillage is influenced by my situated knowledge, or assumptions based on my race, class, gender, and nationality, among other things (Harding 1991; Collins 2000). Feminist and postcolonial scholars have discussed what some consider the limitations of ethnographic research through power effects, or our embeddedness in social relations, between researcher and participants. Some scholars suggest that addressing these power differentials in a reflexive science, or acknowledging our situated knowledge, and embracing our positionality is actually beneficial to the scientific project (Harding 1991; Burawoy 1998; Collins 2000). Thus, I engage in a discussion of my particular standpoint, or my different situation based on the historical processes of classism, racism, and sexism.

During my stay at the ecovillage, my positionality more closely resembled ecovillagers than my Cuban respondents. Similar to many of my ecovillage subjects, I am an educated, lower-middleclass, white woman. I was ten years younger than the mean age of my ecovillage interviewees, though I interviewed many women close to my age. At the time, I had just begun my graduate program and was conducting research for my Master's field paper. In terms of these aspects of my identity, my respondents and I shared level positions in social hierarchies.

While I promised my respondents that I would share their story, their words were filtered through my analysis. To deal with this power differential, I emailed each interviewee a copy of their interview transcript along with my notes. During each interview, I informed respondents that if they felt misrepresented or wanted to clarify something when they looked over the transcript, they could contact me with different information. I also emailed a copy of my manuscript over the community listserv before I attempted to publish it to gauge the community's response. I received no response. I have published articles based on this research and honored many respondents' desire to have their story told.

A Portrait

The ecovillage is embedded within a unique neighborhood that is characterized by overgrown lawns, lavish fruit trees, herb garden–lined sidewalks, houses with colorfully painted, wooden frames, which are situated within conventional, square, grid blocks. The ecovillage sits on five parcels of land, approximately an acre, and takes up about half a neighborhood block. The layout of the village is elliptical, with the major axis, or longest distance, stretching east to west. It is difficult to discern from the street that the village is

much of anything. It is surrounded from the east by a wooden fence that wraps around the corner within the confines of the sidewalk. As the fence moves west, it soon turns to cob (an earthen building material), embedded with expressive, ceramic mosaics, beyond the south-facing, cinderblock driveway. Within the walls, the dwellings follow a similar path, situated around the perimeter of the five parcels. The assorted lodging varies from small, wooden cottages to naturally built, earthen apartments, to individual-sized geodesic domes built from weather-protected cardboard. Many materials that make these homes are scavenged from city waste, including abandoned building sites and dumpsters.

In the center of the village is the concrete tile driveway decorated with leaf imprints and small mosaics. This driveway is the home to a small, purple car and a small truck typically adorned with long wooden planks, tools, and several five-gallon buckets. At the end of the driveway, the woodshop garage supports a home just above it where two of the three property owners live. The driveway is often the site of work parties, which consist of community members working collaboratively to beautify the property or build useful and decorative additions. It is the main work site where artistic creativity and ecological design are combined with utility to create a variety of domestic ecotools. There are expansive vegetable and herb gardens on either side of the driveway and fruit trees sprinkled throughout the village. On a summer walk through the ecovillage, one will likely confront earthy aromas including ripening tomatoes, a variety of herbs, alpaca manure, and the nearby compost heap.

On a "typical" summer day during my fieldwork in the ecovillage, villagers begin to wake up about an hour after sunrise. There was often chatter in the morning as individuals watered their gardens or got together to make breakfast out of fresh veggies

from the garden, “dumpstered” (named from the dumpster retrieval process) bread, goat’s milk from a friend’s farm, and/or eggs from their own chicken coop. People discussed their plans for the day, and most of them would leave to either work or play in the city while a few folks stayed on site to maintain the property.

The specific jobs individuals had were interesting to me because all but three of my interviewees had jobs in line with movement goals. One woman was a nanny who worked 15 hours a week and was able to bring her daughter along with her to work. She found this important because she wanted to raise her daughter with her environmental consciousness. Another woman, an acupuncturist, worked one to two hours a week. There were a couple of integrative intimacy coaches trained in nonviolent communication who helped people understand their personal feelings and needs. There were a couple of permaculture teachers, some natural builders and carpenters, and gardeners. The rest of the individuals worked on the property, trading their work for a place to sleep.

The village usually began to buzz again around five in the afternoon when people would return to the property from their jobs or from their bicycle journeys around the city. At the time I was there, residents were getting ready for an ecofair, off the property, where people from all around the state would take on projects aimed at sustainable practices. During the afternoon and into the early evenings, the woodshop was open while villagers worked on their projects. Ralph was busy making nonelectric, wooden fruit driers that used solar heat and air. Huck had a crew of young women working with him to build icosahedral huts made from cardboards, plastics, and other random city waste materials. Ears was also working with a young woman and her tent partner to build a sustainability sunflower wheel, backed by plywood, that provided information on how

to achieve more sustainable living in day-to-day life. Emily had about half of the ecovillagers rehearsing in a play she wrote and directed about sustainability to take to the fair. All the banter usually continued until around 10 at night when people began to retire to their respective beds.

When discussing identity, it is important to examine social factors such as race, gender, class, and sexuality. In my observations, I noticed some interestingly gendered aspects of the community. In general, men thought women held more power in the community, and I observed some gendered work. Gendered work seemed exemplary of the embeddedness of ecovillagers in the dominant culture. I engage this more in the following chapters. I also want to acknowledge that I only caught a snapshot of this village's history. I am not aware of the typical makeup of the ecovillage. It is a transient space and may have looked very different a few months before I visited. For example, all my respondents were white. I do not know if this is typical of ecovillages in general, indicative of the homogeneity of the city, or a matter of the time I was there. Thus, I do not analyze race and ethnicity in this article. Additionally, sexuality was rarely brought up in my interviews. With regard to class, some of my interviewees came from poor or working-class backgrounds, although most were middle class. The fact that most identified themselves as middle class is consistent with Inglehart's (1977) description of postmaterialists who value quality of life over material signs of wealth.

Urban Farm: Havana, Cuba

The second case-study is of an urban farm located in a peri-urban area on the eastern side of the city of Havana, Cuba. I spent two months conducting participant observation and semi-structured interviews with workers at the model farm. Studying

Cuban urban agriculture is important because empirically investigating effort toward sustainability occurring in the real world can help us understand the processes that facilitate and inhibit environmental reform. We can then examine the costs and benefits of achievements, the ongoing challenges, and the contradictions. In this way we discover possibilities that we are not able to imagine in our own context. It is important for scholars in the global North, who are often sheltered from significant struggles abroad, to witness and report the efforts toward sustainability that are successfully being applied elsewhere.

Havana, Cuba is an ideal site to conduct research on urban organic agricultural practices, and it is theoretically interesting because Cuba is "recognized as a world leader in alternative organic agriculture and [urban agriculture]" (Premat 2005, 153). In Havana, locals grow 60-90 percent of the produce consumed in the area (Premat 2005; Stricker 2007). Additionally, the World Wildlife Fund deemed Cuba the only sustainable nation in the world in the 2006 Sustainability Index Report (Hails, Loh, and Goldfinger 2006). Cuba is also interesting because the Cuban government institutionally supports and subsidizes these agricultural practices, unlike the situation in the United States. The specific farm I observed is the model site that is featured in documentaries on Cuban urban agriculture and is where tourists are taken to observe urban agricultural practices in Havana.

Cubans can make a living doing urban agricultural work as this work is subsidized and supported by the Cuban government. However, even in ideal circumstances some problems persist. To try to understand limitations to strong sustainability, I made two trips to Havana, once in June of 2010 and again from

December to February of 2011. My field research involved interviewing, working with, and observing scientists and farm workers at one site. I read formal/informal organization documents and saw documentaries put together by Cuban feminist organizations on Cuban women's work in agriculture. I also had the opportunity to stay with a woman who worked on the farm and her family.

During My first trip in the summer of 2010, I established contacts through Global Exchange, based in the United States, and Cuban organizations such as: The National Urban Agriculture Group, The Federation of Cuban Women, and the Cuban Association of Agriculture and Forestry Technicians. In the winter of 2011, I went to Cuba for a final round of data collection where I worked on one urban farm. While there, I conducted many informal interviews with the men I worked with, and 15 semi-structured interviews, with thirteen women and two men. I recorded and transcribed the formal interviews and took detailed notes of my work observations and informal discussions with co-workers.

Entrée and Power

I more often confronted power dynamics in my day-to-day interactions with Cuban farm workers than I faced in interactions at the ecovillage. Again, my understanding of things that happened on the farm is influenced by my situated knowledge (Harding 1991; Collins 2000). Different aspects of my standpoint are more salient with my Cuban respondents than the ecovillagers. These include the historical processes particular to Cuban colonialism, Western imperialism, and Cuba's unique cultural expressions of racism and sexism.

To address the above concerns, I reveal here that I am a white, Cuban-American, United States native, woman. My family immigrated to the United States from Cuba

after the revolution and were part of an elite, white, land-owning class. I am also a sociologist from a university in the United States with left-leaning politics. These aspects of my identity undoubtedly affect my interpretation of events in Cuba, how Cubans perceive me, and what respondents choose to disclose with me. With my biases clear, I will describe my interactions with the Cubans at the farm.

While the farm president was enthusiastic about my participation at the farm, as was his daughter who housed me, some other workers were skeptical. However, most Cubans I encountered were friendly and eager to talk to me. This may have had to do with the fact that the president seemed happy to have me there and asked that people work with me. Some Cubans seemed particularly interested in talking to a foreigner, especially a United States citizen who was interested in their work. The young people I encountered were enamored with American culture. They often disclosed that they longed to live in the United States. (It is common practice for young men and women, in particular, to marry foreigners in order to move away with them). When I had an opportunity to divulge my Cuban ancestry to my coworkers, many of them would get excited and claim me as Cuban. However, some people seemed to have no interest in talking to me, either because I was a foreigner or otherwise.

I am aware of some of the privilege associated with being a Cuban-American with fair white skin in Cuba. I have the right to freely enter and exit Cuba, for which Cuban citizens must obtain special permission. Having access to United States dollars elevated my class status in relation to most Cubans, though some Cubans obtain remittances from expatriate family members that increase their class standing. Being white is a privileged identity in Cuba, as black or mixed Cubans experience racism. I am from the United

States, an imperial power causing strife to Cubans through the longstanding embargo that limits Cubans' access to resources, many of which I can easily access. Notwithstanding, there were times when my privileged identities were limiting in Cuba.

My experience dealing with government officials in Cuba was very different than dealing with Cuban people on the farm and streets. Perhaps as a result of government censorship (Reporters Without Borders 2012) and/or terrorist attacks against Cuba, like Operation Mongoose initiated by the Kennedy Administration (United States Department of State 1997), and longstanding political struggles with the United States, Cuban authorities are suspicious of foreign researchers, especially from the United States. Unless sponsored by an official Cuban organization, like a university, the Cuban government will not allow foreign researchers to investigate Cuban activities. Gaining sponsorship is a difficult, time-consuming, bureaucratic process. First, Cubans are generally not responsive to communication from the United States. Gaining access is best done in person, which requires an initial visit to Cuba. Second, many organizations do not want to deal with the bureaucratic hassle of making such a request to the Cuban government and will ask that you talk with them in secret. Third, some organizations will grant you sponsorship for a significant price. Finally, the Cuban government has different visas for tourism and research. Unless sponsored by a Cuban organization, the government extends a limited visa to United States travelers. Gaining an extension for the visa requires proof of tourist travel throughout the country. I was not able to gain official sponsorship through an organization and the corresponding research visa; however, the president of the urban farm I observed allowed me to stay there for as long as I could, which amounted to two months because of my limited visa.

In juxtaposition to my encounters with government bureaucracy, the atmosphere on the farm was very casual. The president often, in jest, told other workers that I was his niece (although he may have been saying that to protect himself because as a United States researcher, I did not have permission from the Cuban government to work there). When I tried to refer to him in Spanish using the formal "you," he insisted that he was not above anyone nor was he that old, and thus I should use the informal "you." People on the farm referred to each other in informal ways and often called each other comrade, a gender-neutral and non-hierarchical way of addressing others, likely a remnant from ties to the Soviet Union.

Being a woman had its own set of problems. People on the farm often bantered in a flirtatious manner. Men in particular would, for instance, tell the women they encountered how flattering their pants were, or they would generally notice that the women looked pretty. Men and women often referred to each other as beautiful or handsome. On many occasions, men told me how beautiful I was, and one man told me he was in love with me. In fact, I received invitations for love, marriage, and one-night stands. Trying to avoid these topics proved to be something akin to walking through a minefield. In addition to unwanted propositions, men would refuse to allow me to do physically demanding labor even when I insisted upon doing it. They noted my feminine stature, and told me to let the men take care of the heavy things. Despite these dynamics, working on the farm was generally a delightful experience. The temperature was usually between 70 and 80 degrees Fahrenheit; it was almost always sunny; and most of my work could be completed outside in a cool breeze under the shade.

A Portrait

The farm sits on 11 hectares of land on the eastern periphery of Havana and is less than a mile away from the northern coast. It is nestled in an expansive neighborhood surrounded by high density housing, with three- to four-story apartment buildings filling each city block. When you approach the farm from the street, there is a row of vendors selling products from the farm like produce, packets of pickled vegetables, packets of herbs, and sugarcane juice. If you walk passed the vendors into the farm, you immediately confront the ornamental plant sales area. Here they sell decorative plants, knickknacks, and art.

The farm has many different stations, including a place for bunny cages, vermiculture, livestock, and fields of vegetables. It also has an area dedicated to processing produce for the street vendors into things like tomato sauce, herb packets, and chopped garlic. Each station works in relation to another. The vegetation on the farm feeds the livestock, the livestock provides manure for the worms, the worms produce hummus for the seedlings, and the seedlings eventually go out into the fields.

To the left of the ornamental plant sales station is the covered outdoor meeting place and lunch area. This is where people congregate to discuss farm business, eat, and take a break. The roof is made of thatch, or layered dried leaves and branches, and under it are rows of tables and chairs. Across a large path that people walk and drive through is the office area that houses three separate rooms for the office staff. The buildings are made from clay with metal corrugated roofs. The kitchen, next door, is built similarly and is attached to the repair shop, where machinists solder together parts of broken down machinery to make working tools for the farm. To the right of the metal shop, and across

another large path, rests the area for seeding, plant starts, and the greenhouses that house them. Tropical shrubs and trees, like neem, shade the front area and are scattered throughout the farm.

If you walk further back into the farm, you will confront fields of vegetables, livestock, and vermiculture stations. The farm grows many types of produce, including several varieties of tomatoes, lettuce, eggplant, onions, corn, and garlic. They also grow some tropical fruits like mango and guayaba and different medicinal plants and herbs like mint, basil, and chamomile. The ground at the farm is dry, solid, red clay that covers your clothes and shoes in a layer that looks like rust. It is not the most fertile, thus they must make a soil mixture for their small plants that includes compost, manure, rice shells, and worm hummus.

Coding and Analysis

I applied both inductive, emerging from my data, and deductive, following from theory, analysis to my field notes and interview transcriptions. I began by open, line-by-line, coding of my notes and transcriptions. I noted themes, patterns, and topics of interest. I wrote initial memos noting locations of ideas, themes, situations, and theories that I gleaned. As themes emerged, I went back and began more focused coding, looking for specific topics, themes, and variations. At this point, my memos began to deal more with comparisons, nuances that I had previously missed, and the evolution of my cultural understanding over the duration of my data collection at each site. I engaged sociological theories with the emergent ideas from my data (Emerson, Fretz, and Shaw 1995; Berg 2007). Through this process, I put together the specific analyses of each of my cases.

To compare my distinctive cases, I asked what the similarities and differences were in the language that Cubans and ecovillagers used; the ideology, assumptions, or conceptual framework they departed from; their actual daily actions and activities; and how they articulated what they believed they were trying to accomplish (Emerson, Fretz, and Shaw 1995). I looked for differences in culture, language, conceptualization, and semantic similarities that obscured cultural distinctions. For example, the word sustainability meant something very different to my Cuban respondents than it did to my ecovillagers. Ecovillagers conceptual framework was more akin to environmentalists and social movement participants. However, my Cuban respondents more saw themselves as farm workers providing for their community. With these differences in mind, I wrote the synthesis chapter. The following chapters include a chapter on the ecovillage, Cuba, and a chapter that compares the two cases.

CHAPTER III

HOW ONE ECOVILLAGE ATTEMPTS TO MITIGATE THE ANTAGONISM BETWEEN HUMANS AND NATURE

The section on the ecovillage movement is similar to work I published in *Organization and Environment* (Ergas 2010, 34-35).

Introduction

In the introductory chapter, I discuss how structural capitalist economic processes are destructive to the environment and exploitative of certain groups of people. In this chapter, I examine the inhibiting aspects of these processes on a local scale. Specifically I examine how a grassroots project attempting strong sustainability, or restitution, is stifled within a capitalist context. The processes that lead to environmental problems operate on multiple scales that range from the machinations of the global economy to the everyday actions of ordinary people. Addressing these problems would likely require changing macro-structural features of societies, such as either revaluing the environment, heavily regulating multinational corporations, or radically reorganizing the global economy (Clark and York 2005; Faber 2008; Wright 2010). Micro features of any given society would require examining as well, including the lifestyles and behaviors of individuals. Alternatives for cities are being tested in different parts of the world today, including the United States. Here, I assess how efforts by one group of people in the United States to change their urban lifestyles in accordance with ecological concerns fit into the larger

structural context utilizing Marx's theory of metabolic rift, as developed by Foster (1999, 2000).

In particular, I explore an attempt at a real world example of the under theorized concept of restitution to further develop what Foster, Clark, and York began in *The Ecological Rift* (2010). This concept originates from Liebig's work on soil nutrition, and more specifically means "giving back to the fields the conditions of their fertility" to ensure "the permanence" of soil fertility (Foster 2000,153). As discussed in chapter one, I use restitution more broadly to mean restoring any interrelated metabolic processes that capitalism has created a rift between, including humans' relationship to nature, human economic relations between each other, and the antagonism between town and country.

I argue that the antagonism between town and country, or the rift in the soil nutrient cycle caused by estranged urban human waste and rural food production, is a crucial concept in discussions about restitution. If we focus on the notion of transforming the town-country antithesis, we can develop a theoretically elegant, yet practically imaginative approach to solving modern environmental problems. People have written fictional and utopian stories about recombining town and country, [1] but real alternatives for cities need to be assessed if we are to create socially just environmental change (Wright 2010). There are examples within the United States of urban projects underway that attempt to reintegrate farming into urban community life.

[1] Since the nineteenth century, people have imagined restitution in the rift between town and country, as in the case of Ebenezer Howard's *Garden Cities,* or William Morris' *News from Nowhere*. (Howard 1902; Morris 1970; Clark 2003). Morris' fictional account of a utopian England presented a society in which the antithesis between town and country had been abolished. Similarly, Howard designed a small utopian scale city with lush, open green spaces for gardening and recreation.

One such example is an urban ecovillage, a communal living and garden space, in the Pacific Northwest. I use this example to illustrate the possibilities for restitution in the Marx identified antagonism between town and country. Ecovillagers do face economic constraints due to capitalism, and, at the same time, many of their community values and goals run counter to capitalist goals of accumulation (Marx 1977). According to the theory of metabolic rift, it is the conditions of capitalism that create rifts to begin with and hinder full restitution. Here, I endeavor to describe some of the constraints urban ecovillagers face in a capitalist context by outlining steps that urban ecovillagers take toward restitution and some of the challenges they confront in this process. While within the village they are able to mitigate aspects of the human and environment rift, they face limitations from the surrounding city and larger economic context.

While some people have written on the concept of restitution, they have either looked specifically at problems with agrarian capitalism (Wittman 2009), macro-structural theoretical issues (Foster, Clark, and York 2010), urban agriculture broadly (McClintock 2009), or at one particular site of urban agriculture (Clausen 2007, 2009). The concept of restitution is important to explore because humans' relationship to nature is greatly in need of mending, and highlighting actions that individuals are undertaking towards restitution and strong sustainability in urban areas reveals options and limitations for strategy development toward environmental change.

I have two objectives in this chapter. First, I aim to further the theoretical understanding of restitution and how it actually begins to take shape on a micro and local scale. Second, I attempt to articulate specific limitations and possibilities some activists face towards mitigating the human and environmental rift. I begin by defining the

ecovillage movement, then the theory of metabolic rift with attention to specific rifts ecovillagers struggle with, and I describe examples of how ecovillagers contend with some of the larger issues by working toward restitution in their day-to-day activities.

The Ecovillage Movement

Ecovillages, a specific form of intentional community, are relatively new phenomena. An intentional community is defined as "a group of people," usually at least five individuals, including some not related by blood, marriage, or adoption, "who have chosen to live together with a common purpose, working cooperatively to create a lifestyle that reflects their shared core values" (Kozeny 1995, 8; Smith 2002). Communitarians, or individuals who live in intentional communities, may inhabit a suburban home, an urban neighborhood, or rural land in a single residence or in a "cluster of dwellings" (Kozeny 1995,18). Intentional communities encompass collectives spanning from religious communes to urban housing cooperatives, of which an ecovillage is one type (Herring 2002; Smith 2002).

Robert Gilman (1991) coined the term "ecovillage" in the early 1990s in reference to combining ecological design with a community-building design (10). As the prefix "eco" implies, ecovillages are created with an intent towards sustainable, environmental living. Ecovillagers may utilize green building techniques, constructing buildings that are made from earthen materials, and situate housing units around green space for subsistence gardening. Villages are purposefully laid out to maximize utility from the environment and to foster community interaction (Gilman 1991; Kirby 2004).

Smith (2002) compiled a list of communities from 1990 to 2000 referencing prominent community directories. He found that ecovillages are among the fastest growing types of intentional communities in the United States, where more recorded intentional communities reside than in all other countries in the world combined (Smith 2002). The directories are not complete as many communities refuse inclusion; thus a definitive number of communities is difficult to calculate. In 1990, there were eight ecovillages recorded in the listing, but by 2007, one source referenced 900 such communities in the United States alone (Communities Directories 2007).

Because of ecovillages' rapid growth, ecovillagers outspoken critique of capitalist accumulation and consumerism, and unconventional living arrangements (Walker 2005), some scholars define these networked groups of individuals as a burgeoning social movement (Schehr 1997; Kirby 2004; Ergas 2010). I investigate an urban ecovillage to illuminate ecovillagers' steps towards restitution within a small city by utilizing Foster's outline for metabolic restoration (2000).

Marx's Theory of Metabolic Rift

As briefly discussed in chapter one, Foster (1999; 2000) extended Marx's theory of metabolic rift by outlining how a rift in an ecosystem's metabolism leads to degradation. Marx meant two things when referring to metabolism: 1) the regulatory process that mediates the relationship between humans and nature, or human labor, and, 2) embedded within that relationship, the regulatory process that mediates the relationship between the division of labor and wealth distribution, or institutional norms.

Capitalist exploitation created a "rift" in both of these metabolic processes (Foster 1999; Foster 2000; Clark and York 2005; Clausen 2007; Clark and York 2008).

In this context, metabolism refers to the "specific regulatory processes that govern" the "complex interaction between organisms and their environment," or the material exchange that underlies the "processes of biological growth and decay" (Foster 2000). From Marx's point of view, humans are part of this interaction. Therefore, metabolism represents a complex interaction between social and natural processes. On the side of the natural environment, these regulatory processes include biogeochemical cycles, carbon and nitrogen cycles, e.g. The concept of the biogeochemical cycle describes how essential elements move through living and non-living matter in support of the biosphere (Rockstöm et al. 2009). On the side of human society, Marx believed human labor is the regulatory process, or the mediating factor between society and the environment. It is labor that transforms nature in a material exchange process of "biological growth and decay"—dialectically, from human resource extraction, production, consumption, and waste to soil consumption, production, and waste—in a reciprocal relationship (Foster 2000,157).

In a broader social context, institutional norms on economic trade, or economic systems like capitalism, are the "specific regulatory process that govern" interactions between the division of labor and wealth distribution (Foster 2000; Clausen 2007). This social process is necessarily embedded within the environment because it is the environment that creates the biogeochemical cycles, (i.e., "the natural laws of life itself") (Marx, as cited in Foster 2000). However, these social processes also affect the environment. In a capitalist economy, where short-term profit and accumulation are the

ultimate goals, and long-term, sustainable environmental practices are not a priority, environmental degradation and destruction are pervasive. When the source of human life, the environment, is degraded society must act to change their socioeconomic interactions, and by extension their interaction with their environment. We have chosen not to, and human society is facing ecological limits and extreme environmental changes (WWF 2012).

Marx argued that large landholders, responsible for the kind of agricultural production that exists under capitalism, were more destructive to the earth than "free farmers" (Foster 2000,165). In his view, rational agriculture, or his idea of sustainable agriculture, was unattainable in a capitalist, large-scale agricultural system. Marx (as cited in Foster 2000) wrote,

> The way that the cultivation of particular crops depends on fluctuations in market prices and the constant changes in cultivation with these price fluctuations—the entire spirit of capitalist production, which is oriented towards the most immediate monetary profits—stands in contradiction to agriculture, which has to concern itself with the whole gamut of permanent conditions of life required by the chain of human generations (164).

Capitalist agriculture consists of a chain of exploitative relationships between town and country, landowner and worker, and worker and soil. Capitalist agriculture is exploitative in its relationship to the soil because the goal of large-scale production is short-term profit over long-term subsistence (for a more detailed discussion of these assertions see Foster 1999, 2000; Magdoff, Foster, and Buttel 2000; Clark and York 2005). In this view, the landowner has no relationship with the soil because laborers work it, and laborers have an estranged relationship to the soil because their commands come from the landowner.

Marx's concept of metabolic rift describes "the material estrangement of human beings within a capitalist society from the natural conditions which formed the basis for their existence" (Foster 2000,163). Drawing on Liebig's finding that large-scale agriculture diminishes soil nutrition and necessitates imported fertilizer in order to remain productive, Marx argued that a "rational" agricultural system is based on "restitution," as discussed in chapter one (Foster 2000, 153). Human waste is an integral aspect of soil nutrition. However, such waste began its separation from the soil during the industrial revolution. Capitalist for-profit mass-production created a demand for human labor that pulled people from rural areas, where they worked the land, into urban industrial centers. This led to the importation of food from the country and disrupted nutrient cycles. Concentrations of human waste in urban centers turned into pollution rather than fertilizing the soil, which resulted in an antagonistic relationship between town and country. As such, the town is the consumer of nutrients while the country is the producer.

According to Foster's interpretation of Marx (2000, 169), in order for restitution to occur to mend the metabolic rift, the associated producers, or the collective of laborers and free farmers who own their means of production, must rationally plan agriculture to eliminate the antagonism between town and country. Foster (2000) specifies that eliminating the antagonism between town and country includes three processes: first, the integration between industrial and agricultural production; second, a more even dispersal of the population between town and country; and finally, the return of waste from both human and industrial production and consumption to the soil as nutrients (169). Foster's steps toward restitution are informed by Marx, who wrote in *Capital volume 3*,

> Freedom in this sphere can consist only in this, that socialized man, the associated producers, govern the human metabolism with nature in a rational way, bringing it under their own collective control instead of being dominated by it as a blind power; accomplishing it with the least expenditure of energy and in conditions most worthy and appropriate for their human nature.

However, Foster does not go into detail about what each step towards restitution actually looks like. In my research, I attempt to outline these steps by looking at a case of an urban ecovillage, which I explore to illustrate the possibilities for restitution. I outline steps that urban ecovillagers take, in addition to some of the challenges they confront, to further the theoretical understanding of restitution and how it begins to take shape on a local scale.

I chose this particular site because it is located within an urban area. While some ecovillages are located in rural areas, this group actively works to establish lifestyle changes within a city. Sites like these challenge city and nature dichotomies that inform traditional urban development policies (Čapek 2010). Urban ecovillages represent an attempt to mitigate, what Marx called, the antagonism between town and country because they bring components of the "country" to the "town" (Marx cited in Foster 1999). More specifically, urban ecovillagers grow their own food and utilize their own waste as fertilizer in the city, thus breaking down the town and country dichotomy within the limits imposed by the town.

Utilizing metabolic rift theory, more specifically looking at restitution, I investigated interview data, field notes, and some written materials, including a welcome

pamphlet,[2] in order to locate ecovillagers' collective steps towards restitution (Foster's 2000, 1999). In my research, I identified recurring themes from interview subjects' responses to questions regarding ecovillage community values, personal values, their understanding of dominant cultural values, and problems they see both in the ecovillage and dominant culture. Then, I evaluated how this understanding of values translates into everyday action by examining responses individuals gave to questions regarding what a typical day looks like, what a typical day might look like if they did not live at the ecovillage, and how individuals feel the ecovillage is affected by its location in a city. Finally, I utilized my observations, which I recorded in a field journal to confirm, disconfirm, and contextualize interviewees' responses to my questions. Through these responses and notes I disentangled the ecovillagers' most prominent goals and how they understand these goals translating into everyday action within the confines of a city.

Findings

In this section, I utilize Foster's (1999, 2000) interpretation of Marx's concept of metabolic restitution to locate the role of associated producers in creating a rational agriculture system, thereby attempting to alleviate the antagonism between town and country in a capitalist economic context. I explore each concept, stated above, in its own section, and attempt to elaborate on these concepts with real examples from a group of individuals' everyday lives. I follow the examples of successes with a section on the

[2] The four-page, typed welcome pamphlet, written and edited by co-owner Emily after meetings where villagers agreed to new rules, was given to newcomers during their initial entry and interview process.

challenges they continue to face as a result of living in a capitalist society that constrains their ability to fully realize non-exploitative human and nature relations.

Cooperative Labor or "Associated Producers"

Marx's idea of cooperative labor, or associated producers, is inspired by his study of communes, of which an ecovillage is a variation. Marx defines free farmers, or a cooperative of farm labor (used interchangeably with associated producers), as individuals who own their labor and collectively utilize the land for food production. Though I offer a gender critique of this in chapter four, ideally, in a cooperative labor system of production, there is no chain of exploitation. Free farmers can more easily establish a relationship with the soil, compared with laborers in a capitalist system of agriculture, because they take no orders from an owner. Laborers work their own soil and reap the benefits of their harvest (Foster 2000, 165).

At the ecovillage, villagers attempt to work cooperatively by making decisions through consensus, having village wide work-parties to clean up the property, and growing their own vegetables for personal and collective consumption. A main obstacle villagers face towards becoming free farmers is landownership, which is a feature of the unequal tension between the use value and the exchange value of city (Harvey 1982; Logan and Molotch 1987), which I describe in more depth below.

Consensus-Based Democratic Decision-Making

One social aspect of sustainability emphasized in Agenda 21 is democratic decision-making. Theoretically, if all stakeholders' concerns regarding the local environment are addressed, then environmental degradation should not occur because someone would feel the affects of such degradation (UN 1992; Moore 2007). Similarly,

Foster's discussion of associated producers collectively working to subsist off of the land suggests that some form of democratic discussion is necessary to decide, at minimum, what to grow, where to grow it, and what techniques are best for the land.

Ecovillagers attempt to relate to each other nonhierarchically by having regular village meetings and practicing consensus-based democratic decision-making. Meetings are held to discuss community issues, grievances, and collective solutions, and consensus is practiced at meetings to ensure that everyone's voices are heard. Consensus is a form of decision-making that requires groups to come to solutions that everyone in the group can agree on. In some cases, groups decide to come to modified consensus because not everyone can agree on a solution. In these situations, some individuals choose not to allow their personal feelings to interfere with the group's decision making process and may choose to step aside. Emily, an older resident, describes how issues are addressed at the ecovillage:

> The way that works is we just get a notice out about the topic, when and where the meeting is, and anyone who cares just shows up, expresses their opinion, or hopefully, runs by consensus. Which, I'm really surprised at how well it has worked. As soon as we started using consensus, I thought we would get bogged down by all the details like what color the paint should be, but it hasn't worked out that way. People are really mature here, I'd say, and they understand. Although, they haven't been formally trained in the process… some of us have, some haven't… The general trend is that people understand that you only block for highly principled reasons, and… you are flexible and you always look for the third way. All those things that make consensus work. People seem to have a handle on that here… I'm pretty impressed with [our] collective ability to come to solutions.

Issues are not always perfectly resolved in these meetings. In my interviews, individuals are split in their assessment of the villagers' decision-making process. Some individuals believe the process works out well, while others feel that their village mates do not

always adhere to group solutions. Hannah, a young woman who has lived on the property for over a year, voices her frustration with the decision making process:

> It seems to me that there are a few people that are really interested and involved half the time and most of the time they're the ones that take initiative so they're the ones that end up making the decisions. Often there is a group effort made and there's an effort made to communicate so if anybody has something to say then they're welcome to say it. But, there have been many occasions where people felt passed up and wonder how things happened when they didn't know about it... So, we're learning. It's all a process. And with people changing constantly that doesn't help the process grow.

Work Parties

Although inconsistent, ecovillagers sometimes have weekend work-parties where community members come together to clean and beautify the community. They work for hours taking care of things for the village including chopping wood, collecting fruit, discarding unsightly debris, building things, and weeding. Afterwards, community members enjoy a large meal and talk together.

I participated in a work-party that constructed the driveway from the street to the woodshop. The workday began early, and individuals were free to participate as little or as much as they wanted. By lunchtime, two community members had prepared a meal that consisted of a green salad picked from the garden, quinoa, and a curry. Everyone sat around a lawn table near the garden to talk and enjoy the meal together. After an hour of talking and relaxing, individuals got back to work in order to complete the project.

The quinoa and curry are examples of how villagers still participate in larger structural economic conditions, as these foods are likely imported to the United States from other parts of the world. Additionally, space constraints in the village limit the kinds and amounts of food that can be produced.

Land Ownership

In urban ecovillages, a major hurdle in the path towards restitution concerns the unequal tension between the use value and the exchange value of city land (Harvey 1982; Logan and Molotch 1987). More will be said about this structural obstacle below. Nevertheless, modern landownership, as a condition of exchange value, obstructs ecovillagers' abilities to be free farmers. Startup capital and good credit are essential to purchasing land. This hinders the ability of many individuals and groups to begin these kinds of projects to begin with, and those who have these resources tend to be more generally well off. There are two property owners who live at the ecovillage, Jamie and her son Ralph, and one woman who more recently bought into the property, Emily. Jamie and Ralph bought the five parcels, where the ecovillage sits, as a business venture twenty-eight years ago. Although once aspiring entrepreneurs, they no longer desire their positions as landlords and encourage others to buy into the property. Only one resident has had the funds available to do this. The owners pay a mortgage on the property and must ask residents for rent, thus reproducing capitalist economic relations by exchanging money and paying the bank. Although most decisions regarding community matters are made by the community as a whole, this land-owner/renter situation interferes with their vision of relating to each other in a nonhierarchical manner. When times become hard, the landowners, as participants in economic institutions, face decisions about whether or not to sell parts of the property. Ralph expressed his dislike with being a landlord:

> I don't know who should own this place. I don't like being a landlord. I would like to sell off a portion of the property to get rid of my debt so I can just write. Ideally, I would love to sell it to the people in the triplex, but they don't have any money. I'm trying to find cool people who will buy into it. The rent from tenants almost pays the mortgage, taxes, and insurance, but I cover the rest in the form of credit cards.

Paying a mortgage is an obstacle for the other villagers as well. Many ecovillagers must work in the city to pay for the land that they live on. Seventeen respondents spend some amount of time away during the day obtaining money for living expenses. If paying rent was not a necessity, villagers could devote more time to nurturing their community. While most of the working ecovillagers have jobs that do not contribute to pollution or land exploitation, such as working as a nanny or an intimacy coach, others work for industries that do contribute to environmental degradation. One individual confided that she works on an assembly line to create large neon signs for other businesses.

Gardening

At the ecovillage, many ecovillagers care for and harvest their own portion of the collective garden. Produce from the garden is used for subsistence purposes and is often shared during community potlucks and gatherings. Because the purpose of the garden is subsistence, ecovillagers are committed to finding ways to keep the garden productive. Some strategies that ecovillagers use to maintain their garden include the creation of swales, or deep and narrow ditches between each garden plot that hold water well after the rainy season, rain catchment tubs for watering, personal, food scraps compost and chicken manure from their chicken coop to fertilize the soil. In addition, many ecovillagers utilize a technique for subsistence agriculture called permaculture, which I describe in depth in the section below.

Rational Agriculture

Ecovillagers subscribe to their own version of what Marx called rational agriculture, or sustainable food production. Marx believed that the only way to restore

metabolism between human beings and the earth is for associated producers to create a rational agriculture. Rational agriculture, as defined by Liebig, applies the principle of restitution, "by giving back to the fields the conditions of their fertility" to "ensure the permanence" of the soil (Foster 2000, 153, 165, 169, 170). Ecovillagers follow a similar doctrine aimed at permanent agriculture called permaculture.

Permaculture, coined in the 1970s by Bill Mollison and David Holmgren, means, "consciously designed landscapes that which mimic the patterns and relationships found in nature, while yielding an abundance of food, fiber and energy for provision of local needs" (Holmgren 2004). In Holmgren's (2004) book on permaculture, he goes on to describe it, "people, their buildings and the ways they organize themselves are central to permaculture. Thus the permaculture vision of permanent agriculture has evolved to one of permanent culture" (xix). Holmgren identifies three key principles of permaculture: "1. care for the earth; 2. care for the people; and 3. set limits to consumption and reproduction, and redistribute surplus" (1).

On the ecovillage property, there live a couple of permaculture teachers. Of my twenty-four interviewees, eleven mention taking a permaculture class at some point. Emily, an ecovillage resident, teaches permaculture at a rural ecovillage not too far from the city she lives in. When I ask her about her political beliefs, Emily closely paraphrases Holmgren's principles:

> Uh, permaculture. I'd call that somewhat of a political view, which is that we all need to become more sustainable where we are in order to protect the outlying areas. And, um**,** the foundation for permaculture is care for the earth, care for the people, and share the abundance. It's very simple.

Some ecovillagers have a more complex understanding of permanent agriculture, somewhat akin to Marx's theory of alienation. They express the interrelated nature of

each of the three principles written by Holmgren. Carol's, a young mother and dome dweller, definition of sustainability encompasses the earth, personal relationships, and community:

> Sustainability is living in a way that enhances the quality of life for not just humans but for other species as well. So a given area or land base can maintain health or increase in health over time. Biodiversity would increase for instance, or at least stay stable and not decrease. Sustainability in interpersonal relationships means that a relationship can continue, that when there's conflict there's a way to resolve the conflict. That goes for whole communities that [when] there's conflict in the community, there's a way for the community to resolve that and continue on with each other, and people don't have to leave.

Caring for the Earth

From my observations and conversations with ecovillagers, I was able to identify actions that ecovillagers took to ensure permaculture principles in their everyday lives. Growing food for subsistence is one of the many ways ecovillagers attempt to care for the earth. Ecovillagers also express the importance of land stewardship, as in the case of a young man named Ears:

> I have been working the land a little bit at the office. You know, there's a little courtyard. I sometimes, at the beginning of the summer, I tinkered around with trying to grow different things at the office. My cucumbers didn't make it because it was too cool in the office. We have southern facing windows, but it didn't work out. So, even though I work in a pretty technological environment, I still try to keep that connection with the land. Especially there because, I mean that's where I spend most of my time. And I feel like it's honoring that piece of land to try to be, to live by my value of being a steward to the land no matter where I am.

Another way ecovillagers attempt to care for the earth is by avoiding excessive consumption. A critique of consumerism came out in about half of my interviews. Individuals distinguish themselves from other Americans by saying things like, "I'm not a consumer." A young woman resident explains the draw of the ecovillage for her:

> Probably the culture was like the final decision why I moved here. I just liked the people, and the mentality was a lot different than that of the Midwest, which was much more bourgeois in a lot of a ways. It's [the Midwest] very materialistic and middle class but contained in a certain box almost.

Caring for People

Ways in which they cared for each other included having regular community meetings, consensus decision making, sharing food, having community potlucks, and having dispute resolution sessions. Food sharing took many forms, and encapsulated Holmgren's third permaculture principle, sharing surplus. Community meetings were ceremoniously potlucks that enticed villagers with community interaction and food. Another avenue for food sharing came from one community member who located a local bakery that gave away bread at the end of each day. He brought extra bread back to the community to share.

Ecovillagers also cared for people by trade. A few individuals specialized in what they called integrative intimacy, which involves getting at the root causes of individuals' emotional disturbances and finding ways to reintegrate their wounded parts. Further, some ecovillagers practiced a form of therapy and/or dispute resolution called co-counseling. In this type of dispute resolution, each participant takes turns fully expressing her/his emotions while the other person listens and is supportive. A large minority of villagers expressed the importance of emotional wellness and expression. In her critique of American society, an integrative intimacy coach on the property discussed her issue with our culture:

> Not having feelings. You're not supposed to have feelings. You're not supposed to cry or even be ecstatically happy because it's upsetting to whoever's around. It would disturb someone or distract them from what they're thinking about or it might make them feel uncomfortable if you have big emotions.

Eliminating the Antagonism between Town and Country

Foster (2000) identifies three things that need to happen in order to eliminate the antagonism between town and country (169, 175). First, associated producers must change the dispersal of the population in both urban and rural areas to a more even dispersal. Second, an integration of industry and agriculture must occur. Finally, associated producers must restore the soil by recycling human and industrial waste for soil nutrition. In this section, I explore how ecovillagers go about doing each of these three things while also discussing limitations they face.

Even Dispersal of the Population

The ecovillagers alone cannot contribute to a more even dispersal of the population between the city they live in and the surrounding rural areas. They are restricted by urban zoning laws, codes, and land rent. This, in fact, represents a structural challenge in their path towards restitution, as discussed below. However, they do attempt to change urban living arrangements in order to facilitate a more sustainable use of resources. The design of the ecovillage, co-housing, and community resource sharing allow ecovillagers to utilize fewer resources individually and maximize efficiency with the resources they do use without increasing total resource use.[3]

The ecovillage is designed to foster less resource use and community. Housing is situated around the perimeter of the property and workspaces in the center. This design forces individuals to interact with each other during work because gardening and building

[3] Unlike in an economic system predicated on growth, like capitalism, ecovillagers do not fall prey to the Jevons Paradox. This paradox is a theory developed by an English economist who noted that when coal processing became more efficient, energy consumption actually increased instead of decreasing. People who had previously not had access to energy could afford it and larger profit margins went into developing more energy.

are done in close proximity, and all community tools are located near workstations. Many dwellers on the property utilize shared common areas. The five dome dwellers share a dome support house that has a living room, kitchen, and bathroom. Similarly, tent dwellers share a covered outdoor kitchen, bathroom, and living room near the community center. Houses on the property usually house between two and four people. These co-housing situations facilitate community while requiring villagers to share resources. Resource sharing is more efficient than single occupant residencies because similar amounts of things are needed, but they sustain more people. As in the example of the dome dwellers, five people share one kitchen, which necessitates only one set of pots, pans, and dishes. Whereas, if each of these dome dwellers lived alone, they would each need their own sets of these kitchen items.

Integration of Industry and Agriculture

Ecovillagers attempt to transform city relationships beyond the immediate ecovillage. In this particular ecovillage villagers grow food in the middle of a city. The village sits between a neighborhood to the east, and industry to the west. Ecovillagers also create a microcosm of this living situation within the ecovillage where they live, grow food, and have a woodshop area for building purposes. I use the word industry in two senses: 1) general business activity and 2) energy devoted to a work task.

The business activities surrounding the ecovillage include, but are not limited to, an ice-cream factory, retail services, restaurant services, automobile repair, and manufacturing plants. Ecovillagers attempt to make their city more sustainable by changing the physical landscape of an urban neighborhood block. The block is consciously designed with dwellings around the perimeter and gardens in the center so

that people can come together in the middle to work and socialize. Villagers bring subsistence gardening to the city, thus incorporating aspects of the country in their city. Gardening and building are both done on the property, creating a microcosm of the integration between agriculture and industry. Finally, villagers repurpose waste, like wood and metal scraps, they scavenge from local industries and dumpsters to make their homes.

Industry also refers to any work individuals devote to a task. In this case, industry can mean building earthen dwellings on the ecovillage property, growing food, building solar fruit driers, and any number of things to which ecovillagers devote their energy. Many dwellings on the property were built by ecovillagers, with the exception of one house that sits on the eastern side of the property. Ecovillagers build icosahedral huts, cob houses, and scrap wooden homes. Moreover, villagers devote many hours to their gardens, situated between their homes.

Restoring Soil Nutrients

Ecovillagers make use of their waste to ensure soil fertility. In particular, compost is central to this end. Ecovillagers compost food scraps, weeds, human urine, chicken manure from their coop, and wood chips from the woodshop. However, compost cannot be haphazardly thrown into a pile and left to rot. Individuals must care for compost by exposing it to the right amount of sun, allowing worms to work through it, mixing an adequate amount of food and yard waste, and turning it every so often so that different parts of the pile are exposed to the air. Ecovillagers throw their food scraps into five gallon buckets, and empty them into the compost when the buckets become full. Male visitors are also encouraged to urinate in the compost.

At the eco-fair, Ears participates in a humanure project. Humanure is a combination of the words human and manure.[4] The idea is to create composting toilets with saw dust and worms that adequately rid human waste of toxins and turn it into a viable plant fertilizer. This project literally returns human waste to the soil as nutrients.

Challenges to Transforming the Town-Country Antithesis

In the above analysis, I outline steps that urban ecovillagers take towards restitution. Nevertheless, as previously mentioned, transforming the town-country antithesis is a project that urban ecovillagers cannot realize on their own. This was briefly addressed when discussing the issues of landownership and the even dispersal of population. Here, I further elaborate on this challenge and argue that there are two interrelated structural obstacles in the path towards restitution. The first obstacle has to do with the intimate connection between modern urban areas and capitalism (Harvey 1982). The second concerns the conflict between the use value and exchange value of land in a capitalist city (Logan and Molotch 1987). The analysis of this obstacle comes from an environmentally-informed interpretation of a well-established urban sociological theory: the urban growth machine.

[4] Humanure has always been central to the maintenance of soil fertility in agricultural societies. Nevertheless, Schneider and McMichael (2010), challenge the agroecological importance of humanure. They further claim that Marx misestimated the importance of returning human waste to the soil in his theory of metabolic rift. They write, "For Marx to be correct that the capitalist town-country division of labour caused soil depletion because humans were separated from the soil, humanure would have to have been the most important material for maintaining fertility in pre-industrial or precapitalist agriculture" (Schneider and McMichael 2010, 471). Schneider and McMichael, however, do not engage the work of urban geographers (e.g., Harvey 1996) and urban historians (e.g., Mumford 1961). These urban scholars have argued, like Marx did, that the return of humanure from medieval cities was an essential condition for the maintenance of soil fertility in the countryside.

With respect to the first obstacle, Harvey (1982) argued that alienation from the means of production, displacement from the land, and population concentration in urban centers are interrelated characteristics of capitalism. Therefore, under capitalism, people are driven into urban areas, thereby being deprived of access to the land. Harvey (1982) argues, in particular, that landownership and rent are two mechanisms that "prevent labourers from going back to the land and so escaping from the clutches of capital" (381-2). These institutions discourage the dispersal of population beyond suburban sprawl and the development of new farming communities. As such, in the context of this paper, landownership and the development of private property, in general, should be seen as a structural obstacle to the restoration of the metabolic rift.

According to the urban growth machine thesis, the types of land uses in a capitalist city are largely determined by the exchange value of urban land. Therefore, American cities especially, are growth machines, characterized by dense, high-intensity land uses that increase aggregate rents and create wealth for the elite (Logan and Molotch 1987:50). Nevertheless, Logan and Molotch do not explicitly acknowledge a specific consequence of this structural dimension of capitalist cities that attempts at urban agriculture are generally unsuccessful. Despite the use value of urban agriculture, food production in cities does not generate rents that competing land uses do. This tension is, at times, dramatically played out in American cities when community gardens are bulldozed in the face of a relatively well-organized social movement (e.g., von Hassell 2002). Such a struggle was portrayed in the documentary *The Garden*, in which a battle for a farm in South Central Los Angeles was lost despite widespread support and

attention from celebrities and politicians like Daryl Hannah, Danny Glover, and Dennis Kucinich.

Conclusion

In sum, ecovillagers struggle to achieve a strong sustainability, or restitution, because of certain constraints embedded in their local governing body and city. Many attempts at restitution are thwarted by institutionalized capitalist ideals, which are enforced by local government (I go into more depth on these processes in chapter five). In this chapter, I contribute to the literature on the metabolic rift by mapping out what each step towards restitution might actually look like on a micro-scale within the limits of capitalism. I do this by examining a case of an urban ecovillage. Restitution is the concept of restoring sustainable human and environment relations. Given the crisis state of many environmental problems, it is increasingly important that, as a society, we learn from groups whose goals and actions are oriented towards mending human environment relations. Life on earth, quite literally, depends on it (Watson and Zakri 2001). Foster's (1999, 2000) expansion of Marx's theory of metabolic rift includes several steps towards restitution. Associated producers, or a collective of labor, must rationally plan agriculture and must mend the antagonism between town and country. My research describes each step in more depth to provide a fuller picture of the restitution process. In addition, I address ecovillagers' specific barriers and successes they are able to forge within the context of capitalism.

Ecovillagers have more success in mending human-nature relations within the confines of their own village even though some laws confine their internal activities.

Some villagers had enough startup capital and/or good enough credit to initially invest in the property. Individuals without such access to money might have a harder time finding land, let alone getting a project off of the ground. They have less success and experience more structural barriers when they attempt to mend the rift outside of this space. For example, they are able to utilize their own waste, compost, in their gardens to nourish the soil where they grow their own food. Outside of the village, the may have some success in utilizing industrial waste or garnering some resources from dumpster-diving, like day old bread or bits of cardboard and wood used for building materials, but they are still confined by the laws and economic norms of the larger society. In particular, many businesses padlock their dumpsters to keep divers out as a means to nudge them to pay for those resources. Further, laws such as urban zoning influence the village's internal structure. Specifically, there are zoning laws that restrict land-use by regulating how many adults may live in a particular space. Portions of the ecovillage sit on parcels zoned for single resident land-use. Zoning laws restrict the use of grey water for gardening purposes as well.

In this study, I describe associated producers and rational agriculture (Foster 1999, 2000). Associated producers, in this case, are a group of individuals who collectively live and work together in a co-housing situation. What makes them associated producers is the way they consciously organize in order to maintain nonhierarchical working relationships. Ecovillagers have regular meetings where they practice consensus-based democratic decision-making. On occasion they come together to form work parties where they collectively beautify the property, and villagers rationally grow food for subsistence. Their attempts at small-scale democratic decision-

making are limited by local governing structures, which have institutionalized capitalist ideologies regarding private property and land rent. Although there are checks against the landowner situation, the ecovillage property is under a mortgage owned by three people who live there. While most decisions are made by consensus, when it comes to monetary matters, property owners have the final say.

In the ecovillage, villagers practice a form of rational agriculture, called permaculture, to ensure permanent agriculture. Individuals produce their own food in the planned green spaces situated within the village. Many villagers also see sustainable human and earth relations as interrelated with human and human relations. Interestingly, their ideas of interrelatedness are consistent with Marx's vision of how capitalism creates alienation for humans between themselves, nature, and other people, and that by mending the rifts that capitalism creates should theoretically resolve all alienation. Because they see these relationships are interrelated, villagers, either consciously or otherwise, practice Holmgren's three permaculture principles: "care for the earth, care for the people, and share the abundance."

Further, I identify real life examples of the three steps towards eliminating the antagonism between town and country: 1. even dispersal of population; 2. integration of industry and agriculture; and 3. restoring soil by recycling soil nutrients (Foster 2000). Ecovillagers alone cannot evenly disperse the population between the city they live in and the surrounding rural areas, but they do manage to more efficiently organize the space that they occupy. By situating homes around the perimeter of their urban block, they are able to create large garden and work spaces that require villagers to come together for work. Moreover, co-housing living arrangements allow for efficient use of

communal resources. However, as discussed in chapter one, there is debate about whether or not population dispersal is necessary for environmental sustainability because many researchers argue that urban density is better for the environment than sprawled settlements (Rees and Wackernagel 1996; Satterthwaite 2009, 2010).

Ecovillagers demonstrate some aspects of reintegrating industry and agriculture and the restoring of nutrients to the soil. They do this on two levels. First, they redesign an urban block, surrounded by industry, to foster agriculture, a subsistence community garden, within the confines of a city. Second, ecovillagers create a microcosm of this integration on site by industriously building in the woodshop next to the community garden. Villagers utilize the waste they produce to create compost fertilizer for the community garden, and they repurpose local industrial waste for their building needs.

Ecovillagers have had some success in mitigating some aspects of the human and environmental rift within their community. However, they face external constraints that keep them from fully realizing restitution. Specific obstacles they face include paying rent or a mortgage, zoning laws that prohibit certain "country-like" activities, adhering to laws that restrict grey water use, lacking access to certain materials, etc. In response to these barriers ecovillagers must find creative ways to obtain money, appeal to state and local politicians, maneuver around laws, and advocate their cause. Despite these constraints, ecovillagers are able to successfully mitigate pollution from waste, grow much of their own food, and are persistent in their goals.

It is important to recognize that without the initial rift, industrial capitalist urbanization, that exacerbated the town and country divide, urban ecovillages or agriculture would not (need to) exist. Because they are embedded in this larger system

they are beholden to certain power relations, or laws. For example, they are still subject to land rent, or a mortgage, eminent domain laws where their land could be seized in the name of state development, and neighboring industrial pollutants can contaminate their soil. Because their work does not operate on an accumulation-based model, they have difficulty accessing enough money to pay the mortgage. The very land they live on is in constant threat of being taken away. In addition, they are limited by what they can reasonably grow in the small space to which they have access. Without communal lands, like what peasants utilized prior to the enclosures, ecovillagers have less access to diverse crops and resources, like wood and grains, that they cannot grow in sufficient quantities internally. Thus, they must rely on purchasing certain goods in order to supplement their resource needs.

CHAPTER IV

BARRIERS TO SUSTAINABILITY IN CUBAN URBAN AGRICULTURE

The literature review in the following chapter is partially co-authored with Hannah Holleman as part of a manuscript we hope to publish later. I also include a brief discussion of gender and the environment that is similar to something I wrote in a co-authored article published in *Social Science Research* (Ergas and York 2012, 966-968). I include a brief discussion of the history of Cuban agriculture that is similar to something I published in the *Monthly Review* (Ergas 2013, 46-51). This chapter is my writing and is based on my own original research. This research was funded by the Center for the Study of Women in Society at the University of Oregon and by the Wasby-Johnson Dissertation Research Award through the Sociology Department at the University of Oregon.

In this chapter, I use the case of Cuba to illustrate the importance of a holistic notion of gender equity to strong sustainable development. I discuss the ways in which the authoritarian approach in Cuba has in many ways created the space for an iteration of sustainable development, which I explore through urban agriculture, that (at least) approaches the ideal of "strong sustainability." The Cuban government facilitates efforts toward environmental sustainability, rather than hindering them, like in the US. I address the ways in which Cuba's separation from the otherwise hegemonic global neoliberalism allows the government, regardless of its authoritarian nature, to create policies that are

not polluted by capitalism and corporate interests. I engage the interaction between culturally determined gender divisions of labor and democratic participation, which are acknowledged to be fundamental aspects of "sustainable development," as outlined by the Rio Declaration. I find that while the top-down authoritarian approach was useful in advancing environmental sustainability and gender equity, this approach has also hindered aspects of gender equity. This has implications for strong sustainability, as conceived as the interrelationship between equity, ecology, and economy. I analyze both economic and governmental processes, both separately, and in the ways that they interact with each other. In addition, I address the ways in which culture influences and is propagated through these larger structures. Marxist environmental feminists' gender critique of metabolic rift theory helps to bridge the gap between culture, economy, and government. Metabolic rift theory permits the valorization of a system like that found in Cuba, at the expense of comprehensive gender equity. This happens because metabolic rift theory is a broad macro theory that doesn't address political processes or interactional and cultural dynamics. The authoritarian, ostensibly, communistic approach to determining the substance of and remedy for gender inequity in Cuba has failed to address sociocultural issues like gender divisions of labor and microagressions. Ultimately, this *itself* perhaps sabotages self-sustaining strong sustainability.

In this chapter, I review the Cuban cultural, political, and economic context. I discuss the history of the city of Havana, the agricultural transformation after the Special Period, and the rise of urban agriculture. I show how the Cuban context demonstrates the complexities of sustainable development, specifically by evaluating cultural aspects of Cuban society, like gender relations. In addition, I use the case of Cuba to illustrate the

deficiencies in metabolic rift theory and advocate the full integration of literatures on inequalities for a more robust theory of society and the environment. The purpose of this chapter is to critically assess an effort toward sustainability, and to highlight one project that we can learn from to develop a better theoretical and practical understanding of what it is that we need to do to bring about socially just environmental change. I am interested in who is doing this work, what is working for them and what isn't, and ultimately, what the barriers are to bringing about these necessary changes.

Researchers argue that gender and poverty are important to environmental protection and awareness for a variety of reasons. These culturally prescriptive gender roles and relations can differently affect women and men's interactions with the natural environment (Flynn et al. 1994; Davidson and Freudenburg 1996; Seager 1996; Bord and O'Connor 1997; Dietz et al. 2002; Kalof et al. 2002; Eisler et al. 2003; Buckingham 2010; McCright 2010). In many cultures, women are positioned as providers of sustenance, making their experience with consumer choices and resource management that much more important in decision-making. Women's roles and experiences may also affect women's outlook on environmental problems; though, Momsen (2010) argues that the empirical results are inconclusive. These researchers contend that as a result of these potentially differing perspectives on environmental protection and management, men and women's different insights are integral to sustainable environmental planning (UN 1992; Ergas and York 2012). My empirical observations in Cuba demonstrate the importance of including women in democratic processes intended to address gender inequity as it relates to environmental protection and sustainable development (UN 1992).

The UN (1987, 1992) further argues that poverty and desperation can cause people to threaten ecosystems by attempting to gain supplies from vulnerable environments. Maal-Bared (2005) found that in Cuba there is "small-scale environmental destruction committed by individuals through illegal hunting, deforestation, dumping of waste into aquatic ecosystems, etc." (356). However, the main sources of degradation usually come from large-scale operations, such as tourism and mining, both of which are controlled by the Cuban government.

However, the Cuban government has taken the task of sustainable development seriously, instituting many laws on social equity and environmental protection during Fidel Castro's incumbency as president, including laws on gender equity, like the 1975 Family Code mandating the equal distribution of household labor. Cuba was one of the 189 nations represented at the 1995 United Nations (UN) Fourth World Conference on Women held in Beijing that unanimously agreed that gender equality is a matter of human rights and therefore requisite for social justice (Momsen 2010). Indeed, Cuba was the first nation to sign, and the second to ratify, the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)[1] that came out of the Second World Conference on Women in Copenhagen (UN 1980). By contrast, the United States still refuses to ratify CEDAW.

Following the 1992 UN Conference on Environment and Development in Rio de Janeiro, Cuba took measures to institute a variety of environmental reforms. They did this even though the country was experiencing a severe economic crisis—known as the

[1] CEDAW "defines what constitutes discrimination against women and sets up an agenda for national action to end such discrimination" (UN Women 2009).

Special Period in the Time of Peace—caused by the collapse of the Soviet Union. In addition, Cuban representatives were present at the Rio conference when Agenda 21 was drafted as an action plan for the implementation of local, national, and global sustainable development (UN 1992). After the Earth Summit, the Cuban government made changes to institutional structure, instituted legal reforms, and implemented environmental programs, including educational campaigns (Maal-Bared 2005). These changes also emphasized the development of organic urban agriculture, which continues to thrive in places like Havana.

Agenda 21 (UN 1992) lays out the essential parts of sustainable development—social equity, environmental protection, and economic development. With respect to social equity, Agenda 21 specifically discusses the necessity to eradicate poverty as a means of ensuring sustainable development.[2] Chapter 24, entitled the "Global Action for Women Towards Sustainable and Equitable Development," states that the effective implementation of Agenda 21 requires that women must be actively involved in economic and political decision-making (UN 1992).[3] [4] Some strategies they suggest

[2] "While managing resources sustainably, an environmental policy that focuses mainly on the conservation and protection of resources must take due account of those who depend on the resources for their livelihoods. Otherwise it could have an adverse impact both on poverty and on chances for long-term success in resource and environmental conservation. Equally, a development policy that focuses mainly on increasing the production of goods without addressing the sustainability of the resources on which production is based will sooner or later run into declining productivity, which could also have an adverse impact on poverty. A specific anti-poverty strategy is therefore one of the basic conditions for ensuring sustainable development" (UNCED 1992, 3.2).

[3] "Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development" (UNCED 1992; Principle 20).

include, ensuring women's access to education relevant to their roles in resource management, rights over their reproductive choices, safe and affordable healthcare, and consumer awareness programs (UN 1992).

The Cuban government demonstrated a clear commitment to implementing the social and environmental aspects of sustainability, even during an economic and resource crises that devastated the nation during the Special Period, after the collapse of the Soviet Union. It is not my aim in this chapter to discern whether or not Cuba effectively implemented a sustainable development program, adequately addressing inequality and environmental protection. Rather, I am interested in looking at their efforts towards sustainable development and revealing the ever-present challenges that exist in their political, economic, and cultural milieu. I aim to paint a more complicated picture of Cuba by addressing the real contributions that they have made to environmental protection, and by discussing the challenges to sustainable development that Cubans face. This allows me to draw attention to practical problems that people endure in their everyday lives and struggles towards change, which is an aspect that is often overlooked. I also use this case to illustrate some of the conceptual gaps in metabolic rift theory in order to strengthen our understanding of social justice in relation to ecological sustainability. The Cuba case is exemplar in terms of sustainable development, but it demonstrates that gender inequity is more complicated than most governments' treatment of it suggests. While Cuba comes closer to achieving gender equity than most nations, the

[4] "An effective strategy for tackling the problems of poverty, development and environment simultaneously should begin by focusing on resources, production and people and should cover demographic issues, enhanced health care and education, the rights of women, the role of youth and of indigenous people and local communities and a democratic participation process in association with improved governance" (UNCED 1992, 3.2).

Cuba case is illustrative of the need to integrate more expansive notions of gender equity if we can ever hope to achieve comprehensive, lasting, and meaningful strong sustainability. To assess the challenges that people making efforts toward urban sustainability encounter in a different political, cultural, and economic context, I conducted fieldwork at an urban farm in Havana, Cuba. In Havana, I found that socially derived issues of equity, including gender divisions of labor, are a barrier to sustainability in urban agriculture.

Cuba has faced many hurdles since the 1959 revolution and subsequent takeover by Fidel Castro. In response to the economic downturn, the Cuban government invested more into its human capital and ecological restoration, while avoiding austerity measures. Now, Cuba is world-renowned for its sustainable development projects (WWF 2006), and urban agriculture in particular (Premat 2005). Cuba has also reached a high level of human development as measured by the UN, ranked at 59 out of 186 nations with one being the highest level (UNDP 2013).[5] Notwithstanding, race and gender scholars and activists see need for improvement in social equity in Cuba (Shayne 2004), and Cuba still struggles with many environmental problems (Maal-Bared 2005; Colantonio and Potter 2006). While some of the strides Cuba has made appear to be waning (NEF 2013; UNDP 2013), their development of urban agriculture is still regarded as the most extensive and innovative program in the world (Premat 2005; Koont 2011).

[5] Cuba ranks number 10, adjusted for inequality across each measure, out of 151 countries in the most recent Happy Planet Index (HPI) Report (NEF 2013). HPI measures life expectancy, subjective well-being, and ecological footprint to measure "happy life-years" relative to national environmental impacts.

The Cuban Context

Cuba is a highly urbanized country and has been for most of the 20th century. By mid-century, over half of the Cuban population was urban (Dyer 1957; Ebanks 1998). The rate of urbanization in Cuba increased steadily from the end of the 19th century to the revolutionary period. Although Cuba urbanized before the rest of the Caribbean, after the 1959 revolution, state policies slowed urbanization rates to the lowest in Latin America and the Caribbean (Dyer 1957; Gurgler 1980; Ebanks 1998). As of 2010, 75 percent of the Cuban population lives in urban areas (ONEI 2011). Havana is the most populace city in Cuba, with a population of 2,135,498, about 19 percent of the national population (ONEI 2011).

After the 1959 revolution and the subsequent imposition of the United States embargo, initiated by Dwight D. Eisenhower in 1960, Cuba became economically reliant on the Soviet Union. As a legacy of Spanish colonialism and over 50 years of United States political and economic domination, Cuba's economy relied on high-yielding sugar exports. After the revolution, Cubans negotiated the exchange of sugar exports for Soviet petroleum and currency, and continued industrial sugar monocultures in the form of large state-farms (Colantonion and Potter 2005; Koont 2011). This type of agriculture required importing agrochemical fertilizers, pesticides, herbicides, and oil to run heavy machinery. In 1989, three times more arable land in Cuba was utilized to produce sugar for export than food for national consumption, and most of the Cuban diet came from imported food (Koont 2009).

Large-scale monoculture, like sugar-cane production, is known to be ecologically problematic. Monocultures are a modern industrial agriculture practice where one crop is

produced in one area year after year. This type of agriculture generally depletes soil nutrition and thus requires artificial fertilizers but it eventually leads to the loss of fertile topsoil. To protect the monoculture, farmers often utilize special disease resistant seeds. However, if a disease strain is introduced that the plants are not resistant to, plant bacteria, viruses, fungi, and pests can destroy an entire crop. Diversifying crops is shown to create higher yields; it can protect crops against plagues, and it serves as a buffer against extreme weather conditions (Shiva 2005).

When the Soviet Union collapsed in 1989-1991 and the United States tightened trade restrictions through the Toricelli Act in 1992 and the Helms-Burton Act of 1996, Cuba lost 70-85 percent of its economic support and export markets (Maal-Bared 2006; Koont 2011). Cubans no longer had access to the petroleum required to maintain large-scale agriculture. To make matters worse, the end of trade between the Soviet Bloc and Cuba resulted in a loss of access to food, which reduced Cubans' protein intake by 30 percent (Rosset 2000). The system of agriculture in place was not sustainable or organized for self-sufficiency. Cubans refer to the ensuing economic crisis and period of resource scarcity as the Special Period in the Time of Peace. This period included shortages of food, fuel, and medicine. Faced with a food scarcity and malnutrition, Cubans had to revamp their food production systems and were forced to make revolutionary transformations in industry and agriculture (Rosset 2000; Companioni et. al. 2002; Lewontin and Levins 2007; Koont 2009, 2011). Additionally, the necessary mission of Cuban politicians, ecologists, farmers, scientists, biologists, and farm workers was to mend the ecological cycles of interdependence that large-scale, exploitative agriculture destroyed (Clausen 2007, 2009).

In spite of these hardships, Cuban society was equipped to contend with the crisis, given the country's specific commitments to social capital and early agro-ecological projects that were already in operation. Agro-ecology is a technique that takes advantage of ecological synergisms utilizing bio-diversity and biological pest control. The Cuban government and leadership worked to provide institutional support to re-direct food production and to enable the development of an extensive urban agricultural project. Following the 1959 revolution, governmental policies that prioritized extending education, scientific and technological innovations served as a springboard for these new agricultural projects. First, the revolutionary government established organizations to address social problems and concerns. These organizations served man functions. They were supply and distribution networks for food; they served as centers for research that examined farmers' traditional knowledge and continuing education programs that taught agro-ecological practices. These organizations were distribution centers of technological innovations, and they evaluated existing programs and operations. Second, the government prioritized human resources and capabilities, investing in human capital by making education more widely available and accessible at all levels. Making use of the organizational infrastructure and investing in the Cuban people made the agro-ecological transition possible during the economic crisis in the early 1990s (Koont 2009, 2011).

Koont (2011) examines how early agro-ecological projects created prior to the Special Period were foundational for the development and expansion of the revolutionary transformation of agriculture during the economic crisis. Scientific knowledge is publicly owned in Cuba, and scientific research is directed toward furthering human development, rather than capital accumulation. With 11 percent of all scientists in Latin America

residing on the island, Cuba had the human resources to address food scarcity. Scientists had already been experimenting with agro-ecology, and these efforts were focused on diminishing the need for inputs such as artificial fertilizers and pesticides (Altieri 2002). Other projects included integrating animals into rotational grazing systems with crops and diversifying with polycultures. Cubans also began recycling sugarcane waste as cattle feed; the cows, in turn, excrete waste that is applied to soil as fertilizer, thereby restoring ecological interdependence. By combining manure with worm castings, Cubans were able to fertilize most of their crops organically without having to import fertilizer from abroad (Clausen 2007, 2009; Koont 2011). Their experimentation also included creating urban organopónicos—raised beds of organic materials confined in rectangular walls where plants are grown in areas with poor soil quality—which were constructed four years before the Soviet collapse. Additionally, personal household plots, which had previously gone unacknowledged, but had long-existed within urban areas, took on renewed importance (Premat 2005; Clausen 2007). Altogether these experiments and projects served as the foundation for greater self-sufficiency, a system of urban agriculture, and a more sustainable form of food production.

Cuba's environmental protections and agricultural innovations have gained considerable global recognition. The World Wildlife Fund's 2006 Sustainability Index Report, which combines the United Nations Human Development Index and Ecological Footprint measures (or natural resource use per capita), determined that Cuba was the only nation in the world that was living sustainably. The island nation is particularly lauded for its strides in urban food production (Premat 2005; Clausen 2007).

Urban Agriculture in Havana, Cuba

The Cuban National Group for Urban Agriculture defines urban agriculture as the production of food within the urban and peri-urban perimeter, using labor intensive methods that pay attention to the human-crop-animal-environment interrelationships, while taking advantage of the urban infrastructure with its stable labor force (Koont 2011). This results in diversified production of crops and animals throughout the year, based on sustainable practices, while also allowing for the recycling of waste materials (Koont 2011, 29). This differs from the UNDP (1996) definition, which does not include agro-ecology in its framing of urban agriculture:

> An industry that produces, processes, and markets food and fuel, largely in response to the daily demand of consumers within a town, city or metropolis. [This can happen] on land and water dispersed throughout the urban and peri-urban area [with the use of] labor intensive production methods, and while using and reusing natural resources and urban waste to yield a diversity of crops and livestock (3).

The agricultural revolution in Cuba has ignited the imaginations of people all over the world. Cuba is a model for self-sufficiency, resistance to neocolonialist development projects, innovations in agro-ecology, alternatives to monoculture, and a more environmentally sustainable society. Instead of turning towards austerity measures and making concessions with large international powers during the severe economic downturn of the late twentieth century, Cubans reorganized food production and worked to gain food sovereignty[6] as a means of subsistence, environmental protection, and

[6] Koont (2011) defines food sovereignty as "the right of each people to define their own policies concerning agriculture, to protect and regulate their national agricultural production and markets with the aim of sustainable development, to decide to what extent they want to be self-sufficient in food, and to prevent their domestic markets from being inundated with subsidized products from other countries. The emphasis is on local, ecologically sustainable production of culturally appropriate, wholesome, and nutritive

national security. While these efforts may have been born out of economic necessity, they are still impressive, as they have been developed in opposition to a corporate global food regime. The neocolonial corporatizing of global food production and supply is an interesting part of the story, and particularly given Cuba's somewhat unique ability to resist it, which is (at least partially) rooted in the success of their sustainable development.

In the midst of ongoing food insecurity globally, increasing urbanization, and environmental degradation, it is important to study alternatives to our current global food system that heavily relies on large-scale industrial agriculture (Rosset 2000; Shiva 2005; United Nations 2009; Magdoff and Tokar 2010). Urban agriculture situates food and fuel production where the highest concentrations of people are, and contributes more than just nutrition to the surrounding population; If properly regulated, it can contribute to the environmental health of the city as well (United Nations Development Programme 1996; Premat 2005). Cuba, which began subsidizing land dedicated to urban agriculture projects in the early 1990s, is renowned worldwide for their sustainable development projects, specifically, their leadership in urban agriculture (Premat 2005).

Urban agriculture in 2007, almost all of which is organic, comprised approximately 14.6 percent of agriculture in Cuba, and took up between 13 and 14 percent of the total land area in Havana (Koont 2011). There are about 300 urban gardens in Havana, with 10,000 hectares used for cultivating crops (this does not include fruit trees, animal husbandry, or forestry) (Koont 2009). Food production within and around

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foods. Thus conceived, food sovereignty incorporates the concept of food security (adequate food supplies to meet the population's needs) and even overlaps with national security" (187).

Havana accounts for 60–90 percent of the produce consumed in the city (Companioni et. al. 2002; Premat 2005; Stricker 2007; Koont 2009; Raby 2009). With 75 percent of the Cuban population living in cities (ONE 2011), urban food production is the most practical and efficient means to supply the population with food. Since most of the food is produced for local consumption, Cuba has one of the shortest producer-to-consumer chains in the world (Koont 2011). For these urban farms, Cubans utilize agro-ecology that includes projects like integrating animals into rotational grazing systems with crops, diversifying with polycultures, and utilizing beneficial bugs for biological pest control.

Cuba's pursuit of food sovereignty has yielded many benefits. Urban agriculture has increased food production, employment, environmental recovery and protection, and community building. Perhaps, the most impressive strides are in the area of food security. During the Special Period, Cubans' caloric intake decreased to approximately 1,863 calories a day. In the midst of this food scarcity, Cuba ramped up food production. Between 1994 and 2006, Cubans increased urban output by a thousand fold, with an annual growth rate of 78 percent. In 2001, Cubans cultivated 18,591 hectares of urban land, and by 2006, this had increased to 52,389 hectares. In 2005, as a result of these efforts, the caloric intake for the population increased to an average of 3,356 calories a day. The Special period also saw a sharp increase in unemployment. The creation of extensive urban agricultural programs, which included centers of information and education, helped to alleviate this, providing new jobs that subsumed seven percent of the workforce and provided good wages (Koont 2009, 2011). In spite of Cuba's considerable success, Cubans have not developed urban agriculture to a scale that would sustain its entire population. Though urban agriculture has increased food security in the area of

vegetable production, Cuba still imports the majority of its calories and protein. In 2005, Cuba was "importing 60 percent to 70 percent of what it consumes [mostly so called bulk foods] at an estimated cost of $1.5 billion to $2 billion annually" (Reuters 2012).[7]

It is common for urban agriculture to be preformed by minority or economically disadvantaged populations worldwide. Research on subsistence urban agriculture suggests that it is largely a female dominated phenomenon in most parts of the world, including, but not limited to, Kenya, Chile, Peru, and Papua New Guinea (UNDP 1996; Momsen 2010). There are some places where men are the majority of urban farmers, including Senegal and Argentina. However, formal or commercial "cash-crop" models of urban agriculture in places like Cuba, Bolivia and Zambia, tend be more male-dominated (United Nations Development Programme 1996, 66-68). Women in Cuba tend to cultivate in small-scale self-provisioning spaces around their homes, rather than engaging in large-scale urban agriculture, thus their work is overlooked, ignored, or made invisible from an institutional perspective (Premat 2005). However, as I detail in the next

[7] Some have questioned the actual environmental gains that occurred after the economic crises of the '90s. The Cuban government's economic strategy to deal with the loss in GDP was to bolster the international tourism economy, which they had mostly eradicated after the revolution. Researchers have found that Cuban tourism, which is state-run by the Ministry of Tourism, is second only to the mining industry in its negative environmental impact (Maal-Bared 2005; Colantonio and Potter 2006; Taylor and McGlynn 2009). The gains made by the state-run environmental regulatory organization, the Ministry of Science, Environment, and Technology (CITMA), are tempered by their attempts to regulate another state-run agency, the tourism sector, out of perceived economic necessity. Some researchers question whether the environmental protection laws and other gains made after the economic crisis were the result of necessity and scarce resources, rather than choice (Maal-Bared 2005; Colantonio and Potter 2006). Further, Colantonio and Potter (2006) argue that urban agriculture since the Special Period has only served to increase environmental problems like deforestation, which in turn affects natural drainage and hydrological systems. However, others argue that the interrupted use of chemical inputs for agriculture has had more beneficial effects on the environment while the building of tourist infrastructures have had more negative effects on the natural environment (Maal-Bared 2005).

section, these gender disparities are far more than an interesting anecdote, as women are in fact integrally important to any successful sustainability project.

Why Gender Matters for Sustainable Development

A significant body of research, spanning a variety of nations and cultures, that examines environmental attitudes, risk perception, and activism, shows that women tend to express different concerns about the environment than do men. In addition, women are more active in environmental reform projects and tend to perceive environmental risks as more threatening (Flynn et al. 1994; Davidson and Freudenburg 1996; Seager 1996; Bord and O'Connor 1997; Dietz et al. 2002; Kalof et al. 2002; Eisler et al. 2003; Buckingham 2010; McCright 2010). McCright (2010) found that women in the United States demonstrate greater scientific knowledge of climate change, approach the issue of climate change differently, and express different concerns and potential solutions to problems. While women are not as active as men in mainstream environmental organizations, they are estimated to make up 60% to 80% of grassroots environmental organization membership (Seager 1996; Bell and Braun 2010; Stoddart and Tindall 2010). Further, research reveals that women often cite their roles as caregivers as the primary reason they are active in grassroots environmental movements (Bell and Braun 2010). There is a body of literature that suggests women's concern for the environment is complicated. At times, women are not more likely than men to exhibit environmental care, but rather, concern is based on educational attainment, ethnicity, and a number of other cultural factors (Momsen 2004, 2010; Paxton et al. 2007). However, the research overwhelmingly indicates that gender relations are likely to matter in environmental

politics, including both structural (e.g. composition of legislative bodies) and cultural (e.g. gendered divisions of labor particular to place) aspects.

Gender and environment theorists explore potential cultural mechanisms. They contend that women's concern for the natural environment is not based on essential or "natural" female characteristics, but, rather, likely is based on social conditions particular to nations, cultures, ethnicities, and topographies that influence gender roles and work (Rocheleau et al. 1996; Bell and York 2010). Gendered divisions of labor in "less developed" countries often position women as reproducers of life (both in biological terms and in terms of reproductive labor), subsistence laborers, water and fuelwood collectors, and caregivers of children and the elderly (Denton 2002). In these roles, women are more attuned to certain types of environmental degradation because their work and the livelihood of their families depend on women's access to convenient fuelwood supplies, clean water, and fertile cropland. These activities often expose women to more direct and harsh environmental problems than men.

Insights from feminist political ecology illustrate that women are disproportionately and distinctly affected by environmental degradation because of gendered divisions of labor, knowledge, legal rights, and land and natural resource access. Environmental degradation often forces women to travel further for resources, such as water and wood, and increases their exposure to life threatening toxins and diseases (Rochelea et al. 1996). For example, during the 1970s, women in Nepal were able to collect fuelwood in two hours, but as forests were cleared throughout the next decade, their collection time increased to an entire day and involved walking through rough terrain (Shandra et al. 2008). In addition, women's structurally conditioned

experiences of childbirth, caring for family members, unpaid and undervalued labor, and subsistence food production often expose them to direct and harsh environmental problems (Hemmati and Röhr 2007; Buckingham 2010). For example, in women's roles as water collectors they face exposure to malaria, which is endemic in many parts of Africa and parts of Central and South America (Denton 2002). In countries where rural women use traditional biofuels for cooking and heating their homes, like in India and Tanzania, women and children suffer disproportionately from indoor air pollution (Denton 2002; Shandra et al. 2008; Buckingham 2010).

Recent research on women in organizations demonstrates that in order for decision-making patterns to change, there must be a critical mass of women in decision-making positions. Women likely need to hold at least one-third of decision-making positions, otherwise their voices may be ignored, they may feel too intimidated to comment, or they may not be particularly representative of women in general, having been selected because their views were consistent with the men in the organization (McKinsey and Company 2007; Buckingham 2010). As an example of how more gender balanced representation can matter for the environment, a study for the European Commission found that local municipalities with a higher percentage of women in positions of authority have higher recycling rates than municipalities with fewer women managers (Buckingham et al. 2005).

A number of cross-national studies have shown that having a significant number of women in positions of power does affect decision-making outcomes. One such cross-national study identified nations with higher proportions of women in parliament ratified a greater number of environmental treaties (Norgaard and York 2005). Ergas and York

(2012) found that nations with a higher proportion of women in parliament emitted lower levels of CO2 even when controlling for a variety of factors. Likewise, a UN Development Report (2007) for the years 1990–2004, documented that among the 70 most developed nations in the world, 18 had stabilized or reduced their carbon emission, and of these 18 nations, 14 had a greater than average percentage of women as elected representatives (Buckingham 2010). In addition, Shandra et al. (2008) found that in nations with a higher proportion of women's nongovernmental organizations (NGOs) per capita rates of deforestation are lower. These results indicate that women's participation in the decision-making process may prove invaluable for addressing environmental sustainability.

Culture and Gender

One way that metabolic rift theory is lacking is that it hasn't taken critiques of feminist and critical theorists seriously. Engaging culture is an important way of addressing the deficiencies in the theory. Culture dictates expectations and interactions based on gender, and these expectations shape men and women's roles, whether coercively or by choice. Men and women resisting these prescriptions may find themselves subtly, or explicitly, sanctioned in daily interactions with others (West and Zimmerman 1987). Even when performing gender consistent with cultural expectations, marginalized groups often experience microaggressions, making for a hostile living environment (Sue 2010).

Carruyo (2008), invoking Stuart Hall and cultural studies, defines culture as "both the meanings and values which arise amongst distinctive social groups and classes, on the

basis of their given historical conditions and relationships, through which they 'handle' and respond to the conditions of existence; and as the lived traditions and practices through which those 'understandings' are expressed and in which they are embodied" (11-12). Here culture is seen as having the "tools" to weave together the gap between structure and agency. Culture is a process that is "fluid, constructed, complex, and contradictory, rather than static or homogenous" (Carruyo 2008, 12). It not only reflects political economy, but also the interplay between local knowledge, environment, tradition, hegemonic globalized knowledge, culture, and a variety of other influences that are constantly renegotiated, reinforced, and challenged.

In regards to gender, culture prescribes "the socially acquired notions of masculinity and femininity by which women and men are identified" (Momsen 2010, 2). Culture also prescribes gender relations—"the socially constructed form of relations between women and men"—and gender roles, or "the household tasks and types of employment socially assigned to women and men" (Momsen 2010, 2). Gender theorists have argued that gender is done or performed, not an essential or biological component of sex (Butler 1990; West and Zimmerman 1987, 2009). Gender performance differs according to age, race and ethnicity, class, and a variety of other factors. Culture prescribes the ways in which gender is performed in each interaction (Butler 1990; West and Zimmerman 1987, 2009).

One way that oppression manifests itself in daily interactions is through microaggressions. Microaggressions are "the brief and commonplace daily verbal, behavioral, and environmental indignities, whether intentional or unintentional, that communicate hostile, derogatory, or negative racial, gender, sexual-orientation, and

religious slights and insults to the target person or group" (Sue 2010, 5). Microaggressions are often difficult for a perpetrator to understand, as they are often unaware that their actions are offensive. It is because of these kinds of interactions that constant dialogue about cultural practices is necessary as are the democratic spaces to have these discussions. With these issues of culture in mind, I turn to how gender plays out in the Cuban context.

Gender in Cuba

Significant structural changes towards equality, especially for women, occurred after the revolution in 1959. Such changes took the forms of laws that mandated gender equality and the adoption of a large-scale (ostensibly) non-governmental organization.[8] Fidel Castro created the Federation of Cuban Women (FMC) in 1960 with the explicit intent to incorporate women into the revolution. Cuban women saw great political gains that guaranteed meeting most of their material and practical needs. The FMC oversaw programs to integrate women into the revolution and to enforce a series of new laws. These laws included the 1975 Family Code that mandates that men share equally in household responsibilities and guarantees women and men rights to their respective properties before and after marriage; the 1976 constitution, which mandates that "women enjoy the same rights as men;" and amendments to the constitution in 1992, which institutionalized the right to employment, state protection of the family, motherhood, and marriage, paid maternity leave, the prohibition of all forms of discrimination, guaranteed access to state positions and jobs for all citizens, equal access to all ranks of the armed

[8] Some argue that state appointed NGOs are more of governmental organizations (Shayne 2004).

forces, equal pay for equal work, equal rights, and the election for political positions (Vallina and Pagés 2000, 21; Shayne 2004). They focused on practical needs including access to free and safe healthcare, contraception, abortion, free and subsidized childcare, free education, divorce, literacy campaigns, and reeducation programs for sex-workers and domestic servants.

The formation of the FMC has greatly benefited Cuban women. In 1961, the FMC began the literacy campaigns that sought to get rid of illiteracy on the island, and this program significantly advanced women, who made up 55% of students. Now Cuba has achieved a literacy rate of almost 100% (Vallina and Pagés 2000, 21; Shayne 2004). Thanks in part to their incorporation through the Federation of Cuban Women, women have made considerable advances in employment, inclusion in leadership positions, and the legal recognition of the rights discussed above.

Cuban women have achieved many advances. They make up just under 50 percent of the population, are about 38 percent of the paid labor force, and occupy about 34 percent of leadership roles in the workforce[9] (Vallina and Pagés 2000, 24; ONE República de Cuba 2011; UNDP 2011). Women also occupy 43.2 percent of national parliament positions as of 2011, which far exceeds the 18 percent of women in parliament in the United States. (GII UNDP 2011). In terms of the UN Gender Inequality Index (GII)[10]—defined as "a composite measure reflecting inequality in achievements between women and men in three dimensions: reproductive health, empowerment and the

[9] Leadership for women has declined since 1996 (Vallina and Pagés 2000, 24; ONE República de Cuba 2011; UNDP 2011).

[10] The GII value varies between zero (when women and men fare equally) and one (when men and women have very unequal living conditions). In terms of Cuba, their GII value, .356, is closer to zero than the average for Latin America, .419.

labor market"—in 2012, Cuba ranked 63rd among the most gender equal nations (the United States ranked 42 as a comparison) (UNDP 2013). Cuba ranks very closely to the United States on many of these measures. This is interesting because Cuba is a relatively poor nation, while the United States is quite affluent. However, even in the face of great resources scarcity, the Cuban government attempts to divide social resources more evenly. In fact, Cuba fares better than the average for Latin America across all indicators except women's labor force participation.

According to official Cuban statistics women employees (by sector) are 18% of civilian workers, 57% of technicians, 56% of administrators, 40% of service employees, and 34% of leaders (ONE República de Cuba 2011). In recent years, Cuban women occupied 65% of the general scientific and technical work force. And, although a small percentage of women do work in urban agriculture, among the technical urban agriculture workers, women occupy 35-50% of upper-level positions (Lewontin and Levins 2007). Regardless of women's seemingly elevated status, there are still cultural barriers to equality in Cuba. After the economic crisis of the '90s, gains women made towards equality after the revolution began to decline. Declining women's status included lessened access to positions of power and increased household workloads.

Problems Cuban Women Still Face

Structural and cultural barriers to equality in Cuba have potentially led to women's steadily declining status since the economic crisis of the '90s. In 1985, the Third Congress of the Communist Party of Cuba realized that women and blacks held disproportionately few leadership positions and established affirmative action-like

policies to promote equalization (Prieto and Ruiz 2010, 164). Upon review, the state acknowledged that further measures were needed to actualize equity in Cuban society. However, soon after this realization, the Soviet Bloc collapsed, destroying the Cuban economy almost overnight. Cuban equalization projects, like building homes for people who lived in dilapidated housing and daycare centers for working mothers, were put to an immediate halt. Further, Cuban government officials instated market strategies to bolster the economy that also increased inequity[11] (Prieto and Ruiz 2010). During the Cuban economic crisis of the early 1990s, social inequalities, in terms of gender, race, and class, widened. In 1953, the Gini coefficient for Cuba, which measures income inequality, was at .56. By 1986 it had decreased to .22, but between 1996-1998, the coefficient increased to .38 (a coefficient of zero reflects perfect equality and a coefficient closer to one reflects complete inequality)—though Cuba was still ranked lowest in Latin America (Argüelles 2010, 114).

In 2008, Cuba ranked 47 among nations according to the Gender Inequality Index, but their ranking has gone down to 58 in 2011 and 63 in 2012 (UNDP 2013). "A number of experts from the FMC's Women's Studies Center indicate that women are the ones who have been hardest hit by the difficulties of daily life in the Special Period" (Pagés 2008, 313). Gains women made towards equality after the revolution that declined during the Special Period include lessened access to positions of power and increased household

[11] After the Special Period, Cuba opened up tourism as a means of reviving their battered economy, which led to programs that had negative consequences on the environment and revived sex work on the island. Other programs included consumption curtailment, cutbacks in state spending, food self-sufficiency programs, legalization of foreign investment and United States dollar possession—which transferred to convertible pesos or CUCs in 2004 (Maal-Bared 2005; Colantonio and Potter 2006; Taylor and McGlynn 2009). Tourism and the legalization of the United States dollar created more disparate class inequalities on the island as well.

workloads. Women's double shifts and other culturally specific forms of sexism, including societal devaluation of women, prejudice, paternalism, and women's internalized self-limitations, restrict their ability to be involved in Cuban leadership (Vallina and Pagés 1999, 2000; Pagés 2008). Further, women work three times as many unpaid hours as men (United Nation Development Programme 2010).[12]

Material resource scarcity and culturally prescriptive gender roles in Cuba contributed to women's declining status and inability to democratically engage in decision-making positions. Cuban socially constructed gender roles assign women with the undue burdens of unpaid domestic, or reproductive, labor. When resources became scarce, many women felt obligated to give up permanent or temporary jobs or retire early in order to stand in line for hours to buy available household necessities, deal with shortages, improvise meals, and care for children, the elderly, and the disabled (Vigil 2008, 310). Women at times had to choose to leave careers they loved to take other jobs in order to earn more valuable convertible currency. Moreover, the economic collapse exacerbated structural problems, including the loss of public transportation, which further limited women's career options. Services intended to ease domestic burdens were also subject to cutbacks after the Special Period. For example, daycare center construction came to a halt, and resource shortages caused daycares to close down at times, even though they had priority, making it difficult for mothers to go to work (Pagés 2008). Unequal relationships persist within couples even while women earn a living; this is often a source of conflict along with general male chauvinism. After the Cuban government

[12] In a study from 2001 in Habana Vieja, a neighborhood in Havana, shows that men and women over the age of 15 on average spend over 7 hours a day working in both paid and unpaid labor. Men work two times as many paid hours as women, but women work three times as many unpaid hours (UNDP 2010).

embraced tourism as a means to alleviate the economic crisis, Cuba saw a rise in the number of Jineteras (or female sex-workers). This is in part perpetuated because cultural norms situate women as, and women perceive themselves as, sex objects (Pagés 2008).

Fleites-Lear (2000), a Cuban woman born the year the revolutionary party came to power, tells of the dramatic changes in women's rights and the ensuing contradictions and paradoxes. She identifies six paradoxes the revolutionary Cuban woman faced. First, with women's newfound ability to work outside of the home and join political organizations, their workloads doubled or tripled, as machismo and patriarchal structures still demanded their attention to their household chores. Economic downturn made household demands even more time consuming. A second paradox she identifies is that with sexual freedom, familial relationships became unstable. The span of marriages, averaging 5 years, and unmarried partnerships declined and divorce rates rapidly increased after the revolution. Though, divorce rates began to decline after the economic crisis of the 1990s. Third, women who were born during or after the revolution experienced gains towards freedom, while women who were alive prior to the revolution, and helped the revolutionary project succeed, felt their freedoms lagged behind. Fifth, despite all the educational efforts to achieve women's equality, sexist language and images still persist in Communist party rhetoric. Fourth, Fleites-Lear laments that the political and employment gains women have made were jeopardized by the economic crisis of the 1990s and have contributed to the rise of sex-work on the island.

Finally, women gained the ability to participate in the political system, but were denied to the right to organize outside the system. The FMC is the only national and legal organization of women in Cuba. Since the FMC was established in 1960, many

young women did not feel that the organization adequately addressed or gave voice to their needs. The leaders of the organization have historically been explicitly anti-feminist and pro-revolution. While some of these things are changing, young women have felt that the FMC has limited discussion on challenges facing Cuban women today, particularly around domestic violence (Shayne 2004).

Feminism and Culture in Cuba

Ironically, the creation of the FMC and the subsequent laws that integrated women into the economy stifled feminist mobilization in Cuba (Smith and Padula 1996; Shayne 2004; Luciak 2007). Instead, feminism in Cuba has historically been considered a Western, bourgeois, imperialist concept that encourages man-hating and is divisive. The Cuban revolution centers on a cultural identity of unity, communitarianism, and socialism, though these things are changing. For almost 40 years after the revolution, feminism was seen as a threat to the Communist Party because of the fear that it could cause disagreement and take away from national unity and solidarity (Smith and Padula 1996). The creation of the FMC and these laws also stifled discussion around more subtle forms of sexism (e.g., microaggressions), which continue to persist in Cuba today (Shayne 2004).

Cuba's unique revolutionary history, culture, and international relationships have contributed to a master narrative that emphasizes national unity and deemphasizes internal conflict. In fact, Cuba ranks among the most censored countries worldwide on the Press Freedom Index at 167 out of 179. It is also ranked the most censured country in the Americas because of laws that require government monitoring of official news

sources and limit organizing in unofficial groups or organizations (Human Rights Watch 2012; Reporters Without Borders 2012). Independent reporters who go against these rules risk jail time or political exile (Human Rights Watch 2012; Reporters Without Borders 2012). A specific example of this is the women's media group, Colectivo Magín, which developed educational materials about sexist stereotypes in the media. They sought official NGO status but were denied by the Communist Party and had to immediately disband and halt all activities in 1996 (Shayne 2004). Because the FMC already existed, and issues regarding women fall under their purview, Magín was seen as a superfluous organization, even though the FMC chose not to take up the issues that Magín dealt with (Shayne 2004).

The master narrative in Cuban culture defines Cubans as comrades working together towards the unified goals of the revolution. Feminism, in this narrative, is portrayed as a divisive ideology that puts women's needs before the needs of society, and, thus, women before the revolution (Shayne 2004). Cuba's Communist Party has historically taken a defensive posture in relation to the United States. This makes sense given its tenuous position as a small island nation just south of an antagonistic world super power. The ongoing United States-led economic embargo against Cuba forbids trade and travel to the island for United States companies and citizens. With this strategy, the United States has sought to suffocate the Cuban economy, thereby dividing and conquering a people. These measures have had detrimental long-lasting effects on Cuba's economy. Given this antagonistic history, any ideologies thought to be imported from the United States, including individualism, capitalism, and feminism, are seen as ideological affronts to the unifying communitarian and socialist vision of the revolution

(Leahy 1986; Shayne 2004; Carruyo 2008). Women's equality in Cuba, they argue, is as a result of the socialist revolution, not a factional ideology (feminism) that prioritizes women. Since equality for all is a central goal in the socialist government, the narrative of equal rights and access and camaraderie towards the unifying vision of the revolution mask inequalities and obscure women's real barriers to positions of power. These barriers are perpetuated through cultural beliefs around divisions of labor and actual access to resources. Because of major reforms, gender inequalities in the social landscape considerably decreased after the 1959 revolution. Many people thought that inequity issues had been resolved.

Because the revolution granted women structural equality through laws and the economy, ideologies that center the cultural aspects of gender inequality are met with suspicion (Prieto and Ruiz 2010). With feminism portrayed as an ideological threat to the revolution, and discussion of gender inequality seen as a divisive, anti-revolutionary behavior, achieving gender equality in Cuba is at an impasse. Despite structural changes that legally mandate gender equality and secure women's practical and material needs, cultural perceptions of women's obligations and duties within a society have been slow to change. Especially in times of crisis, like during the Special Period, Cuban women feel the push of cultural expectations as they adhere to their traditional domestic duties, finding little time to pursue positions of power within the Communist Party (Leahy 1986; Smith and Padula 1996; Shayne 2004; Luciak 2007). Thus, male-gendered institutions and gendered divisions of labor persist (Shayne 2004).

Gender in Urban Agriculture

As a strategy to increase international food security, The United States State Department's Diplomacy Global Food Security Coalition (2009), calls for harnessing "the power of women to drive economic growth." Worldwide, women make up the majority of urban agricultural workers mainly using subsistence strategies to supplement household income; thus, a large proportion of this work is unremunerated and economically unacknowledged (United Nations Development Programme 1996). Cuban women do not make up the majority of urban agricultural workers in Cuba, in part, because Cuban cultural gender prescriptions deem women the weaker sex. However, these prescriptions position women in supportive and domestic roles that subsidize urban agricultural practices. Harnessing "the power of women" in this case may prove to cause undue burden on Cuban women who already experience long hours during the "second shift," or reproductive household work done before and after their work in the paid labor-force (Hochschild and Machung 1990).

An interesting space to examine gender in Cuba is a space that Cubans do not typically associate with women (Premat 2005). Women in agriculture, more broadly, and urban agriculture specifically, are considered unusual in Cuban culture, even though, until 2005, most women worldwide worked in agriculture (Momsen 2010, 178). Though women are often excluded or marginalized in commercial agricultural activities, as in the case of rural Mali (Wooten 2003). After the 1959 revolution, women made significant inroads into most economic sectors. By 1974 women were well represented in all sectors of the economy, but agriculture lagged behind (Leahy 1986, 104). However, historically, slave women in Cuba were active in plantation agriculture (Knight 1970). More recently,

some estimates suggest that Cuban women make up 10-15 percent of Havana's urban agriculture producers, (Hernández and Medina 2001; Premat 2005) while others suggest that they make up 25% of the urban agriculture work force (Companioni, Hernández, Páez, and Murphy 2002). A small percentage of women do work in urban agriculture, yet women are better represented in the upper-level positions of such work (Lewontin and Levins 2007).

Literature that focuses on urban agriculture in Cuba neglects the role of women in these spaces, further entrenching the invisibility of their labor. Thus, my contribution is to center women's work in my analyses of urban agriculture in Havana, Cuba. What cultural constraints, or expectations around gendered work, keep women from working in urban agriculture in Havana, Cuba? In these spaces, where women continue to be marginalized, we can learn more about the specific mechanisms that keep women from participating in large numbers. Moreover, we can reveal the ways in which women's work and contributions to urban agriculture are continuously made invisible. With a holistic vision of sustainability in mind, my question is: Given the particular social, political, and economic context of a place, what are some constraints to strong sustainability?

A Gender Critique of Metabolic Rift

The case of Cuba allows us to examine the effectiveness of metabolic rift theory as an analytical framework because they have eliminated the main theoretical barrier to environmental sustainability and equity. The focus of metabolic rift theory (for further discussion see chapter three) is on larger structural economic processes, specifically capitalism. The theory suggests that capitalist modes of production materially estrange

human beings from the natural conditions that form the basis of human existence. With such a focus, it conceptually prioritizes class inequalities. Because of this, it is deficient in its treatment of the gendered nature of institutions and gender inequalities that stem from smaller interactional and cultural processes. Notwithstanding, the metabolic rift theory is useful in the endeavor to create a more holistic definition of sustainability because it acknowledges how cleavages in social as well as ecological metabolic cycles are interrelated. Foster, Clark, and York (2010) argue that:

> The ecological rift is, at bottom, the product of a social rift: the domination of human being by human being. The driving force is a society based on class, inequality, and acquisition without end. At the global level it is represented by… the imperialist division between center and periphery, North and South, rich and poor countries. This larger world of unequal exchange is as much a part of capitalism as the search for profits and accumulation (47).

The theory indicates that people should strive to operate under ecological principles that include adherence to biophysical limits and the recognition that nature performs critical functions that cannot be replaced by technology. This should be done while ensuring the equitable distribution of resources in a democratic manner. If this theoretical tradition accurately illuminates the destructive elements of capitalism, it stands to reason that a country dedicated to ensuring its people equitable access to resources, like Cuba, experience some mending of metabolic rifts.

When discussing metabolic rift, researchers tend to focus on the social or ecological consequences of capitalism. This theory deals with the structural dimensions of a society, namely capitalism as an economic system, researchers rarely address what these problems look like on the ground in a micro-interactional setting, and especially in relation to gender-divisions of labor. Thus, I expand on Ariel Salleh's (2010) theoretical

work on reproduction to address how gendered divisions of labor, particularly the care-work and provisioning that women do in the household, perpetuates unequal relations that are unsustainable and antithetical to an holistic vision of sustainability. I will also be addressing the second shift—the housework that women end up doing before and after their day jobs—a phenomenon detailed by Arlie Russell Hochschild and Anne Machung (1990).

Salleh (2010) elaborates on reproduction, social metabolism, and ecological metabolism. She emphasizes the regenerative, reproduction work that subsidizes the capitalist economy, which she terms meta-industrial labor. This is the unpaid work from caregivers, peasants, and indigenous gatherers that propels metabolism, has rift-healing properties, and sustains metabolic value. Anthropocentric economic measures of value, like use–value, or material utility, and exchange value, or market worth, do not account for metabolic value, or a flourishing ecosystem that is the basis of life itself. Salleh (2010) argues that debt—unequal exchange or "nonreciprocal material transfer" —is part of the process of the associated rifts created by capitalism (211). While capital is ecologically indebted to global peasants and indigenous groups who have lost their land and livelihoods in the face of industrial development, capital also creates an embodied debt to women and mothers who lose their intergenerational livelihoods, that take the form of handing down tradition or safe natural environments to their progeny. She also describes the social debt that capitalism takes on exploited workers who experience a social rift and give their lives and labor to capitalist production. However, reproductive labor is not limited to capitalist exploitation. It may also be embedded in any gendered-political and economic structures. Latin American Feminists have been saying since the

1980s, “sexism was not the outcome of capitalism and imperialism but rather was shaped by a relatively autonomous, patriarchal sex-gender system” (Sternbach, Navarro-Aranguren, Chuchryk, Alvarez 1992, as cited in Smith and Padula 1996, 184). When it comes to gender inequality, the structure of capitalism is an inadequate explanatory variable.

Another deficiency in metabolic rift theory is that it doesn’t integrate Marxist feminist critiques about the gendered nature of political and economic structures. According to Waring (1999), gendered institutions affect both women and the environment through an economic valuation system that considers women’s unpaid labor nonproductive and environmental resources as a free gift to humanity, which may be extracted ad infinitum. This historical disregard for both women’s work and the environment stems from value systems that were codified in world economic organizations created and dominated by elite, white men (Merchant 1990; Mies 1998). The trappings of these practices did not disappear with Soviet style or Cuban communism. Indeed, the Soviet Union and Cuba both ravaged environmental resources as part of their economies (Stewart 1992; McNeill 2000; Maal-Bared 2005; Colantonio and Potter 2006) and maintained masculinist institutions (Lapidus 1978; Shayne 2004).

Examples of these kinds of “masculine” gendered practices abound in institutions that have historically excluded women. Women are also excluded by top-down decision-making, the use of technical language that limits understanding by individuals who are not experts, and refusal to include women or indigenous stake-holders in policy discussions or decision-making. Institutional biases towards technical solutions also are gendered, as research shows that women prefer risk aversion and personal solutions over

new technologies (Buckingham et al. 2005). Further structural obstacles include reluctance to offer flexible scheduling, which would facilitate women's participation, and general disregard for the gendered implications of institutional actions (Boyd 2002; Stevens 2010).

In the following section, I build on these critiques, offering an analysis of the reproductive rift in Cuba. Reproductive labor subsidizes agricultural production, as care-work, self-provisioning, and subsistence work must be done in order for individuals to be able to cultivate in the fields. This work includes preparing food, taking care of children and the elderly, cleaning the house, and maintaining familial physical and emotional health. While the Cuban government did much to mitigate material inequalities between men and women, they did not eradicate the socially restrictive roles that position women as the primary domestic laborers and caretakers. This, as I will argue, has consequences for women's involvement in democratic decision-making process, and ultimately, for sustainability projects more broadly.

Gender Equity and Environmental Restoration in Cuba

Some researchers commend Cuba's urban agriculture for having many rift healing properties (Clausen 2009)[13]. Metabolic rift theory can be further developed toward a holistic view of sustainability because, even as a macro theory, it provides a solution to metabolic rifts that can be implemented at the micro-level through the concept of

[13] For a more detailed account of how Cuba's urban farming practices heal the metabolic rift, see Clausen (2009).

restitution.[14] This concept can serve an analytical link to micro-level processes because it is derived from Liebig's theory of soil nutrition. Although I use restitution more broadly throughout this dissertation,[15] it can be employed to discuss daily activities like composting. Cuba is interesting when examining restitution because capitalist production, which the theory identifies as the structural barrier to sustainability, is absent. In addition, Cuban urban agriculture utilizes many techniques that are meant to sustain soil quality, as Liebig suggested. Cuban urban farmers reintegrate the town and country, use human waste to restore soil nutrients, like compost, and they use a rational agriculture (i.e. agro-ecology), to produce food and maintain soil fertility. While equalizing access to education and agricultural resources contributed to this project, other cultural dynamics and governmental policies impede democratic debate and participation, especially for women.

Cuba's strides toward ecological restitution are admirable, but in the process of achieving greater food sovereignty, they neglected some of Cuban women's basic needs. Here, I do not attempt to adjudicate whether or not gender equity is a necessary component of environmental sustainability. Rather, I argue that Agenda 21, metabolic rift theory, and Marxist ecological feminists (among other scholars) postulate that equity is requisite for environmental sustainability, and gender equity is one aspect. My experiences at the farm reveal that this relationship is more complicated and that there

[14] Restitution originates in the work on soil nutrients of Justus von Liebig's, and means "giving back to the fields the conditions of their fertility" to ensure that the soil is permanently fertile (Foster 2000, 153). For a more detailed discussion see chapter three.

[15] I use restitution to mean restoring the interrelated metabolic processes that capitalism has created a rift between, including humans' relationship to nature, human economic relations between each other, and the antagonism between town and country.

may be intervening variables. I find through instances in which cultural prescriptions for men and women influence gender divisions of labor, limit women's democratic participation, and perpetuate microagressions in daily interactions, that perhaps failure to achieve a comprehensive form of gender equity does not preclude environmental restoration. Yet, without institutionalizing some forms of equity, urban agriculture as currently conceived of in Cuba may not have materialized, which I discuss in more depth below. While Cuba has made great strides toward healing ecological rifts, their mending of social and embodied rifts associated with women's work have had less success (Salleh 2010). I divide this section into gender divisions of labor at the farm, second shifts, and microagressions.

Gender Division of Labor at the Farm

Gendered divisions of labor at the farm are clear in each sector. During my fieldwork, the total number of employees was 177, with about 40 women representing 23 percent of the workers. There were 13 managers, four of which were women who represent about 31% of the leadership positions. Table 1 breaks down each sector at the farm by gender.

As demonstrated in the table below, women tended to work in the offices doing human relations, accounting, and commercial sales. Men worked out in the fields tending livestock, composting, and harvesting. I also observed that women tended to cook, sweep, clean the grounds, plant seeds, water small plants (though not in the field), package items for sale, and do administrative work. They were often sitting in the shade and/or inside a building, while men were doing physical labor in the hot sun. In fact,

some men complained about how easy women's work seemed. Tasks typically reserved for men to do were manual labor in the fields, cultivating crops, operating heavy machinery, and working with large animals. In fact, I never saw a woman doing these types of activities. I'm not suggesting that gendered divisions of labor are inherently problematic. However, it was clear that with these divisions of labor came certain cultural attitudes that may have limited women's options in other ways.

Table 1: Urban Farm Sector by Gender

Sector	Women	Men
Economic and Human Relations	13	5
Service	7	1
Plant Start House	6	3
Commercial	5	5
Agro-industry	5	5
Ornamental Plants	4	8
Organic Material	0	6
Livestock	0	8
Watering	0	9
Maintenance	0	11
Security and Protection	0	26
New Farm Area	1	48

Gendered divisions of labor often correspond with beliefs regarding men and women's capabilities. Momsen (2010) affirms "women are prevented from entering

certain types of employment, usually on the grounds of physical weakness…" (178). Cuban conceptions of gender affect the types of work that men and women do, and may contribute to the lack of women's participation in large-scale urban agriculture. Ideals about men being stronger than women as workers and protectors of women limits what men allow women to do as well as what women choose to take on. The farm president's daughter explained gender attitudes of farm labor during our interview: "All the farm men, those that work in the field, they are a little macho, and they think the fieldwork is hard, it's demanding, the women cannot do that. So, this slightly undervalues women." Although, she argues, things are changing; "But nowdays there are thousands of examples of women achieving many things."

Some Cubans are contesting these cultural gender tropes. I was able to witness Cubans scrutinize these cultural beliefs at an art opening and documentary screening that highlighted the gender divisions of labor in Cuban agriculture. Some groups in Cuba are working to change gender attitudes. Specifically, the organization that supported the art opening, The Programme for Local Agrarian Innovation (PIAL), a subsidiary of the National Institute of Agricultural Sciences in Cuba, had a gender education strategy. They supported a group called Against Hegemony that put together the art. The art featured women doing agriculture work, and the films interviewed men and women farmers and their children. They asked participants about what they believed constituted women's work. The audience laughed at the list of domestic chores the children rattled off. I felt privileged to observe this examination of gender in Cuba through art, as it was the only instance in my short stay in Cuba where I saw Cubans critically discuss gender expectations collectively.

When I worked at the greenhouse with the starter plants, I worked under a boss named Alberto. Anytime I was doing "women's work," like planting seeds in trays, he mostly ignored me. If I began trying to do "men's work"—shoveling, handling wheelbarrows, carrying too many trays at a time—he would make a point to tell me that I didn't have to do that, or that I could stop if I was tired. One day we had a discussion about my abilities to do these jobs on the farm. He said, "You can do the work that the men can do, but probably not as much because you're a woman. The men are stronger, but you happen to be a capable woman."[16]

The idea of a woman pushing a wheelbarrow seemed very controversial on the farm. Despite the resistance from my male-identified co-workers, I insisted on pushing wheelbarrows. Every time I picked up a wheelbarrow, for a total of five times, it caused some conversation. One day in particular, a co-worker and I were moving dirt with wheelbarrows. First Hernan told me I didn't have to do it; then he insisted that I use the smaller wheelbarrow and not fill it up. Hernan and I walked together to move the dirt, and while we were doing this, another, older man saw that I was pushing a wheelbarrow while Hernan was walking next to me. He jokingly disparaged Hernan by calling him a "capitalist exploiter" and added that he couldn't believe Hernan was making a girl push a wheelbarrow. A younger man said something similar to Renial, a younger man that I often worked with. He picked on Renial for letting a girl push a wheelbarrow on another occasion.

There were some notable exceptions to gendered divisions of labor on the farm. I worked with a female scientist in the field examining the ratio of beneficial bugs to

[16] This quote came from my field notes. It may not be what he said verbatim.

potentially harmful bugs. The vice-president of the farm, a woman, did most of the managing. There was a male cook, and a few men worked on women-dominated administrative tasks. Though, if asked, people acknowledged that men who worked inside the offices tended to be older men who couldn't do manual labor anymore. During my fieldwork, every scientist from the Research Institute for Plant Health—a government organization that conducts research on agricultural practices—who came to exchange information with the farm was a women. Of the scientists I met, women outnumbered men seven to four. Interestingly, while women were often treated as weaker than men and as sex objects, men and women alike regularly made observations about women's intelligence. On four different occasions I heard men referring to women, who were not present, as intelligent, and I heard one woman refer to her niece as smart. I never heard anyone discuss a man's intelligence, present or not.[17]

Many Cubans consider agricultural labor to be crass and dirty, especially when done by a woman. I observed these gendered expectations on several occasions. One day, when I left work at around five pm when most people finish work for the day, I was standing just outside the urban farm wearing my rubber work boots and dirty clothes when a truck full of men drove by. One man yelled at me from the truck "guajira" (which in Cuban slang is a pejorative term for country or peasant girl). This demeaning gesture, ironically, was the least offensive thing that a man yelled at me while I was in Cuba.

[17] It is possible that noting women's intelligence in Cuba is similar to acknowledging how well-spoken an African-American is in the United States. It is not a compliment, the assumption being that women usually aren't smart or that African-Americans usually aren't articulate. The cultural significance of these conversations wasn't clear to me from the limited discussion about women's intelligence. It is also possible that women's intelligence is just culturally understood given how many women are educated in Cuba, as over 60% of the highest degree earners are women (ONEI 2011).

Another example of this type of reaction occurred when I was at a book fair with a young woman friend. We were speaking to a young man selling books, and he asked me why I was in Cuba. I told him that I was working on a farm. He cocked his brow at me, and said "Why? Isn't that work dirty?"

In a conversation with the president of the farm, he divulged that young people don't want to be farmers in Cuba. The Cuban government has worked on educational campaigns to make agricultural work seem sexier and appealing, but young people aren't interested. Another incentive for agricultural work is that it actually pays well in comparison to many other jobs in Cuba. However, cultural perceptions of agricultural work as being dirty and unrefined inhibit the participation of young men, and especially young women.

Microaggressions

Another factor that likely contributes to women's disinterest in agricultural work is the proportion of men to women, coinciding with microaggressions that occur in daily activities. The most common form of microaggression at the farm was the piropo. Piropo literally translates into "flirtatious remarks." Men and women alike commented on each other's attractiveness and expressed love and affection for one another. However, men's comments at times were overtly sexual. Specifically, one man in his 70s named Mesa explained to me why piropos are okay. He said that women in Cuba get offended when you don't tell them how pretty they look. Later that day I asked a woman on the farm what she thought about what Mesa said to me about piropos. She laughed and said that Mesa says the most disgusting things to women. She said that he was constantly

commenting on how much he loves her ass. He asks questions like, is her ass real or did she buy it at the store.

All five of the women that I discussed piropos with explained to me that there was a distinction. They liked the nice piropos, but they didn't like the gross piropos. For example, a nice piropo is when a man tells you that you look pretty. A gross piropo is a sexually explicit comment, pointing out body parts or explaining what he'd like to do to you. Piropos were also common on the street everywhere in Havana. Most of the time a younger woman walks alone or with another woman, men make comments about their physical appearance. Men won't comment when a woman walks with a man. Some of the women I worked with found ways of resisting offensive comments, including responding to men flippantly, but they didn't challenge the piropo phenomenon on the whole. The example of Mesa also illustrates how perpetrators of microaggressions are often oblivious to the fact that they are actually being offensive.

Mansplaining was another microaggression I personally experienced. The word "mansplain" has recently entered popular feminist discourse and is gaining popularity in common parlance. It refers to a woman's experience of men confidently and condescendingly over-explaining concepts that she is already familiar with. While working on the farm in Cuba, I experienced something similar to this when attempting to do anything that was considered men's work. Specifically, when I was shoveling dirt, Alberto, my boss, walked over to me and took the shovel and proceeded to explain to me how to shovel in exactly the same manner that I was just shoveling. This was just one example among many where men felt the need to explain to me how to push a wheelbarrow, carry palettes/trays, and appreciate their piropos. While tasks traditionally

considered women's work were consistently disparaged, they were in fact integral, and they supported the urban agriculture project as a whole.

Gender Roles and Reproductive Labor

Salleh (2010) argues that capitalist modes of production are subsidized by reproductive labor, generally assigned to women in most societies. The Cuba case illustrates that other economic structures can also rely heavily on the regenerative labor that women usually perform. Gender roles for women in Cuba position them as the primary homemakers. I interviewed 13 women at the farm, eight of whom had male-partners. Six of the partnered women said that they did the majority of the housework. Some of the women I talked to accepted it as their lot in life to be the primary homemakers, even though they also worked all day at the farm. There were a few instances where women voiced resistance, but that wasn't the predominant attitude. Here are a few things that people said about household labor.

In reference to the long hours she worked, Isis said, "If I am reincarnated, I will come back a man." A woman who worked in the small industrial section of the farm said matter-of-factly, "I wash dishes everyday because I am the only woman in my house." When asked how she and her husband distribute household labor, an accountant at the farm lamented, "…women have to carry more of the weight than men." A man discussing household chores at his house, and his backyard garden, stated, "My wife must travel further to do the laundry because the garden takes up all the space in our backyard. But the family is a partnership, and my wife knows this is necessary in order to maintain the garden."

A Tale of Two Lives

While I was in Cuba, I had the privilege of staying with a Cuban family. In their household I was able to observe some disparities in the amount of work that the woman did as compared to her husband. I want to note that both of them worked very hard. Denis did not have it easy, but neither did Isis. And Isis did not have anywhere near the amount of leisure time that Denis enjoyed.

Isis worked Monday through Saturday at the urban farm. Monday through Friday, she woke up at 7 am to get her two sons out of bed and ready for school. She made them breakfast and dressed her youngest son. After she had toast and instant coffee, she walked her youngest son to school at 7:45 am. She had to be at work at 8 am, and she worked until 4pm. At 4 pm, she left work to pick her youngest son up from school. They usually stopped at a market on the way home to pick up items for dinner. Once home, Isis began preparing dinner. She began by cleaning the beans, rice, and chicken she was going to prepare. While cleaning beans and rice, she usually helped her sons with homework at the dinner table. Once she had the beans, rice, and chicken in the slow cookers, she began cleaning lettuce and tomatoes for a salad. Around 8 pm, on days when her husband was working, she would bathe her youngest son. Around 8:20 pm, she would serve everyone dinner. The dinner table didn't fit everyone, so she waited until the others had finished eating, and she cleaned dishes in the interim. Then finally, she ate last around 9 pm. She would clean up after everyone and then watch a soap opera on television until she went to bed, usually around 11 pm. Saturdays, Isis worked 5-hour shifts at the urban farm, and Sundays were the days she used to catch on household chores like, sweeping, mopping, and cleaning the bathroom.

Denis worked every other day at a restaurant as a cook. His shifts were typically 12 hours long, and he earned quite a lot by Cuban standards because tourists, who paid with more valuable currency, ate at this restaurant. A typical day off for Denis consisted of him waking up around 11 am or noon. His mother-in-law typically had lunch ready for him when he got up. Some days he would sit and watch television or music videos for several hours. On other days, he would go to a garage on the urban farm and work on his broken down old car that did not function the entire time I stayed with the couple. Around 8 pm, he usually bathed his youngest son. And, as soon as he finished bathing his son, dinner was ready on the table for him to eat. After eating, he would watch television in his room.

Both Isis and Denis worked very hard. However, during my visit, Isis averaged about 87 hours of work per week, and Denis averaged between 37-49 hours of work per week. While the instance of Isis and Denis is not generalizeable, this corroborates other findings that suggest that women work longer hours during the second shift in Cuba (UNDP 2010). Moreover, the degree to which the tasks delineated by gender divisions of labor disproportionately consumed nearly every moment of Isis' time is illustrative of the ways in which the second shift limits women's ability to participate in decision-making processes that are conducted during the farm workers' free time. Furthermore, the ways in which the work women do during the so-called second shift actually subsidizes farm labor more generally, disproportionately benefits men, granting them the "leisure" time required for participation in various local democratic decision-making processes. The net effect of this is the disproportionate exclusion of women from these processes, which is antithetical to strong sustainability.

Discussion and Conclusion

The Cuban case demonstrates that ecological reform and social equality do not automatically come about when a nation eliminates capitalism as a structural barrier. As stated above, Latin American Feminists have said since the 1980s "sexism was not the outcome of capitalism and imperialism but rather was shaped by a relatively autonomous, patriarchal sex-gender system" (Sternbach, Navarro-Aranguren, Chuchryk, Alvarez 1992, as cited in Smith and Padula 1996, 184). For the Cuban government, feminism "was a fundamental rejection of Cuba's long-maintained position of the primacy of the class struggle and the necessity of women's obedience to central male authority" (Smith and Padula 1996, 184). After the socialist revolution, Cubans continued the environmentally destructive practices of large-scale sugar production, and the economic crises of the '90s saw the resurgence of heavier domestic burdens on Cuban women. However, the restructured economy and government did give Cubans the political opportunity to pursue environmental sustainability after the Special Period. The Earth Summit inspired optimism in Cuba, and the government instituted environmental reforms that facilitate urban agriculture. Urban agriculture has many rift healing properties, like integrating the country with the town and reintegrating human waste in agriculture, i.e. compost. Yet strides made toward gender equity began to decline.

Agenda 21 (UN 1992) addresses inequity and environmental degradation as mutually reinforcing processes. The UN suggests that gender equity, indigenous equity, and the elimination of poverty are all essential components of environmental sustainability. Because the UN's official stance is that the global economy is in the

service of people and the environment, their proposed solution to social and environmental problems is neoliberal sustainable development. As I've demonstrated in previous chapters, neoliberal sustainable development has fallen short on some important goals, particularly in equity and environmental protection. This paradigm doesn't appear to achieve what they set out to achieve. I draw on metabolic rift theory and ecological feminist research, where they posit that capitalism is necessarily exploitative of people and the environment and that the domination of nature, women, and indigenous peoples are mutually reinforcing processes. I find that capitalism is a structural barrier to sustainability. As in the case of Cuba, when capitalist goals, individual wealth and accumulation, are not present, Cubans are able to create more sustainable urban environments.

Since the 1959 Cuban revolution, the structural barrier of capitalism has been taken out of the picture. However, Cuba's economy remained reliant on large-scale sugar monocultures and international trade for resources until the Special Period. The Cuban government's efforts toward environmental sustainability were limited until they lost access to international trade. While eliminating capitalism was an insufficient condition, the absence of capitalist goals made working toward restitution, or environmental sustainability, possible. In addition, once they moved toward socialism, gender equity was prioritized. However, the government silences open debate, which stymies necessary conversations toward greater gender equity. Cuba demonstrates that capitalism may be an important yet insufficient variable in gender oppression as well. In addition, this case demonstrates that all three theoretical perspectives that I draw from above, which suggest

that environmental degradation and inequity are necessarily interrelated and mutually reinforcing, are potentially missing other important social dynamics.

While some research suggests that equity and democracy facilitate environmental protection, there are counter examples, like Curitiba, Brazil (Moore 2007), which I discuss in the first chapter. Scholars of gender and development argue that indigenous people, women, and the poor have different relationships to the environment and may contribute important knowledge as stakeholders in environmental protection if their positions are considered. While this is certainly true, there are also many cases of active denial on the part of stakeholders who choose not to acknowledge environmental degradation happening all around them (Momsen 2010).

Is equity broadly, and gender equity specifically, necessary for environmental sustainability as the UN Agenda 21, metabolic rift theory, and Marxist feminist scholars of the environment contend? While countless empirical research points to a relationship between equity and environmental protection (see chapter one), my research suggests that there are likely intervening variables. The United States is ranked higher in gender equity but is more demanding of the natural environment than Cuba. In Cuba, gender relations are more equal than average in Latin America, and they rank closer to environmental sustainability than the United States. Political and economic factors do seem to drive inequality and environmental degradation, but there may be different iterations and varying extents of each dependant on different cultures, histories, and relations to global power. This suggests that the two, equity and environmental sustainability, do not necessarily always work in tandem. There might be a relationship, as suggested by other research, but this case paints a more complicated picture. The movement toward equity,

though not realized, did allow the space for environmental sustainability. If Cuba did not prioritize human needs, they could face the same systemic barriers of capitalism, by prioritizing elite's monetary gain. Because Cuba made higher education accessible and more widely available to everyone regardless of their status, a high percentage of women are employed in the scientific and technical workforce and have contributed important information and research to the sustainability project. In addition, the government prioritized and facilitated food research. Without this, scientists may not have incorporated the indigenous knowledge that was crucial for locating the ecological synergisms discussed above. These examples address how the move toward equity did support the environmental sustainability project to an extent.

On the other hand, paternalistic state programs with heavy-handed policies squelched democratic processes that get at deeper, socio-cultural inequalities, by eliminating the space for constant dialogue. Perhaps with reason, the Cuban government invokes national unity against the looming United States empire when it stifles any inter-Communist party debate or conflict and shuts down oppositional and dissident mobilization (Luciak 2007). This makes any discussion of persisting inequities impossible to pursue. While Cuba was beginning to realize environmental sustainability, material gender inequities in the nation began to rise. Microaggressions and overt forms of sexism persisted as well, like piropos. When the Cuban government created the structural conditions of equality while limiting dialogue, this impeded the realization of gender equity. The case discussed above of the feminist organization Magín is an example of how the Cuban Government obstructed important debate. The censuring of such information actually has served to detract from the equalizing project.

In addition, cultural divisions of labor that position women as the primary domestic laborers interfere with women's access to local democratic participation and large-scale urban agriculture.[18] Cuban cultural beliefs about women's physical capabilities to do manual labor and a cultural distaste for agricultural work, especially women in these jobs, likely contribute to women's limited participation in large-scale agricultural work. Cuban women are not the majority of urban agricultural workers in Cuba. However, Cuban cultural traditions position women in supportive roles that subsidize urban agricultural practices. After the Special Period, women experienced an increase in demands on their time in their domestic labor roles. Even though the Family Code mandates men and women's equal participation in household labor, women still do most of the work. Indeed, six of the eight women I interviewed in partnerships with a man reported that as women they were responsible for the housework. When resources are scarce, they must walk to multiple markets to find necessary food items and stand in long lines, and when energy is limited, they must engage in more labor-intensive work, like washing clothes by hand. These domestic activities, especially when performed in

[18] Socially constructed gender divisions of labor, including reproductive labor, provide a link to the micro level where we can think about how real social relations are connected with ecological practice. Gender is particularly important, since it affects equality and quality of life and relates to culturally prescriptive beliefs about femininity and masculinity, constructing gender divisions of labor. Metabolic rift theory addresses the connection between labor and the natural environment and cultural expectations around gendered divisions of labor differently affect men and women's relationships to their natural environment (Salleh 2010). Because of this, men and women's labor has different ecological consequences, and similarly, ecological problems affect men and women differently. Gender is something that we do, not something that we have, and the script for how people do gender is derived from culture, or how people in a particular place previously did gender (Butler 1999). Considering social context is important to successfully implement ecological reform, not only to understand the ecological consequences of practices, but if we are to develop reforms that will prove socially desirable and self-sustaining.

tandem with wage-labor, constrain women's ability to participate in local democratic processes. Having more responsibilities in the home means less time for democratic participation and less access to leadership positions, further entrenching gender divisions of labor. Economic downturn and resource scarcity causes more undue burden on Cuban women who already experience disproportionately long hours during the "second shift," as is the case for Isis.

As argued by Salleh (2010), women's invisible reproductive work subsidizes the Cuban economy, though in this case, it is a patriarchal economic system that is not capitalism. This work mediates paid agricultural labor by maintaining the health, and therefore the viability or productivity, of laborers. Particularly, we see this in how Isis, and other women on the farm, prepare food and maintain household cleanliness for their families, as well as themselves. If this work is ignored, or made difficult to accomplish, the integrity of urban agricultural labor is potentially compromised, especially for the women workers engaging in the second-shifts.

In addition, patriarchal government structures subsidize and economically acknowledge larger-scale urban agriculture production, thus legitimating this work. This occurs while women's small-scale patio subsistence production goes mostly unnoticed and under the radar (Premat 2005). This relationship between gender and remunerated work is a global pattern. Internationally, women do the majority of agricultural work, but generally for subsistence, and men engage in paid agricultural, or more gainfully remunerated, labor more than women (Wooten 2003; Momsen 2010). Subsistence work isn't accounted for in national accounts; therefore, these government and economic processes serve to render women's work invisible (Waring 1999).

My intent with this case is to look at one aspect of sustainable development, gender equity, and refine a macro-theory like metabolic rift by parsing out what everyday interactions look like when the theoretical structural barrier, capitalism, is taken out of the picture. Since this theory is incapable of addressing cultural and interactional dynamics, I employ feminist theories of the environment to bridge the gap. More research is needed to address the relationships between gender equality and ecological sustainability. My research suggests that there are likely intervening variables. However, without social justice, strong sustainable environmental reform is incomplete. My empirical work exhibits mixed findings to an important assumption of metabolic rift theory—that ecological degradation is predicated on the "domination of human being by human being." Indeed, my research demonstrates that a society organized around the equal distribution of resources can face a period when inequality worsens while they attempt to mend ecological rifts. It also reveals how masculinist institutions can perpetuate inequalities even with the explicit intent to eradicate them. Conversely, my research also demonstrates that the movement toward equity in Cuba may have been necessary for the urban agriculture project.

The purpose of my research is not to prove that gender equality leads to environmental protection, or vice versa. Rather, if the goals of a society are to move toward a strong sustainability, one that takes the Agenda 21 propositions seriously, then more work needs to be done toward comprehensive gender equity and environmental protection. My findings suggest that if the goal is to create socially just environmental change, it must be done deliberately. The instituting of laws, such as the Family Code in Cuba, is important but insufficient. They are insufficient because cultural factors may

restrict women and other minorities' participation in democratic processes. Inequality and disregard for the environment are also culturally entrenched social processes that must be addressed simultaneously and with specialized attention in order for lasting change to occur. Therefore, goals toward economic restructuring, equality, and environmental reform should be deliberately and methodically phased in with democratic discussion at each step and constant research assessing strides and weaknesses in the system.

In the following chapter, I address the ways in which Cuba's separation from the otherwise hegemonic global neoliberalism allows the government, regardless of its authoritarian nature, to create policies that are not polluted by capitalism and corporate interests. This allows me to demonstrate, by way of comparison, the detrimental impact of corporate influence on sustainability projects in the US.

CHAPTER V

WORKING TOWARD SUSTAINABILITY: COMPARING TWO CASES

In this chapter, I compare two potential routes toward urban sustainability, which employ wildly different approaches, assessing the barriers in each context. Cuba and the United States have different goals and policies related to sustainable development and take very different actions. The effort toward sustainability in Cuba exemplifies a top-down regulatory approach that, rather than *mandating* urban agriculture efforts, includes incentives for individuals to develop their own programs. Sustainable development in the Cuban context is approached through an emphasis on meeting material human needs. While it is state initiated, the creativity and investment in these projects come from local residents. Sustainable development in the United States context takes form through partnerships between government and business that possess an economistic worldview, one that deemphasizes the role of the state and celebrates the market's invisible hand. The case I explore in the United States exemplifies a grassroots, bottom-up approach toward sustainability, where many of the goals run counter to entrenched legal institutions, social values, and economic regimes. They often find themselves in opposition to institutionalized consumerism, liberal individualism, market-strategies, and town and country dichotomies. In both cases, they are engaged in a civil society, trying to accomplish their goals within structural and cultural barriers.

One of the requisite aspects of sustainable development that has emerged from the literature is democratic participation, which I review in depth in chapter one. All large-

scale indices that rank democratic governance maintain that the United States is democratic on all counts. These same indices rank Cuba as non-democratic by most measures. However, my cases tell a different and more complicated story about democratic participation, suggesting that these widely accepted indicators are problematic. In fact, while the United States ranks very highly in human development, personal freedoms, economic development, and democratic governance, it has extreme income/wealth inequalities and mixed results on environmental issues. Cuba has reached a high level of human development.[1] In contrast to the United States, Cuba ranks low on most of these indices but excels at environmental sustainability and ranks highly overall and higher than the United States in happiness, as measured by the Happy Planet Index (HPI).[2]

Despite gestures like signing the Rio Declaration, the creation of the President's Council on Sustainable Development during the Clinton administration, and the subsequent creation of the Council for Sustainable Development, the United States is still the second highest carbon emitter in the world and is the fifth largest per capita consumer of natural resources. In the United States, unlike Cuba, corporations wield considerable influence over government and media, which complicates democratic processes. This

[1] Human Development Index (HDI) is a composite measure of three dimensions of human development: health, education, and income (UNDP 2013). In 2011-2012, the United States ranks 3rd, and has a very high human development. However, when adjusted for inequality in all measures, the United States ranks 16th! Cuba ranks 59th and has a high human development (UNDP 2013).

[2] Costa Rica is ranked number one and is the happiest nation, while Cuba ranks 12th, and the United States ranks 105th out of 151 nations. HPI measures life expectancy, subjective well-being, and ecological footprint to measure "happy life-years" relative to national environmental impacts.

influence is evident in cases like Monsanto's popular herbicide Roundup, which regulators have known causes birth defects since 1980. Government responses have been insufficient despite substantial research and considerable grassroots mobilization (Graves 2011). Such trends suggest that these indices obscure the reality, at least in the United States.

Structurally, the United States operates under a neoliberal paradigm, which ostensibly dictates small government and unfettered markets. This paradigm relies heavily on the rhetoric of liberal individualism, which expresses liberty as the ability to own private property, exercise entrepreneurship, and be freed from government interference and tyranny. In contrast, while Cuba is beginning to move toward market liberalization, the Special Period produced a unique set of circumstances that allows us to consider what can happen when a nation is unencumbered by capitalism and the global marketplace. Researchers argue that historically, Cuban communism was based in patriotic unity and communitarian ideologies (see chapter four) (Shayne 2004; Stricker 2007) that dictated the prioritization of human needs over individual gain (Koont 2011). These differences in culture and government and economic structures can in part explain how Cuban society had the political opportunity to be, even if only temporarily, "sustainable,"[3] and the United States did not.

United States Context

In the United States, environmental legislation is generally lacking and at times actively hostile toward strong sustainability environmental efforts. The United States'

[3] Cuba had both high human development and was only using their fair share of global resources in 2005-2006 (WWF 2006).

refusal to ratify the Kyoto Protocol—"an international agreement linked to the United Nations Framework Convention on Climate Change, which commits its Parties by setting internationally binding emission reduction targets"—is indicative of such hostility toward environmental reform (UN 2013). The reasons the United States government put forth for refusing include the fact that developing nations weren't asked to reduce emissions, and the United States feared that placing regulatory strain on industry would hurt the economy. In fact, United States Congress went so far as to prohibit the use of federal funds for programs that attempted to meet Kyoto Protocol targets (Zahran et al. 2008). Congress's refusal to support such programs limits state or city initiatives. While different municipalities or regions may choose to incorporate different policies toward sustainable development, at times institutionalized national policies, like the one described above, or lack thereof impede these activities through bureaucracy, economic activity, and laws that effectively minimize cities' abilities to make basic changes.

As an example, attempts at climate change mitigation are thwarted in many cities because there is no central authority in the United States sanctioning non-participating metropolitan statistical areas (MSAs) for a voluntary policy effort toward CO_2 reduction. Indeed, some regions or metropolitan areas stand to benefit from climate change as some United States businesses can earn a profit from the negative effects of climate change, such as by rebuilding cities demolished by natural disasters (Zahran et al. 2008).[4] In

[4] "Reduction of local emissions will not fully protect a locality from the transboundary effects of global climate change; the costs of climate change mitigation are significantly higher than the expected benefits when participation in the CCP campaign is voluntary and commitment levels are low; the collective benefits of climate protection are nonexcludable and nonrival; and no federate mandate or significant assistance for the implementation of climate change protection programs exists. In fact, the United States

addition, the business community has made extraordinary efforts to suppress information on climate change and advance climate denial (Shwom, Dietz, and Dan 2008; Dunlap and McCright 2011; Dunlap and Jacques 2013).

Indeed, United States Republican politicians have worked in tandem with certain corporations and conservative think tanks to stymie regulation on climate change since the early 1990s (McCright and Dunlap 2011). Fossil fuels have powered American industry. The unintended consequences of burning these fuels are greenhouse gas emissions, which are among the factors that contribute to climate change (Dunlap and McCright 2011). While 97 percent of scientific research exposes that the causes of climate change are anthropogenic (Anderegg, Prall, Harold, and Schneider 2010), public opinion on climate change persists in skepticism. Fossil fuel corporations and conservative think tanks have launched a massive climate change denial campaign to propel skepticism and undermine government climate regulation (Dunlap and McCright 2011). Of all books published on climate change skepticism, 90 percent of them are not peer-reviewed, and 92 percent of them are linked to conservative think tanks (Anderegg, Prall, Harold, and Schneider 2010; Dunlap and Jacques 2013). United States media is more likely to characterize the causes of climate change as uncertain, and United States citizens tend to be less educated about climate change than people in Europe (McCright and Dunlap 2011). The ranks of the climate denier coalition are a veritable force to be reckoned with. Accordingly, the task for activists and concerned citizens who desire change is considerable.

Congress prohibits use of federal monies for programs defined as implementing the Kyoto Protocol before ratification (Betsill 2000)" (as cited in Zahran et al. 2008, 448).

Democracy and Civil Society

The United States fares well according to Western standards of democracy, indices generally created in the United States or the U.K. The Democracy Index 2012 report (the Economist and Intelligence Unit 2012) considers the United States a "full democracy," although is ranks below 20 countries in democracy indicators. In the Press Freedom Index (2013), the United States ranks 32nd out of 179 nations, where a ranking of one is the freest. According to the Freedom House 2013 report, the United States is deemed a "free" nation, while other nations rank "partly free" or "not free," in political rights (electoral process, political pluralism and participation, functioning of government) and civil liberties (freedom of expression and belief, associational and organizational rights, rule of law, personal autonomy and individual rights). On the Economic Freedom Index (2013), the United States is considered "mostly free." According to this index, United States government spending is too high, as are individual and corporate taxes. In Worldwide Governance Indicators (World Bank 2012), the United States does well by world standards in indicators like controlling corruption, government effectiveness, regulatory quality, rule of law, and voice and accountability.

While the United States ranks well in democracy and freedom, some argue that a ruling class serves as gatekeepers and stifles these liberties from the majority of the population. The ruling class consists of growth coalitions and corporate elites who actually control United States government and primarily rule with the money and power that status affords. Corporate elites enter the so-called "revolving door," moving from high-level corporate positions, to high-level government positions, and back again (Domhoff 2006). Specifically, " most top appointees in both the Democratic and

Republican administrations are corporate executives and corporate lawyers," and those who sit on two or more boards of directors of major corporations are four times more likely to serve in federal government than executives from small companies (Domhoff 2006, 165). Corporate influence in government is further enabled under the auspices of campaign finance reforms through policies and court decisions like the McCain-Feingold Act and the Supreme Court's decision in *Citizens United* (Bai 2012). These reforms set the stage for corporations to funnel exorbitant amounts of money into electoral politics by creating a permissive legal framework. Corporations also establish agendas through the Business Roundtable, contribute money to politicians through political actions committees (PACs), deter free speech through strategic lawsuits against public participation (SLAPP), create public relations firms and research think tanks to sway public opinion, and control all major media outlets, allowing them to push their pro-corporate agendas (Herman and Chomsky 2002; McChesney and Nichols 2002; Nader 2002; Nace 2003; Wolin 2008; Open Secrets 2013).

Examples of how these corporate legal strategies have a chilling effect on free speech abound. In 1996, for example, the Cactus Cattle Company brought a lawsuit against Oprah Winfrey and a guest on her show, Howard Lyman, for discussing the potential dangers of having bits of dead livestock in cattle feed. The company filed this suit despite the fact that neither Winfrey nor her guest mentioned Cactus Cattle. Winfrey won the battle at a major expense to her time and money. Between the mid-1970s to mid-1990s, thousands of similar SLAPP lawsuits were filed. While the targets of these lawsuits rarely lost in court, the legal battles were costly and time consuming. As a

result, corporations succeeded in discouraging many others from speaking out (Nace 2003).

The influence of business interests operates on multiple levels of governance, including the state and city levels. I briefly discuss the growth machine thesis, developed by Molotch (1976), in chapters one and three. This thesis reveals how municipal politics in North America are dominated by a coalition of land-based elites who seek to expand the local economy and accumulate wealth (Jonas and Wilson 1999). These coalitions consist of developers, realtors, and bankers, whose interests are to promote growth, and they often dominate even the greenest cities in the United States. To the growth coalition, each parcel of urban land is valuable in so far as it has either exchange value, or that it can be developed for profit generation (Jonas and Wilson 1999). They invest their time and money in politics to ensure that policy and legislation facilitate their agenda. As local community members, residents of the city may look at urban land differently, thinking more in terms of the use-value of each parcel of land. Specifically, they may prefer green space where they can walk, sit, and enjoy a nice breeze beneath a tree. Growth projects can change local communities by developing green space or uprooting whole neighborhoods. Understandably, residents of these communities are often resistant to such change. To deal with potential resistance, these savvy business elites also invest in media and professional sports franchises to create community cohesion with the citizenry and favorably sway public opinion around growth projects (Molotch and Logan 1987).

Despite attempts by elites to control the public opinion, conflict does arise between urban residents and growth coalitions. In the case of Austin, TX, citizens have had a long history of struggle with the pro-growth city council. In the early 1990s,

citizens voted two-to-one to protect the local Barton Springs watershed from development. Subsequently, the development community managed to install allies into city council, who ultimately revised a hard won water-quality ordinance that significantly reduced the restrictions that citizens had fought for and demanded. Austin activists and citizens have been frustrated with a city council that has made backroom deals with developers, is not accountable to them, and has no financial support to implement the environmental protections they vote on. In addition to this, government organizations actively violate environmental protections that citizens vote for repeatedly and overwhelmingly. Particularly, the Texas Transportation Commission used Austin's tax revenues to build roads in sensitive areas around the Edwards Aquifer recharge zone—areas that citizens voted to protect on multiple occasions (Moore 2007).

While growth coalitions are part of a similar ownership class, corporations are different in that they may not own the land, but they employ the wage labor for commodity production. However, corporations and growth coalitions have similar interests in that they thrive on economic growth and profits. Growth coalitions in each city or region compete with growth coalitions elsewhere to bring in and retain corporate business and industry. For competitive advantage, cities may have anti-union policies, lax environmental regulations, or low business taxes to attract corporations. Though, at times their interests are in conflict, growth coalitions work in tandem with corporations to maintain a friendly urban business environment (Domhoff 2006).

Two processes in the 1970s and 80s further entrenched growth coalition politics. These included the mobilization of corporate leadership in the 1970s and the shift toward neoliberalism, economic policies based on the belief that the unregulated and unfettered

market will bring about the greatest societal good and should govern all aspects of social life, in the 1980s (McChesney 2004). In 1972, Frederick Borch of General Electric and John Harper of Alcoa spearheaded the creation of the Business Roundtable, an organization where the CEOs from the top 200 corporations negotiate and strategize a political agenda and pool resources. A number of other institutions were created around this time to assist the corporate agenda, like foundations, think tanks, publications, lobbyists, and public relations agencies (Nace 2003). State regulation in business increasingly underwent scrutiny in the 1980s, and neoliberal market idolatry prescribed minimizing the state, increasing protections on private property, privatizing social safety nets, deregulating markets, and reducing trade barriers (Nace 2003; McChesney 2004; Domhoff 2006; McMichael 2010). With looser restrictions on business and a more strategic and unified business community, even organized activist groups in the United States find mobilizing against business interests daunting. As an example, in 1990, 73 percent of Californians polled supported increasing a tax on alcohol consumption. In response to this, liquor industry leaders put together a negative advertising campaign, front groups, and counter initiatives to sway public opinion against the tax. They invested $18 million on ads while the citizens group only had $40,000 to invest. When it came time to vote, voters rejected the tax—a win for industry. Corporations that use these tactics are said to have a 90 percent success rate (Nace 2003).

Democracy in the United States is thus stifled by the ever-expanding power and influence of the corporate business elite. Their tactic is not necessarily to silence opposing viewpoints, although this does happen with SLAPPs. More so, their main tactic is to drown out opposition by monopolizing the discourse and dismissing competing

ideologies. One way they achieve this is by owning and managing all major media. Media are the sources of most information in the United States. According to democratic theory, democratic society should have an informed citizenry, and the media are largely responsible for informing the populace (Moyers 2005). McChesney (2004) argues that "media are at the center of struggles for power and control in any society, and they are arguably even more vital for players in democratic nations" (17). Journalists should act as "watchdog[s] of the powerful… ferret out truth from lies… and present a wide range of informed positions on key issues" (McChesney 2004, 57). However, after the 1996 Telecommunications Act and subsequent deregulation of ownership restrictions against media companies, a trend began toward concentrated media ownership in the hands of fewer corporate conglomerates. Corporations like CBS, Time Warner, Disney, Clear Channel, Comcast, News Corp., and Viacom now own the vast majority of print, online, TV, radio, and entertainment holdings (Free Press 2013). Researchers argue that as a direct result of the oligopolistic tendencies of media corporations, news sources decreasingly offer a diversity of perspectives reflective of the larger civil society (McChesney 2004; Copps 2005; Cyril 2005; Hart 2005; Moyers 2005). Moreover, corporate ownership of information serves to obfuscate or censor political issues to benefit corporate elites. As an example, corporate representatives appear on network news 35 times more frequently than labor representatives (Hart 2005). This is likely to have implications for public opinion.

Purveyors of neoliberalism use the rhetoric of small government to invoke entrenched American values, like freedom and liberty. However, this association with small government actually serves to obscure the reality of a large corporate welfare state

that facilitates corporate interests. Specifically, United States government policies like the ones discussed above, the Telecommunications Act, the McCain-Feingold Act, and the Supreme Court's decision in *Citizens United,* produce outcomes that directly benefit corporations often under the auspices of reform. These same processes inform initiatives toward sustainable development within the United States, even at local scales of government. The next section details how these processes play out with regards to smart growth.

Sustainable Development in the United States

In the context of the state deregulation of markets, it is unsurprising that cities in the United States are increasingly leaning toward "smart growth" as their primary method of sustainable development. As opposed to former state, top-down, command-and-control regulatory approaches to development indicative of the period between the 1930s and 1970s, smart growth is a market-based approach that emerged in the United States in the 1990s. Smart growth is usually achieved through a public and private partnership, whereby city planning departments work with businesses to rebuild communities that suffered from disinvestment. Proponents of smart growth specifically seek to "reconcile the demands of regional development, namely community integrity, economic development, and environmental protection" (Krueger and Gibbs 2008, 1265), through "regulatory reforms that enable the market to promote these concerns" (Krueger and Gibbs 2008, 1266). American cities and regions use a system of incentives and disincentives for businesses to implement smart growth developments. Awareness and implementation of smart growth strategies have grown since the 1990s and these

strategies have made their way to the UK and elsewhere around the globe. The ten principles developed by the Smart Growth Network are as follows:

> 1. Mix land uses; 2. Take advantage of compact building design; 3. Create a range of housing opportunities and choices; 4. Create walkable neighborhoods; 5. Foster distinctive, attractive communities with a strong sense of place; 6. Preserve open space, farmland, natural beauty, and critical environmental areas; 7. Strengthen and direct development towards existing communities; 8. Provide a variety of transportation choices; 9. Make development decisions predictable, fair, and cost effective; 10. Encourage community and stakeholder collaboration in development decisions (EPA 2012).

These principles sound great in theory. However, case studies of Harlem in New York, the Alberta neighborhood in Portland, OR, and eastside Vancouver B.C. in Canada highlight the internal contradictions and problems associated with smart growth models. Specifically, smart growth in these cases is responsible for gentrification and displacement of poor communities of color (Quastel 2009; Sullivan and Shaw 2011; Checker 2011). Urban planners employ environmental sustainability rhetoric in each case to promote revitalization projects in these neighborhoods that include creating more green space and promoting dense mixed-use residential and commercial space. Developers, seeing the instrumental aspects of green space, have in some cases recast parks and urban gardens as consumer goods. They may create an urban garden space as a placeholder for future developments, to increase property value of adjacent lots, and to keep local homeless populations out of vacant lots (Quastel 2009). Onni corporate group, a private real estate developer in Canada, created an urban garden in an affluent neighborhood where they also erected a billboard to advertise new high-end condominiums they planned to build in the poorest neighborhood in Vancouver (Quastel 2009). This garden served multiple functions for the corporation, including self-

promotion, swaying public opinion favorably, and saving the space for future development.

While proponents of smart growth purport to consider community feedback, planning sessions with community members and actual outcomes tell a different story. Harlem residents attending city planning sessions argued that they have asked the city to improve their local parks for a long time, but planners chose not to respond until developers built more expensive condos in the neighborhood. Long-term Harlem residents expressed skepticism and frustration with city planners. They questioned the authenticity of the sustainability rhetoric coming from planners and developers who have historically disregarded residents' concerns. Investments in parks and community restoration didn't seem to become a priority until more affluent residents moved in and could afford to consume at the new shops. In this instance, green space became valuable insofar as it could raise the exchange value of nearby lots. As a result of many unwelcome changes to the community, between 2006 and 2007, Harlem apartment costs increased by 93 percent (Checker 2011).

Critics of smart growth demonstrate that this pattern of gentrification is being replicated in many places where these projects are developed. They point to its neoliberal underpinnings, which are more concerned with profit generation, free markets, and small government than sustainability or equity (Krueger and Gibbs 2008; Quastel 2009; Zukin 2010; Checker 2011). While in theory, making more compact cities can curtail pollution, "light green" projects aimed at pushing consumerism, opening more cafes, boutiques, and restaurants, miss the mark rather than actually advancing environmental restoration or ensuring equitable distribution of communal goods and

services. Krueger and Gibbs (2008) argue that while these projects may provide "an alternative for the consumption of open space... [they do] not address the larger issue of consumption itself" (1272).

Many argue that the United States is dominated by consumer ideologies that compel citizens to purchase more than they need or want (Schor 1998; Graaf, Wann, and Naylor 2001; Dawson 2003; Stricker 2007). Consumerism is "materialism beyond the needs of survival and self-actualization" (Stricker 2007, 10). Corporations' primary goals are to increase profit margins, and in the United States, big businesses spend over a trillion dollars a year on marketing to push consumer products. Corporations work in tandem with international development agencies, like the World Bank, to export this lifestyle to developing nations around the globe through neoliberal globalization and development projects (Dawson 2003). United States citizens rank fifth among the largest per capita consumers in the world (WWF 2012), and any national policy toward sustainable development in the United States needs to mandate a curtailment of both production and consumption patterns (Gould, Pellow, and Schnaiberg 2008). However, such a mandate would need to come from a decreasingly affective government and would be bad for and increasingly powerful business community.

Cuba Context

Cuba serves as a real-world alternative to the neoliberal paradigm. After the Special Period, global markets restrained Cuba considerably less than most nations. This case exemplifies what relocalization of food production supplemented by global trade would look like if we moved further from consumerism and closer to need-based

consumption. While the Cuba case is not perfect, it illustrates the complexity of moving toward a more sustainable and self-sufficient system. While it illustrates that getting away from neoliberal capitalism may be necessary, it is insufficient in meeting all aspects of sustainability. Specifically, within Cuba there are structural and cultural limitations to strong sustainability that I outline below.

Democracy and Civil Society

The extent to which there is democracy in Cuba is complicated. By Western accounts, Cuba is a non-democratic nation led by an authoritarian dictator under a communist regime. The 2013 Freedom House report, based in the United States, deemed Cuba "not free" in political rights or civil liberties. Cuba is considered an authoritarian regime in the 2012 Democracy Index, a U.K. based index, and scores poorly on all indicators, like electoral process and pluralism, functioning government, political participation, political culture, and civil liberties. Cuba ranks poorly for press freedoms, at 171st out of 179 countries, particularly for arresting and detaining dissenters (Reporters Without Borders 2013). On the Economic Freedom Index (2013), Cuba ranks as "repressed"[5] on indicators like rule of law, regulatory efficiency, limited government, and open markets. Finally, according to the World Bank Worldwide Governance Indicators in 2012, Cuba scored poorly on government effectiveness, political stability and absence of violence, regulatory quality, rule of law, and voice and accountability. The Cuban government does restrict media, the Internet, and access to certain kinds of information and also goes through phases of cracking down on oppositional organizations (Luciak

[5] Rule of law includes property rights and freedom from corruption; regulatory efficiency includes business, labor, and monetary freedom; limited government includes government spending and fiscal freedom; and open markets include trade, investment, and financial freedom (Economic Freedom Index 2013).

2007). Yet, 90 percent of Cubans overwhelmingly believe that their political system is more democratic than other nations, even if not by Western standards (Luciak 2007).

The Cuban government has established access to the resources necessary for an informed and active civil society. Rather than focusing on electoral politics, which I discuss above as easily manipulated by elites, Cuba engages in substantive democracy by giving citizens more even access to social, cultural, and physical resources (Luciak 2007). Education in Cuba is free to everyone at all levels, including higher education (Koont 2011). Cuba ensures people's basic needs are met with the food rationing system and free access to quality healthcare. Cubans are able to enjoy cultural events like ballets and plays for free or an affordable price. Cubans are able to directly participate in local levels of governance by nominating neighbors and directly voting for candidates. Cubans also point out that in the United States, democracy is often stifled for those who are poor and own no property. In Cuba, their access to government positions is less limited by their ability to finance a campaign. Perhaps as a result of United States led opposition movements, or at least they provide a convenient excuse, the Cuban government more directly silences those who organize against the Communist Party (Luciak 2007).

Top-Down Approach

Cuba's sustainable agriculture initiatives largely came from a minority scientific and technocratic community. While they sought to incorporate insights from peasant farmers, many of their technologies evolved from a larger global agro-ecology movement. Prior to the Special Period, scientists developing organic technologies found it challenging to integrate them on a large-scale throughout Cuban agriculture. Farmers and most scientists were proponents of conventional, petroleum intensive farming

methods (Stricker 2007; Koont 2011). However, as discussed in chapter four, after the collapse of the Soviet Union, Cuba's primary source of petroleum, imports of agricultural inputs dramatically declined. This forced Cubans to make revolutionary changes to their agricultural production system. While many scientists and farmers thought the shift to organic production would be temporary, until Cubans regained access to petrochemical inputs, agro-ecology scientists remained hopeful that time would show farmers and scientists that organic technologies would be more fruitful and sustainable methods of farming (Stricker 2007; Koont 2011).

Through a process of "centralized decentralization" (Koont 2011, 53), the Cuban government sought to make organic farming methods accessible to the population at large, somewhat democratizing organic food production. They did this by breaking up large state farms into smaller cooperative farmer owned units and subsidizing urban land for resident farming. They also created government organizations (like the Ministry of Agriculture and the National Group for Urban Agriculture) to offer technical help, facilitate farmers' networks, link farmers with research, education, and service centers. The Cuban government developed NGOs, like the Association of Agricultural and Forestry Technicians and *tiendas consultados agropecuarios* (agricultural consultation stores) (Stricker 2007, 42), staffed with agronomists dedicated to dispensing free advice to local citizens engaged in backyard farming (Stricker 2007; Koont 2011). The Cuban government created incentive programs, allowing farm workers to take home profits they earned from selling their produce. They also expanded agronomy education at the university level (Koont 2011), and created educational campaigns targeting youth to generate favorable opinions of farm labor (Stricker 2007)

The reasons why the Cuban government made these changes may have been borne out of necessity, and certainly these programs began as top-down and technocratic. However, citizen participation and management was crucial to growing and maintaining the projects that began to flourish. Moore (2007) argues that for sustainability projects to be successful in the long run, experts must "depend on citizens to define them" and "rational deliberation among citizens" is necessary to create and sustain such projects (228).

Necessitating Sustainable Development in Cuba

After the 1959 revolution, Fidel Castro nationalized production and expelled United States businesses from the island nation. Unencumbered by United States style corporate influence, the Cuban government developed state-run industries. While many industries made products for export and trade, mostly sugar, the primary focus of trade was geared toward meeting Cubans' needs rather than fattening their bottom line. As previously discussed in chapter four, most trade occurred between Cuba and the Soviet Union, and when the Soviet Union collapsed, Cuba was largely unhinged from a larger global economy. To make matters worse, United States imposed trade restrictions not only prevent trade between Cuba and the United States, but inhibit the docking of cargo ships from other nations as well. If a ship docks at a Cuban port, then it cannot travel to the United States for another six months. This is an effective deterrent for many countries, as the United States has a much larger and wealthier consumer market. In contradistinction to the situation in the United States, Cuba faces perpetual resource scarcity, not only from limited national natural stores, but also as a result of the United States blockade that restricts Cuba's access to trade in the global market. They lack the

resources necessary to create a consumer society. Indeed, they often lack the resources to maintain basic necessities. While Cuba has found other trading partners, in particular obtaining petroleum from Venezuela and machinery from China, the United States embargo is said to have resulted in a huge financial loss for the Cuban economy, between 1989-1993 Cuba saw about a 35-50 percent decline in GDP (Koont 2011). Whether as a result of need or not, Cuba would not have been able to make these changes if it were beholden to a neoliberal global market.

Side-by-Side Comparison

Comparing the city in the Pacific Northwest United States, hereinafter referred to as the United States case, and the situation in Cuba illuminates how different levels of governance, economics, and culture affect attempts at strong sustainability. In this section, I discuss the historically pertinent conditions of urban agriculture, specifically disinvestment and devaluing property in the urban landscape.[6] I also outline the similarities and differences in my cases.

In my cases, economic prosperity, active global trade networks, and a consumer population with money to spend seem to limit the emergence of urban farming. However, urban agriculture seems to arise in prominence when there is a threat to food or national security, like the victory gardens during World War I and World War II. Cuba did not engage in large-scale urban agriculture until after the Special Period, a time of economic uncertainty. In the United States, private urban plots are available for some people in

[6] Detroit, MI is an example of how industrial disinvestment in an entire city turned it into an urban garden hub. A developer actually bought acres of land in the city because it was so cheap to turn it into a for-profit urban farm project.

some cities, but they seem to gain popularity during economic downturn, as in the example I give below.

In the United States case, this particular city officially supports sustainable food production, relocalization, and climate change.[7] This city was one of 200 United States cities in 2006 to become a member of the International Council for Local Environmental Initiatives, or ICLEI,[8] that supports local governments efforts to curb climate change (ICLEI 2013). In 2005, residents of this city emitted 8.6 metric tonnes per capita of greenhouse gases, which is half the state average and two-fifths the national average (2007). Cuba, in comparison emits 3.4 tonnes of CO_2 per capita, (information about other greenhouse gases is not available) (World Bank 2010). However, the United States city's economic growth priorities are clear even in the naming of their sustainability programs and initiatives.

Specifically, the mayor of this city created a Sustainable Business Initiative around 2005. As part of this initiative, the city formed a Sustainability Board that conducted a local food analysis and plan. From this board, they created an official job entitled the Compost and Urban Agriculture Coordinator. I met with the coordinator, who also serves in the city planning office in different capacities. He disclosed that he conducted research on urban agriculture in the city and decided that his position as Urban

[7] I interviewed a city planner, the Urban Agriculture Coordinator, and analyzed official city planning documents.

[8] "ICLEI is the world's leading association of cities and local governments dedicated to sustainable development. We are a powerful movement of 12 mega-cities, 100 super-cities and urban regions, 450 large cities as well as 450 medium-sized cities and towns in 86 countries. We promote local action for global sustainability and supports cities to become sustainable, resilient, resource-efficient, biodiverse, low-carbon; to build a smart infrastructure; and to develop an inclusive, green urban economy with the ultimate aim to achieve healthy and happy communities" (ICLEI 2013)

Agriculture Coordinator was unnecessary for several reasons. First, through his research, he determined that there wasn't the community need nor political will to institutionalize any form of urban agriculture. He said that people are able to purchase enough of their food from grocery stores or farmers markets. Zoning laws prohibit the sale of urban produced foods because commercial agricultural production is relegated to the perimeter of the urban boundary. Thus, urban agriculture is not profitable in the city and only has use value for the community members engaged in gardening. This is an example of an institutionalized town and country dichotomy. Moreover, he argues that agriculture is unnecessary in the city because, ideally, state legislation does not permit city growth to encroach on agricultural space outside of the city boundary. Zoning laws within city boundaries prioritize commercial development and business interests, emphasizing the exchange value of the land.

As examples of the rising prominence of urban agriculture during economic downturn and the competition between exchange and use value, the city loaned a local urban lot to the community for a garden project during the 2008 recession. However, the city wouldn't allow community members to plant fruit trees because, they warned, as soon as a developer wanted to purchase the land, the city planned to sell it. The coordinators of the garden project obtained funds through donations and grants and worked well beyond their paid hours to upkeep the garden. They donated tons of produce to local social service organizations and created an innovative community volunteer and educational exchange program with at-risk populations on-site. Over the course of a few years, the community became attached to the garden. However, when a bank decided to buy the land, the city sold it despite community resistance and mobilization. As the city

planner explained to me, "people got all sentimental" about the space even though they knew the site was only on loan.

However, he said that the city did decide to look into increasing the amount of local foods people consume by a few percentage points. This city planner informed me that less than five percent of food consumed in the city is locally produced. Urban agriculture in Havana, Cuba, by contrast, accounts for an estimated 60-90 percent of all the produce consumed by local residents. In the United States case, planners acknowledge the benefits of local food production and consumption but point the barriers of realizing these goals, including food processing, storage, distribution capacity, zoning, and regulation. Because this specific city does not have large enough food processing or food storage facilities to house the quantities of food produced in the area, these activities are accomplished through a division of labor with other counties or states. Another important barrier that exists to localizing food production and consumption in the United States case is the world market. A certain food item may sell for a much higher price when distributed to nations across the globe than when sold for local consumption. The city planner explained to me that the means by which the city planned on localizing food production was through a public-private partnership, whereby businesses and the city worked together toward creating the necessary infrastructure. Once the infrastructure is established, they plan to "allow the market to take over."

This is the municipal context in which the ecovillage is embedded. As mentioned in chapter three, ecovillagers have had many disputes with urban planners over zoning and code violations. However, most of the time ecovillagers and city planners find ways to work out their differences. One of the ecovillage property owners divulges:

> This town is progressive and the building department helps as much as they can. They are sympathetic old hippies within the system. Bureaucratic laws are slow to change and hinder the progress of the community. Most bureaucrats turn a blind eye to illegal activities. They don't want to make more work for themselves. The only time the ecovillage would get busted is if neighbors report us or if you do something brazen. Be sure you get along with your neighbors if you want to do something illegal.

In order for the ecovillagers to accomplish some of their goals, they must do things illegally at times.

Conversely, at the urban farm in Havana, the government supports the efforts of farmers, and regularly sends scientists from the Research Institute for Plant Health to investigate the progress of organic pest controls and to offer advice and resources. While ecovillagers struggle with the city over the legality of their sustainable innovations, farmers at the urban farm in Havana receive support and guidance.

Other constraining features in the United States case for ecovillagers include outside jobs and pay, distance to work and city infrastructure, and land rent, briefly discussed in chapter three. The property owners must pay a mortgage to occupy the parcels of land that the ecovillage sits on. Ecovillagers must work in the city to make enough money to pay rent and supplement their urban farming. Most ecovillagers I interviewed were able to work in occupations that fit their goals. However, at times, ecovillagers must work in jobs that run counter to their goals as environmental stewards, as in the case of Angel. She worked for a corporation assembling signs for major grocery stores, which she expressed with some reticence. In addition, the city infrastructure encourages driving more than other carbon-neutral forms of transportation. Thus, even though ecovillagers actively speak out against car use, more than half of them use cars regularly for work and otherwise.

In contrast, Cuban farmers have usufruct rights to land where they grow their own food for self-provisioning, to sell to neighbors and the government, and to gain a profit. Interviewees at the Cuban farm often expressed satisfaction with the amount of money that they earned at the farm. Specifically, six of the thirteen women I interviewed explained to me that they appreciate the pay at the farm. Telma confided that there are many aspects of working at the farm that she enjoys. She added, "in addition, it's well paid, well paid, and well paid." Further, seven of the women I spoke with pointed out that they appreciate that the farm is so close to their homes; they can easily walk or bus to work.

In the Cuba case, women made up a minority of urban agriculture workers, which stands in contrast to urban agriculture work worldwide. Some differences from the Cuba case and elsewhere are that urban farmers in Cuba are paid, while women urban farmers in other countries often engage in subsistence food production that is unremunerated and invisible in national accounts. The United States seems to follow a similar pattern as the one established internationally in that this type of production is more often engaged in by women, who are not getting paid. Indeed, United States women makeup the majority of grassroots environmental activists (Bell and Braun 2010; National Women in Agriculture Association 2013), and the residents of the ecovillage do not deviate from these general patterns, as 15 of my 27 interviewees identified as female.[9] However, Cuban government programs likely perpetuate the invisibility and low priority of Cuban women working in urban agriculture, as Premat (2005) exposes that women do engage in small-scale provisioning.

[9] This is reflective of the gender distribution of the ecovillage as a whole.

Ecovillagers and Cuban urban farmers share some practices in common, even if they do these things out of different circumstances and needs. Both sites reuse urban waste for their own do-it-yourself projects. In the ecovillage, villagers reuse city waste, like wood, metal scraps, and cardboard to make icosahedral huts, repair broken items, and to make eco-tools, like solar fruit dryers. At the farm in Cuba, farmers gather empty glass bottles from the surrounding neighborhood to clean and fill with garlic paste. They sell this paste at the street vending location in front of the farm. In the farm's repair shop, the mechanics utilize scraps from broken machinery to fix machines still in use.

Some constraints that Cubans face at the farm involve a lack of resources, perhaps indicative of Cuba's larger economic problems associated with attaining material resources. Eight of the women I interviewed at the Cuban farm expressed frustration with the lack of materials they needed for their jobs. Women in the offices complained there were not enough computers, ergonomic chairs and desks, or space for everyone to work comfortably. The scientist and doctor, Marisol, said that she lacked many materials to observe the insects that she studied for pest control. As an example of this, I observed Marisol cutting up unused condoms for use as rubber bands to hold cloth in place over the openings of glass jars where she kept her bugs. Indeed, the farm president's daughter explained that there were limited resources on the farm, and that this is exacerbated by government bureaucracy. She says,

> Despite the fact that we have money and want to buy for example an ice machine for the sugarcane juice, we are not the ones who get to decide to purchase the machine. We have to get government authorization to buy the machine, and they decide if we need it or not. And many times when they finally give a positive answer, Yes, we can buy it, they have taken so long in bureaucratic paperwork and permission, that when we go to the place where they sell it, they ran out, there are none.

In terms of restitution, both sites integrate some form of "rational agriculture." At the ecovillage, villagers use a technique called perma-culture (which I discuss in detail in chapter three), while Cuban farmers at the site I visited in Havana utilize agro-ecology technologies. However, I did meet urban farmers in other parts of Havana that did integrate perma-culture practices in their parcels. Both styles of farming seek to exploit ecological synergism, reintegrate organic waste, and employ biological pest controls. In addition, both sites engage some form of consensus-based democratic decision-making, where the associated producers worked together to reach common goals.

While on the whole, the state-initiated urban farming program transformed Cuban cities, grassroots back-to-the-land movements in the United States have failed at making large-scale structural change. The ecovillagers are able to engage in the lifestyle practices on their private property, but as soon as their activities bother neighbors, the city can cite ecovillagers for violating codes and zoning laws. As much as these ecovillagers attempt to make structural change by writing op-eds in the local paper, negotiating zoning changes with local city officials, and even appearing on national TV, these attempts are thwarted. City officials dismiss them by saying "just don't get caught," and the television show portrayed them in an unflattering light. While in Cuba, urban agriculture is accessible to most urban residents, these projects in the United States are usually engaged in by fringe groups like elites who have the luxury of time and money, and who can participate in a lifestyle movement, like the ecovillage. Poor immigrants may also engage in subsistence food production but may face more institutional barriers. For example, as I briefly discuss in chapters one and three, Latino farmers created a 14-acre urban farm in south central LA that was in operation for more

than a decade, and through a dubious legal battle, they lost their project to a developer. The United States case illustrates some of the challenges to sustainable food production that are absent in Cuba.

The United States is one of the main nations driving the neocolonial corporatization of global food production (Shiva 1991). Cuba has managed to achieve the seemingly impossible, as a poor nation confronting the neocolonial project (which I discussed in more detail in chapter four). Cuba has had a unique ability to resist it, which is (at least partially) rooted in the success of their urban farming program.

Conclusion

Governmental, political, and cultural factors contribute to the success or hindrance of urban sustainability projects. While Western democracy indicators position Cuba as "undemocratic" and "unfree," the Cuban government ensures its population substantive democracy, by way of meeting humans. Cubans have free access to higher education, food rations, and healthcare that can facilitate more lively civic engagement. However, the government does go through phases of shutting down oppositional discourses. Despite this censorship, farmer's democratic participation is essential for the urban agriculture project. In a process of centralized-decentralization (Koont 2011), the government subsidizes and supports urban agriculture with their limited resources. Individual farmers are given rights to land and decision-making over their farms if they can produce and provide for the community. Farmers are connected to networks of other farmers where they discuss best practices given the soil and resources they have. In this

way, Cuban farmers are actively engaged in local democratic processes, even if only through the farm.

Conversely, the United States ranks well in democracy indicators as a "free" and "democratic" nation. Research suggests that the reality of democracy in the United States is more complicated. The federal and local governments work in partnerships with businesses in such a way that they suppress community discourse, resistance, and mobilization. Corporations and growth coalitions do this by mostly controlling the media, and therefore the conversation over political issues, inserting CEOs into politics, and indirectly funding and supporting certain politicians. Sometimes corporations even overtly suppress dissenting voices by threatening the opposition with costly and time-consuming legal battles. As a result of these growth coalitions, the exchange value of urban land is elevated, and industry often gets priority over limited urban resources. This limits the successful implementation of urban farm projects.

Urban agriculture in both of my cases, in Cuba and the United States, seem to gain prominence during times of economic downturn, and/or when there is a threat to national food security. Victory gardens during wartime in the United States demonstrate this. However, Cuba maintained its urban agriculture program. Cuba's development of urban agriculture during and after the Special Period serves as a unique time to explore the living counterfactual of neoliberal global market networks. While in Cuba, the government employed urban agriculture as a market strategy to regenerate the economy, people in the United States case tend to engage in urban agriculture in opposition to market forces. In the United States case, urban farmers and residents' opposition to the

bank takeover of their borrowed urban land is both literally and figuratively illustrative of this dynamic.

For the political and economic reasons I outlined above, market-based food production and consumption in the United States city is generally institutionalized and limits local food production in several ways. Zoning laws prohibit the for-profit production of food in urban areas. In addition, land rights are difficult to obtain or maintain because of the cost of land rent. This favors a niche lifestyle movement among more elite urban food producers, as they have the luxury of money and time. Moreover, the planner explained that the city prefers to sell urban land to developers who will create jobs and who will bring investments into the community, as in the example of the urban farm and bank center above. The urban planner, in the United States case, argued that people have access to food and purchase it at grocery stores and local farmers' markets, thus supporting urban agriculture is unnecessary in this city. While not necessarily his intention, rationale like his favors for-profit, large-scale food production and consumerism because it relegates food production to the outskirts of the city. This physically separates most people from the food growing process because most people live and work in the city. Perhaps as a result of international market dynamics or local competition with large-scale food producers, local and organic food is generally expensive. Because of this, the urban planner's logic also positions local and organic food as niche markets for high-end consumers, rather than empowering individuals' everyday practices of subsistence food production. Further, it undermines local autonomy and self-sufficiency, which also favors large food retailers that stand to profit from consumers who are dependant on them for food. Individuals who grow their own food for

subsistence are standing in opposition to both city zoning logic and corporate food-retailers. Markets limit local food consumption in other ways as well. Food growers in the United States are compelled into selling in international markets because consumers across the globe may pay a higher premium for their goods.

In Cuba, the government institutionalized urban food production and incentivized farmers by giving farmers usufruct rights, giving them the resources to begin production, allowing them autonomy in decision-making, and aligning incomes with food production. Cuban farmers sell their produce to the local community, and whatever they receive in profits is theirs to keep. This stands in contrast to the would-be urban farmers in the United States case who either pay for a city plot, must grow food in their time away from paid labor, or earn a wage through unstable means, i.e. donations or grants, that doesn't cover the amount of time they actually spend farming. Finally, in the Cuba case, urban farming was an essential component of a nationwide food security plan. As a result of tightened United States trade restrictions and the Collapse of the Soviet Union, Cuba was all but blocked from international trade. They had to come up with a food strategy that would support their mostly urban population. Urban farming was the most efficient way to ensure access to the most people.

My two cases illustrate that capitalism may indeed be a structural limitation to urban sustainability, as suggested by metabolic rift theory, as are federal and municipal governments that institutionalize capitalist interests. However, the Cuba case illustrates that removing these structural conditions are necessary but insufficient at creating a holistic sustainability. The Cuban government did not transform their food production system until after the Special Period when they faced an economic crisis and were

essentially barred from international trade. The absence of capitalism did create the political and economic opportunity for the Cuban government to focus food production solely on meeting the immediate needs of their people, a condition that would be impossible in the United States. In the United States, government and business partnerships set the terms for urban development through institutionalizing zoning laws, limiting public discourse, and implement policies that generally favor industry. Through this process, industry generally gets priority over urban land. This is further supported because of institutionalized town and country divides, urban agriculture is not profitable as urban produce is illegal to sell. Additionally, farmers have a monetary incentive to sell their products on the international market where they can earn a higher premium for their goods.

CHAPTER VI

CONCLUSION

In this dissertation, I make an argument for strong sustainability by distinguishing it from weak sustainability. I critique the global neoliberal sustainable development project, a weak form of sustainability, using Marx's theory of metabolic rift. However, I find this theory lacking in its ability to engage forms of oppression outside of class, such as gender. Because of this, I employ theories on gender and environment and theories of environmental justice to explore systemic and cultural aspects of gender oppression, which inhibit strong sustainability. As alternatives to neoliberal sustainable development, I examine two cases working toward strong sustainability, an urban ecovillage in the United States, and an urban farm in Havana, Cuba. I assess the viability of these projects, their strengths and weaknesses, structural barriers, and applicability in different contexts toward a rigorous theory of strong sustainability.

In the second chapter, I outline my methods and cases. I conducted qualitative cross-national comparative research to critically assess two model cases approaching strong sustainability. I do this to address what is working well and what barriers they confront toward achieving their goals. I also look at the constraints they experience toward stronger sustainability both within their projects and in the larger political, economic, and cultural context. One case I assess is a grassroots environmental movement in the Pacific Northwest United States. It's an intentional community where some environmentalists, bohemians, and others live. The second case I examine is a

state-incentivized urban farm project in Havana, Cuba. Community members worked cooperatively to design and build this farm space with the support of the Cuban government. These cases allow me to consider the varied paths to strong sustainability.

I describe the outcomes of neoliberal sustainable development, a weak sustainability project, which prioritizes the economy over equity and the environment. The consequences of neoliberalism run counter to the goals of strong sustainability, a form of sustainable development that prioritizes environmental and social justice concerns. In chapter five, I demonstrate that Cuba has been able to create state-initiated programs toward strong sustainability in part because it is not constrained by the neoliberal paradigm, though not fully realized. However, other barriers in Cuba, such as state tourist programs geared toward economic growth that are environmentally destructive and cultural gender inequities that limit women's participation in democratic processes, constrain strong sustainability. By contrast, in the United States context, neoliberal goals are institutionalized in policies that incentivize business and industrial development in urban areas. This is exacerbated by government policies that permit corporate oligopolies, corporate financing of electoral politics, and corporate control over the media. These policies inhibit grassroots environmental movements, like ecovillages, whose goals run counter to consumerism and liberal individualism.

Research shows that in the 30 years since the international community mainstreamed sustainable development, global inequities have increased within and between nations, and ecological systems are in steady and rapid decline (WWF 2012; UN 2013). While wealth and profits are rising for a small sector of people (Milanovic 2005; Norton and Ariely 2011; UN 2013), globally, human society has been running on an

ecological deficit since the 1970s (WWF 2012). This has implications for intergenerational equity, or resource access for future generations. Sustainable development as a globalizing practice that drives urbanization is falling short on some important goals, particularly regarding equity and the environment.

I engage Marx's metabolic rift theory to expose the internal contradictions of capitalism that undermine the ostensive goals of sustainable development, conceived of through the neoliberal paradigm. Metabolic rift theory illustrates how the accumulation of wealth, the exploitation of people, and the destruction of the natural environment are inherent features of capitalism. In the third chapter, I adopt the concept of restitution, the mending of rifts, as an analytic tool that opens a window to the micro-level to evaluate attempts at strong sustainability. Specifically, at the ecovillage, I explore the concept of associated producers, a collective of people living together in a co-housing situation and working toward communal goals. Goals include maintaining and beautifying the village, perma-culture gardening, consensus-based democratic decision making, and living according to their visions of sustainability. I find that they experience constraints from the city they are embedded within. In particular zoning laws and codes restrict their activities like multiple occupancy housing and greywater recycling. Moreover, urban laws require land rent and a mortgage that obliges ecovillagers to engage in commercial activities for money outside of the village, even if the jobs are environmentally destructive. Urban infrastructure is even further restraining in that it often requires individuals to drive to work in cars rather than facilitating less fossil fuel dependant alternatives. While ecovillagers attempt to implement sustainable practices on-site and

engage the city at large to move toward more sustainable practices, they have been unable to make systemic change.

I find that metabolic rift theory lacks insight into systemic, interactive, and cultural forms of gender oppression. To contend with these theoretical gaps, I draw on insights from different academic traditions. I address other systems of oppression and cultural inequities by employing gender and environment and environmental justice theories in the fourth chapter. These theories direct attention to the fact that in Cuba, cultural prescriptions of gender, including gendered divisions of labor, are limiting to women who desire to participate in local democratic processes and work in urban agriculture. Women's culturally-relegated roles as the primary caregivers and domestic laborers restrict the time they are able to devote to democratic participation outside of the home. In addition, cultural ideals of women as weak and clean limit their work in urban agriculture and define clear divisions of labor.

I do not intend to either idealize Cuba or to criticize their attempts toward strong sustainability. Rather, my aim is to paint a complicated picture of a particular project in Cuba, considering its environmental and social implications in chapter four. The Cuban government has stifled dissenting voices within the country by controlling the media, imprisoning citizens who try to create alternative media, and disallowing organizing without prior government approval, thereby suppressing democratic processes (Shayne 2004; Reporters Without Borders 2012). Moreover, cultural prescriptions that relegate women to domestic roles limit women's ability to fully participate in democratic processes. These cultural and political dimensions of Cuban society curb their ability to attain strong sustainability. However, Cuba occupies a nearly unique global position,

since it is not as politically or economically constrained by hegemonic neoliberal policies as most other nations. This allows for an opportunity to see how a national move toward strong sustainability could take form.

In a valiant effort made by the government and people, Cuba was able to overcome an economic crisis, the Special Period initiated by the collapse of the Soviet Union, which could have devastated the island nation. Instead, the government harnessed the infrastructure of universities, organizational networks, vacant urban lots, and an educated populace to create an urban sustainability project geared toward meeting the needs of the people. Specifically, the Cuban government gave people usufruct rights to urban land if they could transform it into productive urban gardening and farming space and supply local schools, hospitals, and communities with food. Cubans, in this way, reintegrated town and country by utilizing urban land and waste for provisioning.

The case of Cuba is further compelling because, although it is a mostly urban nation bound by United States imposed trade restrictions, it chose a different path than other nations. Rather than giving into the hegemonic neoliberal project, which would have delivered much needed aid and currency, and imposing austerity on their people, the Cuban government chose to prioritize the needs of their people and natural environment. During the Special Period, Cuba was able to make do with primarily the amount of natural resources that the land area of the nation could provide. After the crisis, and despite being a predominantly urban nation, Cuba maintained a high level of human development while consuming only their global fair share of resources. As a result, Cuba is one of the few nations to ever rank as sustainable according the sustainability index (WWF 2006). Cuba serves as an example of how economic and political activities are

potentially better explanatory variables in environmental degradation than the percentage of the population that is urban. This flies in the face of those who would claim that cities are constrained by path dependence, inevitably reliant on the exploitation of people and the environment. Cuba demonstrates that urban human societies can potentially get off this path—that another way is possible.

From different layers of analysis, I extrapolate two key findings from my cases. First, the structure of society matters in determining the opportunities for sustainability projects to occur. As postulated by metabolic rift theory, my cases suggest that capitalism is a structural barrier to sustainability, but eliminating capitalism is an insufficient condition for nations attempting to attain equity or environmental protection. In the Cuba case, urban farming is able to happen because they do not have political and economic structure, e.g. capitalism, that prioritizes elite's accumulation and gain. Instead, their economy prioritizes the material needs of the population. However, the 1959 revolution and subsequent turn to communism did not automatically bring about environmental sustainability. Indeed, the Cuban government did not implement urban agriculture until after the Special Period when the Cuban people faced an economic crisis that brought on food scarcity. To promote food security and sovereignty, the Cuban government began a program that supports urban agriculture by giving people rights to the land, subsidizing land rent, and allowing them to take home the profits. Cubans have free access to advanced education and farm training, have farming support networks through government and nongovernment organizations, and receive free advice from agronomists and affordable inputs for agriculture from these organizations. Additionally, Cuban farmers actually earn a living growing and selling food to their neighbors.

The United States by contrast, limits ecovillages and urban farms at both national and local levels of government. As illustrated in chapter five, these barriers are created, supported, and perpetuated by growth coalitions, or public-private partnerships, and interlocking networks of politicians and corporate CEOs. In the United States, not only are ecovillages and urban farming projects rarely supported, but the actual institutionalized goals of the city are to garner exchange value, or earn money on parcels of land. These goals run counter to the goals of ecovillagers who desire to merely subsist. Indeed, in the city where I conducted research, it is illegal to sell produce grown in city limits because it is zoned for industrial production and not agriculture. Thus, plots of urban agriculture for subsistence food production are rendered valueless to the city, as they only have use value for those tending the plots. This obstructs people's access to such production because they have to own or purchase land, grow food in their free time outside of paid labor, and they cannot earn a profit on the excess produce. Without some amount of economic privilege or political savvy, engaging in urban agriculture is challenging.

Second, any discussion of structural power dynamics that fails to consider real people embedded in on-the-ground social power dynamics would be incomplete. While Agenda 21, metabolic rift theory, and ecological gender scholars argue that social inequalities and environmental degradation are interrelated and mutually reinforcing, my research findings complicate this. As demonstrated in chapter one, empirical research indicates that equity and environmental protection are correlated (UN 1987; UN 1992; Moore 2007; Dillard, Dujon, and King 2009; Ergas and York 2012), but the Cuba case illustrates that in this relationship there may be intervening variables. This case reveals

that removing capitalism and institutionalizing material equity are insufficient in bringing about comprehensive gender equity. Indeed, gender inequities increased at the same time that transformative environmental reform occurred. In chapter four my findings illustrate that in Cuba, gender equity is limited by cultural divisions of labor, the suppression of democratic processes, and microaggressions.

Salleh (2010) contends that the reproductive labor that most societies expect from women serves to subsidize global capitalism. Work that Cuban women do also serves to subsidize the Cuban economy generally, and the urban farm specifically. Cuban cultural prescriptions like gender divisions of labor, affect how men and women interact with each other and the natural environment. In Cuba, women are the primary caregivers and domestic laborers. As an example from the farm, workers have the option to go to work an hour later and leave an hour earlier if they have children so that they can take their children to and from school. Women most often have this schedule. When the economic crisis devastated the nation, women's reproductive labor supported resource stricken Cuban households. Primarily women came up with mixtures of sugar and water to sustain their families when food was scarcely available. While women were picking up the domestic slack during the economic crisis, environmental reforms moved the island nation toward sustainability. Women were burdened by longer second shifts, and at times, had to quit jobs or other civic responsibilities just to make ends meet. Thus, I find that though policies toward equity facilitated Cuba's transformation to sustainable agriculture, comprehensive gender equity did not necessarily work in tandem with Cuba's move toward environmental sustainability.

However, equity programs were essential to bring about the agricultural transformation. Many agronomists, scientists, and technical workers are women. Because they had equitable access to education, women were able to give their invaluable input and expertise to the urban agriculture project. In addition, scientists consulted with indigenous farmers to garner information about Cuba's farm ecology. Equalizing projects like these facilitated Cuba's move toward environmental sustainability. These findings suggest that even if gender equity and environmental sustainability do not completely coincide, they may be related by way of other means. Because of this, a candid evaluation Cuba's attempt at attaining strong sustainability must integrate socio-cultural, political/governmental, and economic forces.

The project of this dissertation is to explore real world alternatives. Research suggests that there may come a time in the future when we can no longer continue down the exploitative path we are on. In a global context where cities as social structures are not going away since they are homes to more than half of the world's population, we should be asking if and how we can reimagine or repurpose these structures so that they are no longer exploitative. Toward this end, I advocate urban development that is not predicated on economic growth, as most proponents of sustainable development pursue. That is, I propose that we shift our focus toward quality of life as research demonstrates that advancements in human development, like education and life expectancy, show no relationship to environmental destruction (Dietz el al. 2007).

The cases that I explore are not meant to be prescriptive paths toward strong sustainability; instead these examples of alternatives are meant to wet the palette of those craving a different way. Wright (2010) cautions against attempting to implement utopian

fantasies with no prior trial or assessment. He warns of catastrophic unintended consequences. Instead he advocates "utopian ideals that are grounded in the real potentials of humanity, utopian destinations that have accessible waystations, utopian designs of institutions that can inform our practical tasks of navigating a world of imperfect conditions for social change" (Wright 2010, 6). I argue similarly, we should consider utopian ideals something that we should constantly strive for rather than something we can achieve, using them as orienting visions in our ongoing and honest critique of best practices as they exist at any given time. We shouldn't hold model sites up as the end game, but rather a stop on the way toward something more adaptive to the contemporary needs of people and the natural environment.

APPENDIX

SEMISTRUCTURED INTERVIEW QUESTIONS

Ecovillage

Demographic Questions

1. What is your birth date?

2. What gender do you self-identify with (and birth sex)?

3. What is your ethnicity?

4. What is your occupation?

5. What level of schooling did you complete?

6. What level of schooling did your parents complete?

7. Do your parents/siblings own property?

8. What occupations do your parents/siblings inhabit?

9. Do you own property?

Life Questions

1. What events brought you where you are now?

2. What does your typical day look like?

3. What would your typical day look like if you were not living here?

4. How do you get around?

5. Where and/or how do you obtain food?

6. What does living in intentional community mean to you?

7. What is most important to you about living in intentional community?

8. What do you think are the most important issues in your intentional community?

9. What do you think are the most important issues in the larger community?

10. How are decisions made in the intentional community?

11. How does the community deal with a lack of resources, or resources running low?

12. How does the community deal with people who are not contributing?

13. How does the wider community perceive your community?

14. Is the larger community conducive to maintaining this community?

15. How do you sustain your living conditions?

16. How do you obtain money (do you even need money)?

17. What resources do you use from the city?

Attitude Questions

1. What do you think are some mainstream cultural values?

2. How do you feel about these values?

3. Do you have any judgments, positive or negative, toward these values?

4. What are things that your community values?

5. How do you feel about these values?

6. Do you have any judgments, positive or negative, toward these values?

Urban Farm

Demographic Questions

1. What is your birth year?

2. What gender do you identify with?

3. What race/ethnicity do you identify with?

4. What is your occupation?

5. What level of schooling did you complete?

6. What level of schooling did your parents complete?

7. What occupations do your family members do?

Work Questions

1. How did you get involved with the work that you do?

2. What work do you do on a daily basis? Or, what does a typical day look like?

3. What work do you do before and after your day job?

4. What kind of work would you do if you did not do this work?

5. How many hours of work do you do each day? On each activity?

6. What is the most challenging work you do? How often do you do it?

7. What is the most creative or interesting work you do? How often do you do it?

8. What is the most mundane/boring work you do? How often do you do it?

9. Do you do the same kinds of work as the wo/men in a similar position? What kinds work do you do that is different/same? What work do the wo/men do?

10. What do you enjoy most in your work?

11. What do you enjoy least in your work?

12. Overall, is your work experience enjoyable? If not, why/how? If so, why/how?

13. What are the biggest obstacles you face to doing your work?

14. Do you experience men (or women) not taking your work seriously?

15. What facilitates your work experience?

16. What are daily problems you face, and how do you go about solving them?

17. How do you feel about sustainability? Organic agriculture? Urban agriculture?

18. How did the farm come about?

19. What is the history of this farm/organization?

20. What are the objectives of the farm/organization?

21. How do you fertilize the soil? Who does it?

22. How do you choose a farm site, and who does it?

23. What do you grow and why? Who chooses?

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