

**From Seeds to Syndicates:  
Explorations in Collective Actions for  
Food Sovereignty and Resiliency in Guatemala**

by

**Christina Marie Ariana Bielek**

B.A. (Sociology & Hispanic Studies), University of British Columbia, 2004

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# Approval

**Name:** Christina Marie Ariana Bielek  
**Degree:** Master of Arts (Sociology)  
**Title of Thesis:** *From Seeds to Syndicates:  
Explorations in Collective Actions for Food  
Sovereignty and Resiliency in Guatemala*

**Examining Committee:**

**Dr. Cindy Patton**  
Chair  
Professor of Sociology and Anthropology  
Simon Fraser University

---

**Dr Hannah Wittman**  
Senior Supervisor  
Assistant Professor of Sociology  
Simon Fraser University

---

**Dr Juanita Sundberg**  
Committee Member  
Associate Professor  
Department of Geography  
University of British Columbia

---

**Dr Mark Roseland**  
Internal / External Examiner  
Professor, Centre for Sustainable Community  
Development  
Resource and Environmental Management  
Simon Fraser University

---

**Date Defended/Approved:** October 25, 2011



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## **Abstract**

In the face of rising environmental and food insecurities, communities across the globe are increasingly organizing to regain control of agro-ecological systems. This thesis explores these struggles in the context of highland Guatemala, examining food/seed sovereignty and permaculture movements and the lived experiences of rural women, farmers and grassroots environmental collectives. First, this thesis explores the historical erosion of local seed sovereignty, women's current roles in the food sovereignty movement and the gendered implications of both of these processes. Second, this thesis explores how grassroots collectives are drawing from permaculture's principles to creatively address agricultural and environmental vulnerabilities through horizontal organizational frameworks. This thesis posits that the food sovereignty and permaculture movements not only offer promising approaches for agricultural production and environmental stewardship, but they also provide valuable insights into the process of promoting local self-determination, democratization, gender equality and resiliency within and beyond local movements.

**Keywords:** Food, Seed Sovereignty; Permaculture; Gender Relations; Organizational Dynamics; Socio-Ecological Resiliency; Guatemala

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## List of Acronyms

DR-CAFTA	Dominican Republic-Central America Free Trade Agreement
GM	Genetically Modified
NGO	Non-Governmental Organization
NPIC	Non-Profit Industrial Complex
NTAX	Non-Traditional Agricultural Export
REDSAG	Guatemalan National Network in Defence of Food Sovereignty
TRIPS	Trade Related Aspects of Intellectual Property Rights
USAID	United States Agency for International Development

# 1. Introduction

The global food crisis of 2006-2008 has in many ways persisted with no clear end in sight, as over 925 million people go hungry everyday (FAO, 2010) and as the price of staple food is expected to nearly double over the next 20 years (Oxfam, 2011). The causes of the crisis include such factors as environmental shocks, market failures, the depletion of natural resources, population growth, price speculation, and changing dietary patterns (Oxfam, 2011; Conceição & Mendoza, 2009). Yet as expansive monocultures deplete soil and leave crops vulnerable to adverse climate conditions, the encroachment of industrial agriculture marginalizes and displaces small farmers across the globe, and agro-ecological simplification threatens agro-biodiversity, researchers are increasingly revealing that the industrial food system has failed to fulfil its promise of ensuring food security and is, in many ways, at the core of the crisis (Shiva, 1997; McMichael, 2005; Patel, 2007a; Altieri, 2010). With soaring corporate food profits in recent years<sup>1</sup> and the simultaneous impoverishment of millions, it is also becoming clear that the neoliberal economic regime has led to rising inequalities in the food system and the absence of fairness in the market (Bello & Baviera, 2009; de Janvry & Sadoulet, 2010). In this context, it is no longer possible to speak of “the food crisis” without acknowledging the top-heavy political and economic relations that have effectively created a *food system crisis*

<sup>1</sup> At the height of global food crisis in 2007, as food prices rose by 52 percent and millions were left hungry, profits for the top three grain traders (Cargill, ADM and Bunge) grew by 103 percent while profits for the top three global seed/pesticide companies (Monsanto, Syngenta and Dupont) rose by 91 percent (McMichael, 2009).

(Holt-Gimenez, 2008) premised on the pursuit of corporate profit, the simplification of agro-ecological systems, the privatization and depletion of natural resources, and the marginalization and exclusion of small-and-medium-scale farmers.

In the face of an increasingly domineering and destructive food regime, numerous social movements fighting food and climate insecurity are putting the pursuit of creative alternatives and democratic participation at the heart of their struggles. This thesis will explore two of these movements — *food sovereignty* and *permaculture* — in the context of rural highland Guatemala, with a specific focus on small-scale female farmers and grassroots organizations in the department of Sololá. While food sovereignty originally emerged as a conceptual alternative to the neoliberal concept of “food security,” food sovereignty has been transformed into a global movement of peasants, small-scale farmers and indigenous communities advocating “the right of local people to control their own food systems, including markets, ecological resources, food cultures and production modes” (Wittman et al., 2010). As a part of this global movement, *seed sovereignty* has emerged as a central pillar, highlighting women’s traditional and contemporary roles as seed custodians. Similarly, the permaculture movement was formed out of concerns over the unsustainability of the current model of agro-industrialization, and has expanded into a global movement of activists committed to working cross-culturally to re-design human settlements towards more resilient agro-ecological models, based on patterns observed in nature. Co-founded by two Australian men, Bill Mollison and David Holmgren, the permaculture movement is dedicated to decolonizing agro-ecological systems (Morrison, 2011) and credits Indigenous peoples across the globe for their insights on “how to live in place,” promoting local self-determination and active community participation in the formulation of evolving sustainable design practices (Birnbauham, 2009). For these movements, the focus has in many ways shifted from discussing what is wrong with the global food system to

planning and implementing sustainable approaches that help us understand what can be done to fix it.

Such proactive and creative approaches are particularly important in the context of rural Guatemala. With one of the most rural, agricultural and impoverished populations in the world<sup>2</sup>, Guatemala has also suffered from several natural disasters over the past decades (including Hurricane Mitch in 1998, Hurricane Stan in 2005 and tropical storm Agatha in 2010), exemplifying the vulnerability of rural populations to climate change and food insecurity. The high levels of rural vulnerability in highland Guatemala have been attributed to multiple factors, including precarious living conditions and reduced access to land that has led to unsustainable farming practices and increased deforestation. Instead of helping to ease these stresses, state policies and programs have generally resulted in increased social exclusion and unsustainable resource-management practices, leading to hill slope erosion, loss of arable land, deterioration of crop diversity, damage to crops during extreme weather events and food dependency (Katz, 2000a; Elías, 1997; Wittman & Geisler, 2005; Steinberg & Taylor, 2009). Numerous studies have demonstrated that, despite overall economic growth and the rapid expansion of the agro-export economy, the restructuring of rural livelihoods and the historical legacies of social exclusion are preventing economic growth from providing assistance to the rural poor, making rural poverty a significant source of food and health insecurity as well as a leading cause of environmental stress (Krznicaric, 2006; CEIBA, 2008), particularly for farming households (de Janvry & Sadoulet, 2000, 2010). Even

<sup>2</sup> Guatemala still maintains a very large rural population (52 percent) and a high rural poverty rate (71 percent). A large portion of rural households in Guatemala engage in farming (70 percent), and an even higher portion of the rural poor (72 percent) (INE 2006). Of Guatemala's 22 departments, Sololá has the third highest poverty rate (72.6 percent), with rural poverty reaching 86.4 percent (ibid.).

with skyrocketing food prices from 2006-2008, studies have shown that the vast majority of Guatemalan farming households suffered net welfare losses with rising food prices — particularly marginal, small and medium-scale farmers in rural areas — countering the assumption that the urban and non-farming poor were the most negatively affected from the food crisis (De Janvry & Soudoulet, 2010). Also, given that state-led initiatives aimed at addressing agrarian and climate-related risks have generally failed to take existing inequalities into account, they have tended to reinforce rather than remedy the feminization of poverty (Deere & Leon, 2002) and the marginalization of indigenous peoples.

It is within this context of increasing agricultural, environmental and socio-economic vulnerability that the food sovereignty and permaculture movements have emerged to pursue sustainable alternatives to the dominant model of “development.” While food sovereignty and permaculture are certainly not the only alternatives being advanced in this context, they offer promising approaches to resource management in which agricultural production and environmental stewardship are adapted in diverse ways to the highly variable geographic conditions typical in rural Guatemala. As a principal component of working to find sustainable remedies to address the food and climate crises in Guatemala, these movements are working to promote democracy and equality in the food and political systems, a process which also involves promoting widespread participation from diverse social groups and working to address inequalities *within* the movement.

Given the need for more context-specific research on food sovereignty and permaculture initiatives (Veteto & Lockyer, 2008), this thesis investigates the experience of these movements in highland Guatemala in working to promote creative alternatives to the food and climate crises while attempting to foster democratic participation. Specifically, Chapter Two explores the historical processes that have led to the erosion of local food and seed sovereignty in the Guatemalan highlands, women’s current roles in the seed sovereignty movement

and the gendered implications of both of these processes. Chapter Three explores how grassroots organizations in the Guatemalan highlands are drawing from permaculture's principles to find innovative remedies for addressing agricultural and environmental vulnerabilities, how they are promoting horizontal decision making and non-hierarchical power relations, and to what extent these principles and practices promote socio-ecological resiliency within and beyond the organizations. While these movements may face significant challenges and growing pains in attempting to implement these ambitious projects, their experiences offer valuable insights into the process of working towards sustainable agricultural production, self-determination, democratization, equality between diverse social groups and socio-ecological resiliency.

## **1.1. Methodological Framework and Ethical Considerations**

This thesis draws from qualitative fieldwork conducted in the Guatemalan highlands between November 2009 and February 2010, including participation in the VI Week for Biological and Cultural Diversity hosted by the Guatemalan National Network in Defence of Food Sovereignty (REDSAG); interviews with female farmers and women displaced by Hurricane Stan; as well as interviews and participant observation conducted with two environmental organizations (the Ay Mayon Collective and Agua Clara Atilán) in the department of Sololá. The methodological framework for this research project was largely based on feminist epistemology, which emphasizes qualitative methods (in this case participant observation and interviews), the need to begin from the standpoint of women and other frontline actors (those directly involved in with the work of production and reproduction) as well as the importance of maintaining self-reflexivity and continuous ethical reflection (Smith 1987). Based on the practical knowledge of frontline actors, feminist research works to uncover how local experiences are structured and constrained by extra-local relations such as patriarchy, racism and

global capitalism, and how local actors are developing alternative rationalities oriented towards goals of social equality (Sprague & Zimmerman, 2004).

### **1.1.1. *Participant Observation***

Participant observation for this research project was conducted through attendance at workshops and panel discussions on food sovereignty and permaculture, and also through hands-on volunteer work with the organizations listed above, including gardening, wetland construction and community outreach activities. I generally recorded fieldnotes after each day of volunteer work or workshop participation, and if time and space permitted, during the fieldwork. In addition to providing me with extensive fieldnotes, this volunteer work also helped me to establish rapport with interview participants, allowing for more spontaneous discussion.

### **1.1.2. *Interviews***

This research project draws principally from twenty-three semi-structured interviews with female farmers, women displaced by Hurricane Stan and activists involved in the food sovereignty and permaculture movements in the department of Sololá (see Table 1). Interviews lasted between 45 minutes and two hours, and involved open-ended discussion on family histories and traditions, farming practices and livelihood strategies, experiences relating to environmental vulnerability, and experiences working with local organizations and social movements including the permaculture and food sovereignty movements. Given the sensitivity of some of the interview topics, particularly relating to food insecurity and environmental displacement, I continually reaffirmed to interview participants that they could change the topic or end the interview process at any point if they did not feel comfortable (nonetheless, the interviewees often expressed that they appreciated the opportunity to discuss these issue in depth). Following an inclusive feminist methodology, I attempted to give priority in the interviews to actor's own subjective perspectives on their everyday lived

experiences. This approach is particularly important when discussing gender issues, given that women are most often assigned the daily work of meeting people’s physical, nutritional, emotional, and social needs, and thus their unique standpoints provide the potential for developing a clearer understanding of social and environmental relations (Sprague & Zimmerman, 2004).

**Table 1. Interview Participants**

<b>Group</b>	<b>Sex</b>	<b>Vocation</b>	<b>Total</b>
Ay Mayon Collective/ REDSAG & associated farmers	Women: 8 Men: 5	Coordinators/ Facilitators: 6 Farmers: 7	13
Agua Clara Atitlán	Women: 3 Men: 4	Fishers: 2 Teachers: 1 Doctors: 1 Farmers: 2 Other: 1	7
Chuk-Muk (settlement for families displaced by Hurricane Stan)	Women: 2 Men: 1	Artisans: 2 Teachers: 1	3
Total:	Women: 13 Men: 10	Coordinators/ Facilitators: 6 Farmers: 9 Fishers: 2 Teachers: 2 Doctors: 1 Artisans: 2 Other: 1	23

### **1.1.3. Data Analysis**

After transcribing the interviews and field notes, I identified and tagged major themes and concepts that I found in the data and began analyzing these topics through concept maps and cross-sectional data analysis methods. These analytical methods proved to be very valuable as they allowed for some unexpected themes to emerge. First, seed relations, particularly as relating to



indigenous gender relations, turned out to be a more prominent theme than originally anticipated, becoming a principal component of my thesis. Second, organizational dynamics and issues relating to decision-making processes were salient in both the interviews and fieldnotes, leading to an increased analysis of group process and organizational structures as they relate to the food sovereignty and permaculture paradigms. Thus, in many ways, the focus of this project has shifted from an analysis of rural agro-ecological vulnerabilities, to a discussion of people's everyday lived experiences working (as individuals, families and collectives) towards seed sovereignty and socio-ecological resiliency.

#### **1.1.4. Ethical Considerations**

Following a feminist research paradigm, it is important to recognize that all “research is carried out through social relationships of differential power with the attendant risk of exploitation ... both in terms of decision making and in the allocation of accrued benefits” (Sprague & Zimmerman, 2004, p. 43). Given these power relations and the fact that research designs, questions and conceptualizations are inherently value laden (Smith, 1987), self-reflexivity has been an important goal throughout this research project, although it has not prevented some additional ethical considerations and dilemmas from arising. In addition to the challenging ethics of entering the fieldsites as a foreign, non-indigenous researcher within limited prior practical knowledge of the local context, the politics of being “Canadian” became more of an issue than initially anticipated given the massive expansion of Canadian corporate mega-projects and mining operations in Guatemala. While mining might not seem directly related to food sovereignty or permaculture, local residents continually noted that Canadian mining interests are leading to the contamination of local land and waterways and causing numerous health problems, which ultimately threaten local livelihoods, ecologies and food sovereignty. Being a “Canadian” researcher thus often became an issue as I attempted to gain trust and rapport with local

groups. This was particularly the case at the VI Week for Biological and Cultural Diversity, where numerous mining-affected farmers came forward to discuss the impact of Canadian mining projects on their communities. Coming from a country and province with some of the lowest corporate taxes in the world (serving as a tax haven for some of the most notoriously destructive mining corporations) and where the pension system is heavily invested in mining, this research project has made me increasingly aware of my connection to these issues as I finish writing my thesis in “the belly of the beast.” These ethical concerns have become even more apparent given that my university is increasingly receiving funding from mining companies, most recently accepting a \$10 million donation from Goldcorp Inc. — by far the corporation with the worst human rights and environmental record in Guatemala, according to local residents. Although my research was not directly funded by mining companies, it is important to recognize the indirect channels that can connect us as researchers to global relations of exploitation, with potential impacts on monetary rewards and/or challenges (e.g., university research grants) as well as academic freedom and/or restrictions (e.g., potential libel charges for making “slandorous” statements about corporations). In many ways, these concerns and insights have transformed my experience as a Canadian graduate student, and have largely informed my personal activism against open-pit mining, the privatization of education and corporate welfare and in support of public education, academic freedom and local community gardening.

Feminist researchers such as Dorothy Smith (1987) have noted that research must be self-consciously oriented towards the interest and struggles of marginalized groups in order to avoid serving dominant interests. Specifically in terms of women’s issues and struggles, “research would have to address the dismantling of patriarchy and the empowerment of women” (Sprague & Zimmerman, 2004). This thesis project is an attempt to speak to these issues, and is dedicated to the women in Guatemala who are valiantly working to challenge oppressive social and economic structures in defence of local

livelihoods, ecologies, biodiversity, cultural traditions, seed relations and food sovereignty.

## **2. Cultivating Equality? Women, Indigenous Knowledge and the Pursuit of Seed Sovereignty in the Guatemalan Highlands**

Over millennia, women's seed saving and exchange practices have played a crucial role in rural societies, contributing to important crop improvements, household food security and safeguarding a wealth of agrobiodiversity. Yet while women produce 80 percent of the food in developing countries, they represent 60 percent of people who are food insecure, own 2 percent of the agricultural land, receive less than 10 percent of credit provided to farmers and are burdened more than men in coping with resource degradation and changing production systems (Vernooy, 2006). Further, although women predominate globally as wild-plant gatherers, herbalists and plant breeders (possessing a broader set of seed-selection criteria than men) (Howard, 2003), women's knowledge of agro-ecosystem management has also long been disregarded by plant geneticists and development experts (Sachs, 1994; Ayales-Cruz et al., 2002; Momsen, 2007). In recent years, in the face of widespread agricultural simplification — with 75 percent of global crop genetic resources being lost since the beginning of last century (ICFFA, 2006) — scholars are increasingly acknowledging how women's agro-ecological knowledge is crucial for ensuring food security and protecting agrobiodiversity (Shiva, 1999; Howard, 2003; Lambrou & Lamb, 2006; Momsen, 2007). However, with the advancement of neoliberal economic restructuring, the displacement of small diversified farming systems in favour of expansive monocultures and the success of multinational corporations in gaining control and over seed resources, the

development and exchange of women's seed knowledge is increasingly being impeded (Shiva, 1997, 1999; Kloppenburg, 2004, 2010).<sup>3</sup>

In response to the corporatization of food and seed systems, a global coalition of small-scale farmers, farm workers and indigenous peoples from across the globe has emerged to advance a *food sovereignty* agenda. Specifically, food sovereignty refers to “the right of all people to healthy and culturally appropriate food produced through ecologically sound and sustainable methods and their right to define their own food and agriculture systems” (La Vía Campesina, 2009, p.8). Given that seeds are essential components of the food system and the erosion of farmers' control over seed resources has a disproportionate impact on female farmers, the pursuit of gender equality and *seed sovereignty* have both become central pillars of this movement, with strategic actions and forums being held by the international food sovereignty network La Vía Campesina, in addition to hundreds of affiliated groups across the globe. Although the food sovereignty movement has affirmed that the realization of food sovereignty is predicated on the repossession of seed sovereignty (Kloppenburger, 2010), the latter term has yet to be explicitly formulated by the Via Campesina and its affiliated organizations and networks, likely due to its conceptual complementarity to the former (Kloppenburger, 2008). For the purpose of this thesis, seed sovereignty is defined as the right to and recognition of seeds as the *collective*<sup>4</sup> heritage of farming communities to be freely saved, reproduced, improved, diversified, exchanged and disseminated by

<sup>3</sup> Currently, just 5 companies, or “green giants,” have come to control the US \$20 billion annual global-seed market (Kloppenburger, 2010).

<sup>4</sup> By defining genetic resources as collective heritage, the food sovereignty movement can be seen as calling into question the conceptual and material basis of private ownership (Kloppenburger 2008). As La Vía Campesina affirms, “farmers' rights are eminently collective; they should therefore be considered as a different legal framework from those of private property and intellectual property (2001, p. 49).

farmers for the benefit of all people and the environment (Kloppenburg, 2010; La Vía Campesina, 2001), with specific recognition of women's roles and rights in the preservation of genetic resources (La Vía Campesina, 2008).

While a significant body of research has documented La Vía Campesina's integration of gender analysis as a central component of food-sovereignty mobilizations (Desmarais, 2002, 2004, 2005, 2007; Pimbet, 2009, Patel, 2010; Martinez-Torres & Rosset, 2010)<sup>5</sup>, a gap in the literature exists on how these efforts are playing out for local organizations and families on the ground<sup>6</sup>, particularly in terms of how gender relations relate to seed saving<sup>7</sup>, and the movement towards seed sovereignty. Further, given that some food sovereignty researchers have noted that the gender relations embedded in seed relations are often rooted in structural patriarchal inequalities (problematizing the widespread notion of food sovereignty as positively rooted in cultural traditions (Benzer Kerr, 2010), more context-specific research is needed on the relationship between gender relations, seed sovereignty, cultural traditions and power relations, particularly those relating to colonial legacies and post-colonial practices.

In this chapter, I will explore the role of women in the seed sovereignty movement in the Guatemalan Highlands. Guatemala in many ways offers unique insights into the seed sovereignty movement given the significance of this region as a megacentre of agro-biodiversity (Isakson, 2009) with a still extensive rural

<sup>5</sup> Although La Vía Campesina has focused on gender relations since its inception, recent initiatives reflect a renewed effort dedication to building gender equality in the movement, including a gender parity requirement for regional and global representatives in 2000, a global campaign "For an End to Violence Against Women" in 2008 (La Vía Campesina, 2008), and the Women's seed forum in South Korea in 2007 (La Vía Campesina, 2007). These commitments have served as significant stepping-stones for the movement given that "the Vía Campesina's success rests primarily of the persistent and concerted efforts of local and national organizations working towards gender equality" (Desmarais, 2005, p.144).

<sup>6</sup> For one example, see Wiebe, 2006 (Brazil).

<sup>7</sup> For two examples, see Benzer Kerr, 2010 (Malawi) and Pionetti, 2001 (India).

population (52 percent), a large share of rural households engaged in farming (70 percent) (INE, 2006) and with rural women continuing to act as seed custodians, maintaining a vast diversity of heirloom seeds (Ayales-Cruz et al., 2002). Female farmers have also been active in the Guatemalan National Network in Defence of Food Sovereignty (REDSAG), helping to bring the topic of seed sovereignty into the forefront. At the same time, Guatemala has extremely high female poverty rates, with poverty affecting 75 percent of rural women (ActionAid, 2005), a high incidence of violence against women (Paz & Bailey, 2006) and has suffered from extremely unequal and gender-biased land-tenure patterns (Deere & Leon, 2002)<sup>8</sup>, raising questions about the prospect of promoting food sovereignty *and* gender equality in the context of widespread gender violence and discrimination. To address these questions, this chapter will review the historical processes that have led to erosion of local food and seed sovereignty in the Guatemalan highlands as well as the gendered implications of these processes. Drawing from semi-structured interviews with female farmers in the Guatemalan Highlands as well as participant observation from the REDSAG's VI Week for Biological and Cultural Diversity, this chapter will also examine how women's individual and collective actions are helping to cultivate creative alternatives to the corporate food and seed regimes, and how they may be challenging systemic gender inequalities through this process.

<sup>8</sup> Despite progress made towards establishing market-based agrarian reforms following the 1996 peace accords and the government's recognition of equality between women and men's land rights, most women have not benefited from agrarian reforms in Guatemala (Deere & Leon, 2002).

## 2.1. A Brief History of Seeds and Agriculture in the Guatemalan Highlands

A vital part of the Mesoamerican crop domestication hearth, the Guatemalan Highlands are a well-documented centre of origin of important crops including maize (*Zea Mays*), squash (*Cucurbita pepo*), sunflower (*Helianthus annuus*), common bean (*Phaseolus vulgaris*), cacao (*Theobroma cacao*) and amaranth (*Amaranthus*). Evidence of agricultural domestication in the region dates back as far as 10,000 years for squash, 7000 years for maize, and 5000 years for amaranth (Black, Bewley & Halmer, 2006). Indigenous Mesoamericans in pre-Columbian times came to domesticate, cultivate and breed a plenitude of seed varieties, which, in addition to hunting and gathering activities, served as a substantial part of local diets. Through careful and evolving crop-management and seed-selection practices, the Indigenous population produced and maintained an extensive amount of both intra-crop (i.e. within-species) diversity and infra-crop (i.e., across species) diversity. Another factor that has historically contributed to agro-biodiversity in Guatemala is the environmental heterogeneity of the mountainous landscape, with a great deal of rugged topography, varying elevations (ranging from sea level to 4,220 meters), and diverse ecological niches which have allowed indigenous farmers over time to develop seeds that are specifically suited for the climate, soil conditions and slope of each growing environment (Isakson, 2007). The areas housing the most crop diversity in Guatemala were (and continue to be) areas populated principally by indigenous Maya populations in the Highlands (Steinberg & Taylor, 2002).

Seeds have been vital to Indigenous traditions and religious practices since pre-Columbian times, being offered to earth deities to provide both human and crop fertility. Maize seeds in particular have played a preeminent role in Indigenous religiosity, also being featured in Maya creation myths (Black et. al, 2006). As illustrated through Pop Wuj (the “Mayan Bible”), Ixmucane, the grandmother of the day, attempted to create humans from mud and sticks, but



was not successful in her task until she used white maize to create human bones, yellow maize to create human flesh, red maize to create human blood and black maize to create human hair. Crops such as cacao and amaranth have also served as important offerings to agricultural deities (Black et al., 2006), possessing clear associations with male and female mythological beings.

### **2.1.1. Colonization**

Lacking valuable mineral and metal deposits, Guatemala became an economically marginal but agriculturally important area during the Spanish colonial era (Van Etten, 2006). Food and seed sovereignty was undermined as export-oriented farming models and repressive labour practices were imposed upon populations, marginalizing Indigenous control over agriculture and other forms of social and cultural production. The Spanish colonizers forced both Maya men and women to work as slaves on *haciendas* — large plantations that cultivated and exported various agricultural commodities, including cochineal, indigo, and cacao. Even after legal changes in 1550, the colonizers' subordination of the indigenous population continued through the system of *repartimientos* (forced labour service payments for land taxes), the arrival of new diseases and epidemics as well as the imposition of other taxes which largely served to impoverish the indigenous peasantry (McCreey, 1986; Lovell, 1988). Also during this era, the colonizers saw the use of seeds in traditional indigenous ceremonies as a dangerous imitation of Catholic rituals, leading to the prohibition and criminalization of some seed varieties such as amaranth (Black et al., 2006).

For the Spanish colonizers, the most ideal lands for the exploitation of the local resource base were concentrated in the Pacific coastal lowlands and the temperate areas to the south and east of the capital city Santiago (Lovell, 1988). The highlands, also historically referred to as the "*tierra fria*" or cold lands, were considered unattractive to colonial agribusiness and of little economic value given the rugged topography of the region which was not conducive to large-

scale monocropping (Hamilton & Chinchilla, 2001). Increasingly, the Maya population was concentrated in the highlands, which, given Spanish perceptions regarding the unprofitability of this area, initially allowed for traditional agricultural practices to persist and for cultural resistance to grow (Lovell, 1988).

### **2.1.2. Post-Independence Guatemala**

Following independence in the mid-nineteenth century, the weakening of indigo crops (due to locus infestations), combined with the increasing profitability of the coffee export market, led many plantation owners shift to coffee production, increasing the demand for indigenous labour and land (McCreery, 1994; Carey, 2009). Despite the liberal revolution's promise of ending coerced labour in 1871, the colonial system of *repartamientos* was simply substituted by a new system of *mandameintos* which were modelled after the latter and continued at unprecedented levels for several decades to come (McCreery, 1986; Lovell, 1988). Even after the government's formal decision to put an end to debt servitude in 1934, plantation owners were successful in lobbying the government for new way of keeping down labour costs. Between 1934 and the early 1940s, a vagrancy law was instituted which required anyone without sufficient property to provide "adequate" income to work between 100-150 days of the year on a plantation (McCreery, 1986).

The ongoing cooperation of the Guatemalan state in appropriating indigenous lands for plantations and in mandating coerced paid and unpaid labour had numerous consequences for local control over agricultural production and resources, including seeds. First, it made Guatemala the last country in the Western Hemisphere to end coerced labour (McCreery, 1986), also creating an ethos of racialized and class-based violence, which legitimized the use of lashings against labourers, work gangs policed by soldiers, and the implementation of "trespassing" legislation which allowed plantation owners to shoot workers without breaking the law (Forster, 1999). Further, while a

significant amount of agro-biodiversity was preserved in the Guatemalan highlands through the colonial and post-colonial periods (largely due to indigenous farmers' dedication and attachment to the land) the demands of coerced labour heavily compromised subsistence production (van Oss, 2002; Lutz & Lovell, 2000; Carey, 2009). As McCreey notes,

Forced to go to the coast during critical periods in the corn cycle or held there longer than anticipated, peasant producers could not weed or harvest their fields on time, make or even maintain capital improvements, or repair damage done by weather or animals. The result was that declining productivity in highland agriculture paralleled the rise of coffee. (1986, p. 112)

In turn, coerced labour systems also increased the country's dependence on imported food and led to growing food scarcity (McCreey, 1994). "Between 1871 and 1940 Guatemala suffered repeated corn shortages and, as a result, remained dependent on corn imports" for several decades (Carey, 2009, p. 290). Further, coerced labour demands and the continued appropriation of indigenous lands also threatened local access to and control over seed genetic resources, given that it caused a decline in small-scale subsistence production based on agro-ecological heterogeneity in favour of plantation agriculture based on homogeneity (Isakson, 2007).

An often unacknowledged consequence of the plantation economy and forced-labour policies relates to gender relations and gender violence, given that many women reported being victims of rape and violence while undertaking migrant work, generally at the hands of plantation authorities (Forster, 1999). Although some resources were available for women to file charges of gender violence after the fall of the Ubico dictatorship in 1944, most of the accused men went free given that "sexual violence in conjunction with class violence usually guaranteed the rapists impunity because the accused was able to coerce alibis from those who worked under his orders or depended on his influence" (Forster, 1999, p. 60). Further, acts labelled as "female crimes," including abortion and

adultery would unequivocally invalidate a female plaintiff's case, increasing the perception of women as "property" of their fathers and husbands and reflecting the expectations of obedience held by white plantation owners towards indigenous and *mestizo* labourers (ibid.). The systematic appropriation of indigenous lands and the suppression of local food sovereignty went hand in hand with the development of a culture of plantation violence directed largely towards coerced migrant workers and with particularly horrendous outcomes for female agricultural labourers.

### **2.1.3. *Civil War and Green Revolution***

The mid to late twentieth century represented a period of increased militarization, dictatorship, violence and growing civil unrest in Guatemala, culminating in a civil war from 1960 to 1996, through which Maya residents of the Guatemalan highlands weathered brutal repression at the hands of the military. During this period, between 40,000-50,000 Guatemalans were disappeared and approximately 20,000 were killed (Murshed, 2002; CEIBA, 2006). Violence against women — largely initiated by the military — was systematic during the war, and thousands of non-combatant women and girls were the victims of rape and torture during this timeframe (Paz & Bailey, 2006).

Studies of the relationship between militarization, indigenous agricultural traditions and agro-biodiversity in Guatemala have found devastating impacts for seed sovereignty. Military repression led to a decline of indigenous agricultural rituals, particularly those involving offerings to male and female earth deities, because many of these rituals and traditions were seen as directly associated with communism and antigovernment forces (Wilson, 1991, 1995). During this period, Guatemala also experienced a significant decline in the number of maize seed varieties planted by Maya farmers as a result of this cultural repression and other related factors such as ongoing violence, displacement and deteriorating socioeconomic conditions (Steinberg & Taylor, 2002). For example, Steinberg

and Taylor estimated a 56.7 percent decrease in maize varieties between 1940 and 2001 in the Cuchumatán range in the Guatemalan highlands (2002)<sup>9</sup>.

Also during this period of increased militarization in Guatemala, while smallholders continued to see their lands appropriated to make way for agribusiness (Hamilton & Chinchilla, 2001), an emphasis was placed on “modernizing” agriculture through the “green revolution,” which aimed to increase agricultural productivity. The green-revolution campaign was focused on the promotion of high-yielding hybrid seed varieties, the mechanization of agriculture, monocropping, agrochemical fertilizers, pesticides, irrigation and agricultural credit. In many ways, Guatemala became an ideal location for the green revolution experiment, given the historical emphasis on agricultural “modernization,” production for exportation, expansive large-scale farms, and the marginalization of small-scale and Indigenous farming models (Carey, 2009). The green revolution’s promise of increasing harvest yields appeared to provide the perfect solution to solving Guatemala’s domestic food crisis without forcing policy makers to confront the incredibly unequal and unjust land tenure patterns<sup>10</sup> or the demands of rural movements for revolutionary agrarian change (ibid.).

Although the green revolution tended to give preferential treatment to large-scale farmers whose lands and farming patterns were already well suited for this type of agricultural model (Carey, 2009), some new opportunities were provided to small-and-medium-sized farmers in the Guatemalan highlands as a

<sup>9</sup> The authors visited 6 highland Guatemalan towns in May 2001, including Todos Santos Cuchumatán, Concepción, San Pedro Necta, San Martín Cuchumatán, Jacaltenango and San Antonio Huista. 10 farmers were interviewed in each town to compare present-day maize diversity with data collected early this century (such as Stadelman, 1940).

<sup>10</sup> Although the highland areas were able to preserve a moderate amount of small-scale farms (in contrast to the monoculture-dominated coastal areas), by 1979, 88 percent of the farms covered only 16 percent of the arable land, while 2.5 percent of the farms embraced the remaining 65 percent (Carey, 2009).

part of the government's import-substitution strategy to decrease food and technological dependency (Iskason, 2007). Initially, during the 1960s and 1970s, these opportunities came through a strategy for promoting wheat production for domestic consumption, in which farmers were given hybrid seeds, fertilizers, herbicides, extension services and (in some cases) mechanization (Wittman & Saldivar Tanaka, 2006). Supported by public sector agricultural institutions, harvested wheat soon became an important cash crop for highland farmers, contributing to rural employment, decreasing many farmers' economic need for seasonal migration, and improving (to a certain extent) food security (ibid.). In terms of seed sovereignty, however, it is important to recognize that the promotion of hybrid or "improved" seeds served to fracture the intimate relationship between farming and seed saving given that hybrid varieties do not "breed true" or grow very well in the second season, leading increased to seed commodification and dependency (Fitting, 2008). Further, government initiatives to encourage farmers to shift from *milpa* to wheat production were the probable causes of declining agro-biodiversity in Guatemala during the 1960s (Isakson, 2007). Globally, the proliferation of "modernized" commercial agriculture has been identified as the principal contemporary determinant of declining genetic diversity, and the replacement of local varieties with "modern" seed varieties as the main cause of genetic erosion (FAO, 1996).

#### **2.1.4. Economic Restructuring and Free Trade**

In addition to green revolution attempts to re-orient agriculture, a key threat to food and seed sovereignty in Guatemala can be found in the massive economic reorientation of the country that was spurred through structural adjustment programs. Beginning in the 1980s, these program, imposed by the World Bank and International Monetary Fund, involved the dismantling of national marketing boards, eliminating price guarantees, closing many research and extension systems, breaking down tariffs, and deregulating agricultural markets (Holt-Gimenez, 2008).

To understand these processes and their impact on food sovereignty, it is essential to examine the impacts of “food aid” loans and donations that were included in Guatemala’s structural adjustment package. The first loan was disseminated in 1985 and took the form of \$US 18.6 million of maize and beans, followed by a \$US 3.3 million donation of maize, rice and wheat in 1987 that were to be sold at a low cost (Isakson, 2007). These “donations” served to prime the domestic market for the influx of low-priced foreign grain, which has progressively controlled a rising share of consumption in Guatemala since the 1980s (CEIBA, 2007). For example, whereas Guatemalan producers had cultivated an average of 98 percent of the country’s total maize consumption during the 1980s, the proportion has sharply declined to less than two-thirds by 2006 (Isakson, 2007), once again increasing Guatemala’s dependence on imported food. With the elimination of tariffs on wheat imports, small-scale wheat producers were weakened, and in many cases decimated as they could not compete with subsidized imports, and were forced to return to seasonal migration to work on the plantations (Wittman & Saldivar Tanaka, 2006).

Not only did the conditions attached to structural adjustment loans require the opening of Guatemala’s agricultural markets to competition from low-priced — and heavily subsidized — foreign imports, the US Agency for International Development (USAID) and other actors simultaneously pursued a coordinated effort to push Guatemala’s small-scale highland farmers to shift to the cultivation of non-traditional agricultural export (NTAX) crops (including broccoli, snow peas, cabbage, flowers and berries) that could be sold in the United States and other foreign markets. While the impacts of farmers’ conversion to NTAX crops in Guatemala are not straightforward, there is growing evidence that these crops have not provided the intended promises. In a longitudinal, mixed-methods study of the socio-economic and cultural impacts of NTAX crops for small-scale farmers in the central Guatemalan highlands, for example, Hamilton and Fisher (2003) pointed out that while these crops initially led to increased economic benefits for small-scale farmers, they later discovered other environmental,

economic and social costs of these crops in the long term, including growing concerns about the toxicity of chemical pesticides and fertilizers that NTAX production requires, increased vulnerability of NTAX crops within the global market as well as an increasing concern that differential NTAX earnings are leading to higher levels of class differentiation that can erode community solidarity (Hamilton & Fisher, 2005).

Similarly, the logic of regional trade agreements such as the Dominican Republic-Central America Free Trade Agreement (DR-CAFTA), which Guatemala signed in 2005, follows the premise that food security can be better ensured through the deregulation of the national financial systems and the reduction of investment in food production for national consumption in favour of production for exportation (Holt-Gimenez, 2008; CIEBA, 2006). Chapter 15 of DR-CAFTA on Intellectual Property Rights also extends the US-corporate-patenting-rights model, requiring compliance with the World Trade Organization's Agreement of Trade Related Aspects of Intellectual Property Rights (TRIPS) and the Union for the Protection of New Varieties of Plants of 1991, which grant patent-like corporate protection on plants that can be used to trump farmers' traditional rights to save seeds (Olson & Galian, 2004). Such mandatory agreements strengthen the legal rights of multinational seed corporations to sue farmers for patent violations, even farmers who choose not to plant hybrid or genetically modified (GM) crops, but whose crops could become contaminated by pollen drift or other means beyond their control (*ibid.*).

While there is a ban on the production of GM crops in Guatemala, some field trials have been permitted<sup>11</sup>, and illegal distribution and cultivation could be

<sup>11</sup> The cultivation of GM crops in Guatemala began in 1989 when the company Ujphoh/Asgrow established field trials for GM squash (CEIBA, 2005).



occurring, creating real risks of genetic contamination (CEIBA, 2005). In fact, in 2002 the environmental organization Friends of the Earth documented the presence of a genetically modified corn called StarLink in aid packages sent to Guatemala by the USAID and the UN World Food Program. A follow-up study in 2005 found 80 percent of samples were contaminated by GM corn (as cited in L.A.I., 2007), making illegal drift probable. The threats associated with potential genetic contamination of local varieties include agro-ecological risks (unintentional simplification of crop system, genetic erosion and loss of biodiversity; the creation of super weeds, crops that are resistant to herbicides that convert into weeds, pathogenic bacteria, plant mutations and other more virulent viruses) and human-health risks (including issues associated with toxicity and allergies<sup>12</sup>) (Garcia-Tello, 2007).

Such risks are further intensified as seed companies and national institutions are bought up by agro-chemical multinational companies. Most recently, the seed giant Monsanto purchased the Guatemalan seed company Semillas Cristiani Burkard to expand its business operations — particularly the development and sale of both hybrid and GM maize — in Central America (*El Periodico*, 2008). Such acquisitions represent a new corporate strategy “to vertically integrate the global market of agricultural commodities for food and non-food purposes,” transforming seeds from a common resource into a commodity to be controlled by the corporate sector (ICFFA, 2006, p. 12).

Through agricultural “modernization,” economic restructuring and free trade, farmers’ sovereignty over seeds has been continually eroded, having many gendered impacts and outcomes. First, the strong impetus to shift from

<sup>12</sup> The full scope of human-health risks are difficult to assess given the limited scientific research on this topic (Garcia-Tello, 2007).

small-and-medium-scale agriculture for domestic consumption to industrial crops has often exacerbated gender inequalities. For example, the labour-intensive nature of NTAX production has tended to increase women's agricultural workload, often sacrificing women's participation in the cultivation of traditional commercial crops (Hallum-Montes, 2009; von Braun et al., 1989). Given that NTAX earnings are generally controlled by male household heads and this new production regime disrupts other income-generating activities for women, NTAX production has tended to have a negative impact of women's economic power with the household (Blumberg, 1994; Katz, 1995, 2000b). Further, as agricultural practices are simplified, the possibility of varied household nutrition tends to shrink for farming households, leading to high consumption of carbohydrates and diminishing dietary diversity (Ayales-Cruz et al., 2002). For instance, average female caloric adequacy was found to be 12 percent lower in poor NTAX-adopting households (in comparison to poor, non-adopting farming households) (Katz, 2000b).

Other consequences of the adoption of green-revolution and NTAX strategies include negative impacts on family health given the increased utilization of agrochemicals (Hamilton & Fisher, 2005), with disproportionate effects on women (Ayales-Cruz et al., 2002). Further, female Guatemalan farmers, already largely ignored by the green revolution extension system, were most affected by structural adjustment programs through both reductions in essential services (with a 58.3 percent cut to health care between 1980 and 1984 (Corina et. al, 1987)), which increased their workload, and reduced access to agricultural resources.

Furthermore, the required compliance with TRIPS through the signing of DR-CAFTA obscures the importance of gendered roles in biodiversity conservation and does not require the informed consent of those farmers, primarily women, whose knowledge is mined for the purpose of scientific and agricultural "innovation" (Sahai, 2004). The diminution of seed genetic diversity

has gone hand in hand with the weakening of small farming practices, local food cultures and local women's knowledge about the use of cultivated and wild plant varieties in their diverse socio-ecological habitats (ICFFA, 2006).

## **2.2. Local Seed Practices and the Cultivation of Seed Sovereignty**

Given the historic relationship between agriculture, seeds and systems of colonial agricultural and cultural restructuring, local seed saving and exchange activities represent important sites of struggle in Guatemala for preserving crop genetic diversity. Despite the ongoing threats to local seed sovereignty, smallholder female farmers in the Guatemalan highlands continue to actively cultivate, breed, select, share and sell a diversity of heirloom seeds at the household and community levels. Many of these seeds have been cultivated across many generations and adapted in site-specific ways to the evolving, diverse agro-ecological environments typical of the Guatemalan highlands.

Female farmers also often carry and pass down particular stories of different seed varieties that hold important political, cultural and historical meanings. As one female farmer explains about her amaranth plants:

During the colonial era, our ancestors were forbidden from cultivating amaranth. The colonizers understood the strength of this grain and they wanted to make us weak and malnourished ... But there was a very wise family who stored seeds beneath their house and grew their amaranth in hiding. Thanks to them, we still able to grow this plant today.<sup>13</sup>

The quote above adds important political and cultural dimensions to this seed history regarding the issues of colonial control (in this case nutritionally as well as

<sup>13</sup> Interview # 9, November 23, 2009.

culturally and politically), and the resistance of local families against the suppression of seed sovereignty.

The recuperation and reintegration of amaranth cultivation is particularly eminent for small-scale farmers in rural Guatemala facing food and climatic insecurity, given the seed's extremely high nutritional value and protein content, the plant's ability to tolerate both high and low temperatures, and its resistance to drought and its need for less water than maize (REDSAG, 2011b). It is also interesting to note that the colonial renaming of amaranth as *bledo* (or "worthless") is a reflection of how the grain was systematically devalued. This renaming has been transfigured into a contemporary popular idiom "*me importa un bledo*" literally "I don't give an amaranth seed," or figuratively "I could care less." Incidentally, the impetus to have local communities *care less* about the preservation of heirloom seeds, and to *give less* seeds through local seed exchanges seems to have gone hand in hand with the colonial and neo-colonial agricultural projects, a process that is being continually contested through the food sovereignty movement and local seed saving practices.

As illustrated through the story of amaranth seeds, local seeds-saving practices are embedded with cultural, ecological and political meaning, and represent important sites for local women for asserting cultural rights, preserving agro-biodiversity for regaining greater levels of control of the food system. The following sections will highlight women's strategic seed-sovereignty initiatives at the household, community and national levels. Given that seeds are not produced in a vacuum, it will also be important to acknowledge the role of wild-plants in the struggle for seed sovereignty and how wider ecological and resource-management practices influence food sovereignty initiatives.

### **2.2.1. Wild Plants, Women and Seed Sovereignty**

There is a great need for seed and food sovereignty research to focus on the importance of wild or uncultivated plant species in addition to the

preservation of domesticated, heirloom seed varieties. Many of the uncultivated plants within and surrounding traditional cropping systems are wild relatives of domesticated crop varieties, and through cycles of natural hybridization and introgression between crops and uncultivated plant relatives (either intentional or unintentional), a vast array of heirloom-seed variability and genetic diversity is preserved (Altieri, 1987). Given that it is mainly women who are the wild plant gatherers, managers, herbalists and plant domesticators across the globe (Howard, 2003), there is a need to integrate a gendered analysis into wild-plant research initiatives (Vazquez-Garcia, 2008).

The female farmers interviewed for this project utilized wild-plant species in a variety of ways on their agricultural plots. In addition to their plant breeding functions, wild and weedy plants are often intentionally left to grow amidst crops for pest deterrence. Other frequent agricultural uses for wild plants include the generation of leafy mulch for soil improvement as well as for water-retention and water conservation purposes.

Harvesting uncultivated plant varieties also serves as a key household food-security strategy for marginalized groups such as women, children and the rural poor in addition to playing an essential role in the conservation of biodiversity (Vazquez-Garcia 2008). Wild-plant gathering was an important topic for many of the women interviewed for this project, and generally contributed meaningfully to their households' diets and nutrition. As one female farmer and weaving cooperative member reflects:

When I was a growing up my father worked in a cotton *finca* and we often didn't have enough food to feed the whole family, so we would eat plants from the mountains everyday ... We would gather small wild tomatoes, *hierba mora* [healall, *prunella vulgaris*], *izote* [*Yucca guatemalensis*], *Chipilin* [Chop, *Crotalaria longirostrata*], among others ... Now I'm able to

feed my family better. We eat chicken once a week, sometimes beef, but we still eat a lot wild plants.<sup>14</sup>

Women, bearing the social responsibility of feeding their families, gather these types of wild plants for several reasons. While women may use wild plants as a food supplement in times of food shortage, wild plants often form a fundamental part of the daily household diet, even when other food is not lacking, and are generally esteemed for their nutritional, culinary and cultural values. These findings are consistent with other studies that show the important role that women play in both cultivated and uncultivated plant management (Vazquez-Garcia, 2008; Wilson, 2003). Other common wild-harvested materials include fuelwood, poles, natural colouring agents for textile production, basketry items and natural medicines.

While these uncultivated plants play important roles in sustaining local seed and food sovereignty, it is important to recognize that local access to and preservation of wild-plant species is threatened by the advance of climate change, environmental displacements, industrial agriculture and other “development” initiatives, including the privatization of communal lands where much of this wild-plant gathering was previously taking place (Wittman & Geisler, 2005). For women interviewed in a government-sponsored settlement for environmentally displaced families, displacement and relocation after Hurricane Stan in 2005 was cited as a huge impediment to finding and harvesting wild plants, thus having a negative impact on household nutrition. As one interviewee notes:

When we lived in *Panabaj* [before being relocated after the hurricane], we used to gather wild plants from the mountains whenever we wanted, but

<sup>14</sup> Interview #22, January 27, 2010.

now we have to pay for transportation if we want to go there, and we don't have the money ... Usually all we have to eat now are tortillas. ... They are installing expensive streetlights right now [in the settlement], but they don't even care that we don't have food to eat.<sup>15</sup>

Such observations imply that women's livelihood needs may not be fully taken into account in the implementation of resettlement programs, thus requiring more effective community-consultation mechanisms.

Several interviewed women also noted that barriers associated with environmental displacement, along with ongoing transformation of the rural landscape through "development" initiatives, can impede women's ability to find and utilize wild plants for medicinal purposes, thus impacting family health. An herbalist, for example, spoke to me extensively about the importance of the "cancer herb" (*Acalypha aryensis*) in both preventing cancer and for treating skin problems. However, she later told me that when she went back to the forest area where the plant has previously been gathered, the area had been cleared for a new development, and she was unsure of where she would be able to gather the plant in the future.

It is also important to recognize that wild-plant relatives serve an invaluable function to plant breeders given that they possess numerous ecological amplitudes, including the capacity to enhance the genetic diversity and resilience of domesticated seeds (Altieri, 1987). Given these considerations and the rapid disappearance of many wild-plant species, organizations such as the Global Crop Diversity Trust (Khoury & Guarino, 2010) have recently launched a large-scale global project to find, gather and catalogue the wild relatives of major food crops in an effort to investigate ways to make crops more resilient to climate

<sup>15</sup> Interview #19, January 18, 2010.

change. However, given that the conservation of genetic diversity is more effective when carried out within the ecosystems in which the resources occur (Altieri, 1987), it is imperative to maintain small-scale farming systems *and* adjacent natural ecosystems as a means of preserving diverse-crop and wild-plant genetic resources. As we face a future of food and climate insecurity, the food sovereignty movement's initiatives to promote diversified, small-scale agriculture as well as farmers' access to land and natural resources become an imperative strategy "to feed the world and cool the planet" (La Vía Campesina, 2009; McMichael, 2010), necessitating the active participation of rural women in the creation of viable agro-ecological alternatives.

### **2.2.2. *Revitalizing Local Seed Exchange Practices***

Few widespread, specialized social institutions or networks for farmer seed exchanges currently exist in the Mesoamerican area (van Etten, 2010), in contrast with other regions, such as South-East Africa, where seeds are commonly exchanged as ritual gifts (Benzer Kerr, 2010). As a result, seed exchange in Guatemala tends to occur somewhat sporadically, corresponding with existing social contacts: "[i]f social contacts (trade, marriage, political connections) across space are constant and frequent, seed exchange is likely" (van Etten, 2006, p. 692). Given that most documentation of seed saving and exchange dynamics in Guatemala only dates back to the first half of the twentieth century (ibid.), it is difficult to infer if the somewhat fragmented and informal character of contemporary exchange networks are the result of the colonial and neo-colonial erosion of traditional socio-agricultural practices, or if seed exchanges have simply always been this way in the area. However, the existing (although shrinking) wealth of crop genetic diversity in the area (Steinberg & Taylor, 2002) in addition to the existence of some historical evidence linking indigenous ritualistic practices to seed exchanges (ibid.; Wilson, 1991), would suggest that exchange activities have been significant in the past.



Interview data with female farmers from the department of Sololá reflects farmers' collective memory of historical seed-exchange practices, particularly at the community and local levels. Some of the women commented on the loss of the traditional practice of *casamiento* (literally meaning seed marriage) in which members of neighbouring communities would traditionally assemble and place all of their maize or other seed varieties together to blend, interchange and then redistribute seed resources. Such seed-intermixing practices, in addition to serving as a space for exchange of knowledge and best practices, also serve to improve the seed germplasm by encouraging greater genetic diversification. Further, seed *casamiento* events can serve as an important safety net for families and/or communities who may at given times lack seeds due to unusually adverse environmental conditions, such as drought. One interviewee discussed the loss of this tradition, noting that the fact that people don't generally discuss or practice seed *casamientos* anymore "has to do with the type of education they have been introducing in this country, and with the type of development that has been introduced that goes against the sustainability of sovereignty of the people."<sup>16</sup> While some interviewees seemed sceptical of the idea of seed *casamiento* practices with nearby communities (citing a lack of trust about others' seeds and concerns about possible pesticide use) other groups have started organizing local seed-marriage events, and are actively working to (re)build a strong seed-exchange culture.

For some communities, social movements and local organizations in the Guatemalan Highlands, establishing seed banks has also become a fundamental component of building local seed sovereignty. While the female farmers interviewed for this project typically save and store most of their seed stock in their own home, recent participation in seed bank projects has represented a

<sup>16</sup> Interview #23, February 2, 2010.

valuable opportunity for the sale and exchange of seeds as well as for storing and retrieving diverse seed “inventory.” The seed bank shown in Image 1 from the town of San Lucas Toliman, Sololá, for example, houses more than 200 seed varieties. One interview participant explained that maintaining seed quality and health depends in many ways on a continual cultivation of seeds, carefully observing crop changes, registering new information, and sharing experiences and knowledge between different farmers and seed bank coordinators. With the continual growth of these seed exchange and seed bank initiatives, highland communities are working to strengthen local production and ensure local autonomy over seed cultivation, preservation and distribution.

**Image 1.** *Seed bank in San Lucas Toliman, Sololá*



### **2.2.3. From Local Practices to National Movements**

To bring together these local community initiatives from across the country, the Guatemalan National Network in Defence of Food Sovereignty (REDSAG) was formed to provide spaces for the collective development of

proposals, political actions and culturally appropriate strategies in defence of food sovereignty. Currently the REDSAG has over 200 member organizations from across Guatemala (some of which are also members of La Vía Campesina), and has hosted several national events dedicated to the revaluation of ancestral and local knowledge, management of food insecurity and vulnerability, preservation of seeds, sustainable *campesina* agriculture and holistic health.

Recent large-scale events include the II Meeting for Agro-ecology (jointly hosted by the REDSAG and La Vía Campesina in August 2011) as well as the REDSAG's VI National Native and Heirloom Seed Fair (held in April 2010) and the VI week for Biological and Cultural Diversity (held in November 2009), which provided important venues for the exchange of knowledge and the generation of strategies in defence of seed sovereignty. As one female activist notes:

We are finding that the process of cultivating food sovereignty requires a long chain of actions, from food production to food preparation, from preserving seed-saving practices to establishing venues for seed exchanges, from understanding historical processes that have violated our land rights to working together to defend our land and natural resources. ... Perhaps most importantly, we have to work to rescue our values so that our children also participate in saving our seed heritage.<sup>17</sup>

Another principal way that some communities, and particularly women, are exchanging knowledge and collectively working to defend seed sovereignty in Guatemala is by refusing to accept food aid that is suspected of containing hybrid and/or GM grain. This practice is particularly prominent within some of the *Comunidades de Población en Resistencia* (CPR) (which represent communities that have resettled in Guatemala after being displaced from the civil war). At the VI Week for Biological and Cultural Diversity, there was also a lot of discussion about establishing official areas free of agrochemicals and GM crops, as have

<sup>17</sup> Interview #6, November 17, 2011.

been established in some areas in Costa Rica, and which could be established in unison with already existing areas that have been declared mining-free zones by local communities. Such collective actions in defence of seed sovereignty help to dismiss the common portrayal of peasants as “apolitical smallholders” (Bryceson, 2000), as helpless victims of capitalist expansion, or as naïve recipients of food aid who will “accept anything they can get for free.”

The REDSAG’s campaign for the protection and preservation of native and heirloom seeds has become a strong site of resistance, action and organization for women across Guatemala. However, women’s participation in the network is not limited to seed forums, nor is the REDSAG’s commitment to women’s issues limited to a few seed-related areas. The REDSAG has also made gender equality — defined as the “promotion and defence of equality between different genders as political and social subjects” (REDSAG 2011a) — as a key programmatic and cross-cutting theme which is integrated into all other thematic areas.

### **2.3. Engendering Seed Sovereignty**

In this chapter, I have reviewed the historical, political-economic processes that have worked to erode local food sovereignty; the gendered implications of these processes; women’s role in heirloom-seed and wild-plant management in the Guatemalan highlands; as well as women’s roles in working towards local seed sovereignty. Yet, in engaging with the limited research on gender and agro-ecological dynamics, it is important to ask if these collective and individual actions by women in Guatemala are meeting strategic gender needs (Molyneaux, 1985) in addition to the practical agrarian and environmental needs that have been outlined above. As Allen and Sachs explain, “women may act to meet their practical needs, such as access to healthy food, without altering gender relations” without engaging in strategic actions that transform patriarchal

social structures (2007, p. 5). They further posit that the “agrarian ideology” tends to reinforce the subordination of women given that “women have been expected to support the farm, men, and children ahead of their own needs and aspirations,” and traditional gendered roles “can pose a roadblock to raising issue of gender equality” (ibid.). Such concerns have been furthered by scholars such as Rachel Benzer Kerr (2010, p. 143) who notes that in Malawi,

Generational and gender differences embedded in seed relations are rooted in the structural inequality of women in this patrilineal Tumbuka and Ngoni culture ... An older woman’s role as manager in seed selection is built on this patriarchal system. These gender inequalities challenge a notion of food sovereignty rooted in cultural traditions, and need to be addressed if seed sovereignty is to foster social equity.

Is “traditional,” sustainable agriculture, as promoted by the food sovereignty movement, being advanced at the expense of women’s rights?

While there are without doubt wide-ranging contexts in which agrarian movements and traditions are not explicitly feminist and can at times be oppressive to women, I posit that the gender relations embedded in traditional or Indigenous agricultural paradigms in Guatemala and the emerging food sovereignty movement are not inherently anti-feminist. In fact, my research on the food sovereignty movement in Guatemala shows that traditional gender relations as related to agricultural production can at times be empowering for women, thus meriting a more nuanced analysis.

First, in the Guatemalan context, we need to acknowledge that a central component of Maya-Indigenous culture and agricultural religiosity (which has been progressively eroded through processes of colonization) is the notion of *male/female complementarity* (Marcos, 2009) or *gender parallelism*. For the Maya, maize and other traditional crops such as amaranth formed an important part of indigenous cultural and religious traditions, with important implications for gender relations (Bassie-Sweet, 2000) given that agricultural deities were both male and female (Wilson, 1991). While it is difficult to assess to what

extent gender equality existed in Mayan communities prior to and during the initial phases of colonization, some scholars have argued household gender relations were likely structured in a way that a “husband and wife were thought to work in complementary unison, just as the right side of the body works with the left,” and the married couple held the position of mother-father together and shared the status and prestige of this office (Bassie-Sweet, 2000).

The Indigenous feminist scholar Rosa Pu-Tzunux (2007), notes that these social structures are not simply a part of a historic or romanticized past, explaining in contemporary Maya culture, women’s specific roles in seed saving and agricultural production are seen and lived within a system of social representations, which privileges the principals of gender balance and complementarity. According to Pu-Tzunux (2007, 32-33):

if women or men have different role in the family or in society, it doesn’t mean that they are superior or inferior, dominant or dominated, but rather that the pursuit of societal balance requires the fulfilment of certain functions and because the Mayan social systems sustains the idea of reciprocal collaboration and solidarity (understood as complementarity).

Pu-Tzunux (2007) further posits that the Indigenous system of gender parallelism may in some instances be more empowering for both genders than the occidental model of gender relations:

In contrast to the occidental (liberal-capitalist) economy and (“democratic”) political system, where people see in each person (woman or man) an <<individual>> element with specific <<rights>> according to the concept of <<individuality>>, Mayan society embraces a holistic vision of the social world, which privileges the balance and complementarity of elements that form the <<social whole>>. (p. 32)

While the occidental model views equality primarily in terms of individual rights, the indigenous philosophy sees equality and balance as a result of relations which privilege common objectives (ibid.). As illustrated through an account of the First Indigenous Women’s Summit of the Americas, many Mesoamerican

indigenous feminists are currently working to reintegrate their ancestral cultural beliefs relating to gender complementarity and balance, and see these concepts as “a potent resource in their quest for gender justice and equity” (Marcos, 2009, p.39).

At the same time, it is also important to recognize that women as a group do, in fact, face specific forms of oppression — particularly greater vulnerability to food insecurity and domestic violence — within the current historical-political context. Andrea Smith, a North-American Indigenous feminist, posits that contemporary issues of patriarchal oppression need to be analyzed in terms of their historical trajectory:

[W]hen colonists first came to this land, they saw the necessity of instilling patriarchy in Native communities, because they realized that indigenous peoples would not accept colonial domination if their own indigenous societies were not structured on the basis of social hierarchy. Patriarchy in turn rests on a binary gender system; hence it is not a coincidence that colonizers also targeted indigenous peoples who did not fit within this binary model. (2008, p. 312)

Smith further notes that the deterioration of women’s rights through violent colonial practices was central to the erosion of local sovereignty over land and natural resources: “gender violence is a primary tool of colonialism and white supremacy. It is through sexual violence that a colonizing group attempts to render a colonized peoples as inherently rapable, their lands inherently invadable, and their resources inherently extractable” (ibid.). As discussed in the historical section of this chapter, extreme forms of violence directed against indigenous peoples, migrant workers, and particularly against women, went hand in hand with the development of the agricultural export-production economy, the systematic appropriation of indigenous lands and the suppression of local food sovereignty.

In this sense, instead of simply blaming movements working to revalue traditional agricultural and cultural practices for being “infused with machismo

culture” and oppressive to women, we need to acknowledge how such oppressive systems are, in many contexts, largely the product of colonization and neocolonization. Further, it is important to ask if the advancement of a Western or liberal-feminist agenda in the Guatemalan context might be counter-productive to the generation of equality for women given that it is premised on (re)instilling an individualized, binary notion of gender equality. How then can Indigenous feminism address contemporary issues related to the oppression of women?

A female facilitator for the REDSAG noted that in integrating gender analysis into the food sovereignty framework, the movement faces the difficult task of reintegrating traditional cultural practices emphasizing values of gender complementarity — in which the female and male household head are seen as equals and addressed as an integrated unit — while also attempting to address real contemporary issues that are impacting women more severely than men (such as domestic violence and lack of access to land) in which women’s issues may need to be addressed separately. Along these lines, some tensions were observed at the VI Week for Biological and Cultural Diversity in the Women, Territory and Rights working group. First, fifteen men attended the three-day working group (mostly male farmers accompanying their wives), representing about a third of the entire group, which (in comparison to other workshops on women’s issues that I have attended where generally only 1-2 “token” men are present), is a very impressive number. While one European woman participating in the working group commented, “these men are here to monitor their wives,” a female indigenous participant had a different opinion on the matter noting, “these men are here to support their wives and address these issues as a family.” While these two accounts may seem to be contrasting, they both reflect the need to understand the important role of gender complementarity in indigenous culture while respecting that in some cases there is a real need for integrated strategic gender analysis to address issues that have come to affect women differently than men. As another Indigenous female interviewee notes:



Some men think that by talking about inequalities in our homes, we are trying to be the bosses. We are not trying to dominate, but rather to share power and decision-making. But we can't have complementarity when there are huge inequalities in the family, the economy and in the political system. So what can we do as men and women in the face of these struggles? We have to work together in equality, building the movement.<sup>18</sup>

Another area of tension in the Women, Territory and Rights working group related to the topics of discussion. While several small sub-working groups (women and climate change; women and access to land; women and food sovereignty; and women domestic violence) were able to discuss diverse topics in detail, one full day was dedicated at the end to more open discussion and was dominated by topics relating to agricultural production and food sovereignty. During the last session, one representative from a women's rights NGO repeatedly noted that "we are not having any real discussion about *women's* issues; we are just talking about issues that should be discussed in other working groups." Yet the main topics that were being discussed related to sustainable agricultural practices, particularly the need to avoid using pesticides, and several organic pest-control recipes were being energetically exchanged between participants. It could be argued, then, that the participants were discussing strategies for a women-centred agriculture and for acknowledging women's vital knowledge and role in agricultural production (even though the words "women" or "gender" were not repeated on a regular basis). As Vandana Shiva (1999, p.37) argues, "[a]griculture based on diversity, decentralization and improving small-farm productivity through ecological methods is a women-centred, nature-friendly agriculture." Such considerations imply that there is a need to expand our definition of what "doing gender analysis" actually means, in that working to support women's agricultural needs and methods may also be a part of fulfilling

<sup>18</sup> Interview #7, November 18, 2009.

their strategic gender needs. Just as household seed saving is not merely a subsistence strategy, but also an important political act (Phillips, 2005), women-centred, sustainable agriculture can be seen as going beyond women's practical needs to advance strategic goals and to challenge the structure of industrialization and masculinization of agriculture (Shiva, 1999).

Several facilitators at the forum also acknowledged the need to integrate an analysis of gender issues into all of the working groups, particularly regarding mega-projects, given that the expansion of mining and hydro-electric projects tend to impact women in different ways. As another female participant notes:

It is women who have to deal with issues with water and the health of our children and the community, and then sometimes there are also issues of alcoholism and violence in the home, and women being targeting for defending their territory. So as we fight to create areas free of mining, and areas free of GM crops, I also think we have to declare areas free of violence against women, because this issue is also related to territory.<sup>19</sup>

These discussions demonstrate that strategic gender analyses and actions can and are happening within the food sovereignty movement, although there clearly is still a lot of work to be done in addressing specific issues that are impacting women (particularly issues of domestic violence), in revaluating and incorporating women's traditional agro-ecological knowledge, and in navigating the complex process of re-encompassing indigenous gender relations based on complementarity and "working together in equality to build the movement," while also acknowledging and fighting against the specific inequalities and forms of violence that have been directed against women. As discussed above, this process also involves recognizing the interrelationships between the systematic oppression of women and the repression of local food, seed and resource

<sup>19</sup> Interview #5, November 16, 2011.

sovereignty, as they operate as a *matrix of domination* (Collins, 2000). The violence intrinsic to colonization, militarization and industrialization is a coordinated and synchronized violation against women, indigenous knowledge and gender relations, traditional agriculture and wild-plant-management practices, and biological diversity. Thus, cultivating gender equality is vital to cultivating local food sovereignty, a process, much like the seed, that needs to be raised, nourished, preserved, diversified and defended on an ongoing basis.

### **3. A Permaculture Paradigm for Socio-Ecological Resilience: Linking Community, Ecology, and Power in Western Guatemala**

*One clear morning in November, a soft-spoken Guatemalan farmer brought me to visit the tiny piece of land where she grows a winding mix of vegetables, herbs and flowers. The soil is dry and cracked from several weeks with no rain, but the dust-covered plants seem to be withstanding the dearth. She tells me about the maize, squash and beans, the principal crops that are grown in her garden and across the region: “these crops are called the three sisters, but really we are talking about a much larger set of relationships”. The maize is planted first, and once it reaches half a foot, the beans and squash seeds are carefully scattered around the stems. Cultivated as companions, these plants have special functions and benefits that generally cannot be reaped as individual crops: the maize serves as a living structure for the beans to climb; the beans provide nitrogen to the soil; and the squash, growing along the garden floor, protects and provides moisture to the soil. She also points to the way that the crops interact with each other; “there is no dominant plant; they are not trying to dominate each other. They understand how to work together and complement one another.... And that is how we need to learn to live again, without dominating each other”.<sup>20</sup>*

The benefits of multi-cropping agricultural systems consisting of maize, squash, beans and other plants — referred to as the *milpa* system in Mesoamerica — are increasingly being recognized in scholarly literature. Not only can milpa agriculture produce more food per hectare than monocultures without the need for harmful chemical inputs (Altieri, 1999; Gurr et al., 2003;

<sup>20</sup> Interview #2, November 11, 2009.

Lenné, 2011); but it has only been shown to better contribute to rural household food security and nutrition (Uphoff, 2002; Fraser, 2006, 2007; Holt-Gimenez, 2008; Frison et al., 2011); to better support the preservation of local seed-security and agro-biodiversity (Altieri, 2002, 2004; Jackson et. al., 2007 ;Isakson, 2007); and to better withstand climate-related disasters than monocultures (Kareiva et al., 2007; Holt-Gimenez, 2001). Such benefits accentuate the capacity of purposeful agro-ecological designs to promote greater ecological resiliency in the face of environmental vulnerabilities. But how does agro-ecological design based on horizontality and resilience connect to social relations, not only in terms of how humans relate to the earth, but also how humans relate to each other in decision-making scenarios? What can an agro-ecological paradigm explain about power relations at the level of local and international organizations and institutions? What can it teach us about different ways of organizing and structuring institutions for the delivery of rural development aid, disaster mitigation and related assistance?

One of the few existing frameworks to make such connections is permaculture: a global movement encompassing a set of principals and design guidelines aimed at fostering sustainable or “permanent” culture and agriculture (Holmgren, 2009), drawing extensively from the *milpa* system and other aspects of traditional ecological knowledge (Birnbauhm, 2009). While permaculture’s design guidelines were developed largely for agricultural contexts, permaculturists are increasingly observing the importance of integrating these principals into social and organizational ecologies, given that cultures and environments are seen as co-constructed and intimately linked (ibid). Given permaculture’s emphasis on using lateral thinking and active community participation (Morrison, 2011), many permaculture activists are working to incorporate horizontality into organizational practices, a model of grassroots organizing largely emerging from social movements in Latin America, that is characterized by non-hierarchical structures, consensus-based decision making and decentralized coordination (Sitrin, 2005). Despite these merits, permaculture

has received surprisingly little attention from academics and policy makers (Veteto & Lockyer, 2008; Carlsson, 2008).

In this chapter, I attempt to conceptually link purposeful ecological design as detailed in the permaculture framework with an analysis of organizational dynamics and power relations. Analyzing the theory and practice of permaculture through a sociological lens, this chapter draws on qualitative fieldwork with *Agua Clara Atitlán* and the *Ay Mayon Collective*, two grassroots environmental organizations in the department of Sololá, Guatemala that are implementing unconventional organizational strategies. Explicitly drawing on permaculture's design guidelines, particularly as they work to incorporate indigenous knowledge and governance systems, the two organizations are working to find innovative solutions to issues of environmental vulnerability while challenging conventional power relations, top-down decision making and social exclusion within and beyond their respective organizations<sup>21</sup>. Based on the experiences of these two organizations, this chapter examines how permaculture, by drawing from the principals of horizontality and traditional socio-ecological knowledge, can foster more resilient social organizations in addition to promoting more resilient agro-ecosystems. *That is, now that permaculture — with its strong foundations in milpa agriculture and traditional ecological knowledge — has been acclaimed for helping to address ecological vulnerabilities, what can permaculture teach us about building more resilient social organizations that work to maintain these ecologies?*

<sup>21</sup> While the permaculture philosophy largely emphasizes horizontality and power from below, this does not mean that all organizations utilizing permaculture are grassroots or consensus-based, and some may actually be structured quite hierarchically. However, as emphasized by the collectives in this study, permaculture's promotion of horizontality can be extended to organizational relations and structures.

### **3.1. What is Socio-Ecological Resilience and How Does it Relate to Social Organizations in Guatemala?**

In environmental research, the term *resiliency* broadly refers to “the ability of exposure units to resist or recover from the damage associated with the convergence of multiple stresses” (McLaughlin & Dietz, 2008, p. 100), the ways that such capabilities change across temporal and spatial scales (Adger, 2006; Smit & Wandel, 2006), in addition to “the social, economic and political factors that shape the ‘finer mosaic’ of vulnerability and adaptability” (Dow, 1992, p. 421). To assess the resiliency of social organizations, it will thus be important to acknowledge the diverse stressors or vulnerabilities that organizations are exposed to as well as the socio-political contexts in which they emerge and persist. This context, also referred to as the “politicized environment” (Byrant & Bailey, 1997), is “constituted through struggles over material practices and struggles over meaning,” revealing the continued role of historical and contemporary power relations in shaping the social and physical landscapes (Byrant, 1998, p. 84).

In Guatemala, following a long colonial trajectory, this politicized environment has often been exclusionary on class, race and gender lines, violent and disruptive of social movements and indigenous systems of governance. In particular, several authors have noted that the thirty-year civil war (1960-1996) — in which 40,000-50,000 Guatemalans were disappeared and approximately 20,000 were killed — was rooted to a large extent in Guatemala’s long-standing issues of social, political and economic exclusion (Murshed, 2002; CEIBA, 2008). The legacy of this violence and repression can be seen as representing a significant vulnerability for social organizations as well as a major barrier to participation for many citizens.

Political advances in recent decades have brought hope for creating more resilient and representative social and political organizations in Guatemala,

particularly the return to civilian rule in 1985 as well as the finalization of the civil war and the signing of the peace accords in 1995-1996. The Guatemalan peace accords in particular have been acclaimed for their success in promoting policies relating to decentralization, political participation and for strengthening the scope and capacity of non-governmental organizations (Blum, 2002).

It is important to remember, however, that the growth of the non-profit sector and other political-decentralization mechanisms have occurred in the context of widespread neoliberal reforms which tend to maintain, and at times exacerbate, societal inequities (Hale, 2002). Currently, income inequality is exceptionally high in Guatemala, with a Gini coefficient of 55.1, the second highest in Latin America (after Panama) (UNDP, 2009), and with 74.8 percent of indigenous peoples living in poverty as compared to 44 percent of the non-indigenous population (INE, 2006). As Sundberg (2003) observes, the Guatemalan government has failed to meet all of its commitments to the peace process granted that structural inequalities, corruption, racism and widespread mistrust of political institutions have remained firmly intact.

The contradictions in the concurrent formation of a politics of participation and the expansion of exclusionary economics suggest a new and more obscure manifestation of social vulnerability, in comparison to the more blatant forms of repression directed at social organizations in Guatemala's past (Hale, 2002). While new relationships between the state, corporations and social organizations bring increased opportunities for social movements to receive funding and political influence (Blum, 2002), these relationships have at times been seen to redirect activist energies into career-based modes of organizing while "encouraging social movements to model themselves after capitalist structures rather than to challenge them" (Smith, 2007, p. 3). In Guatemala, for example, Berger (2006) notes that neoliberal "democratization" has led to the institutionalization and "NGO-ization" of social movements, through which lobbying and ad hoc service-delivery become the focus of most organizations'



mandates, thus privileging professional and technical skills, encouraging organizations to turn from protest politics to policy work and excluding (in many cases) participation from the rural, impoverished majority. Similarly, research on the decentralization of forest management in Guatemala following the peace accords has shown that decentralization policies, rather than enabling greater participation from local communities in decision-making, can at times actually diffuse centralization while undermining village-level governance structures (Wittman & Geisler, 2005). Ethnographic research on conservation efforts in the Maya Biosphere Reserve further reveals the contradictory relationship between the purported aims of democratic environmentalism and the authoritarian, and at times violent, approach taken by the state and North American NGOs to implement conservation (Sundberg, 2003).

Authors Andrea Smith and Dylan Rodriguez discuss such contradictions and their relation to the non-profitization of social movements through the concept of *the non-profit industrial complex* (NPIC) or “a set of symbiotic relationships that link political and financial technologies of state and owning class control with surveillance over public political ideology, including and especially emergent progressive and leftist social movements” (2007, p. 8). While a thorough analysis of these contradictions is beyond the scope of this chapter, it is important to acknowledge that, in a time of neoliberal political, economic and social restructuring, social organizations do face risks when modelling their organizations in partnership with the state, corporations and/or large funding agencies in terms of compromising core goals and values or of reproducing structures that they seek to eradicate (Smith, 2007). Although such partnerships bring opportunities for organizations and social movements in terms of funding and exposure, thus lessening financial risks, they may simultaneously give rise to socio-organizational vulnerabilities.

Thus it is important to explore new and diverse ways for organizations to resist or recover from the convergence of social, economic and political

vulnerabilities as they struggle to promote resiliency both within and beyond their organizational structures.

### **3.2. Experiments in Organizational Resiliency**

To explore diverse meanings and visions of organizational resiliency, we can look to permaculture and several emerging social movements and organizations, particularly in Latin America, which have been noted as having significant counter-hegemonic potential given their emphasis on horizontal, consensus-based and shared leadership (Fox Piven, 2008). These movements have also helped to expand of the concept of “political work,” by linking the process of working for social and environmental justice with how people live their everyday daily lives (ibid.). Rojas (2007) and Tang (2007), for example, have highlighted that in some contexts, social movements are not as dependent on non-profits, but are instead fuelled and guided by the constituents, and the goal is to sustain movements, not the non-profits that support them.

From November 2009 to February 2010, I had the opportunity to work with two such movements located in the department of Sololá, Guatemala, which are striving to find dynamic and innovative paths to socio-ecological resilience through permaculture, participatory community engagement, shared leadership and the process of trial and error. Given the need for more research on such counter-hegemonic possibilities, I will draw from the experiences of these two grassroots organizations in Guatemala to explore diverse visions and pathways to socio-ecological resiliency through the permaculture framework. I will draw primarily from semi-structured interviews with organizational members, as well as participation observation at the VI Week for Biological and Cultural diversity hosted by Guatemalan National Network in Defence of Food Sovereignty (REDSAG) held in November 2009.

First, the *Ay Mayon* collective is a small group of permaculture activists based out of the department of Sololá, Guatemala who work closely with the REDSAG. The main goal of this group is to promote collective leadership and food sovereignty at the individual, family and community levels. The main focus of the group is permaculture, popular education, and revaluation of traditional knowledge, with an emphasis on respect, equality and solidarity. The collective was initiated in 2009 by six permaculture coordinators who formerly worked for the Guatemalan Environmental Reconstruction Organization (GERO),<sup>22</sup> a well-established NGO focusing on hurricane relief. The collective was initiated when the coordinators left their jobs at GERO over conflict and concerns about how the organization was being managed. Rather than establishing a formal, non-profit organization, the group chose to form a collective, and has already initiated several small-scale projects, including permaculture gardens and workshops and a bee-keeping initiative, in addition to coordinating events and workshops with the REDSAG.

Next, Agua Clara Atitlán is a grassroots group of local residents from the areas surrounding Lake Atitlán including fishers, teachers, farmers, doctors, scientists, and farmers. The Group formed in 2008 over concerns about a harmful bloom of *cyanobacteria lyngbya hieronymusii* that has been growing in the lake area (see Images 2 and 3), raising serious concerns about the health and livelihoods of the local populations as a result of water contamination. While scientific tests of toxicity levels are still in their early phases and range from very low (such as Rejmankova, 2009 as cited in Persson, 2010) to high (Mayorga, 2009 as cited in Persson, 2010) (often depending on when and which area of the lake the sample is taken from), there is general consensus among scientists that the water is toxic to some extent, and more advanced water filtration systems are

<sup>22</sup> The Guatemalan Environmental Reconstruction Organization (GERO) is a pseudonym.

urgently needed to protect communities that obtain their drinking water from the lake (as it is believed that boiling the water does not kill the bacteria). Cyanobacteria are single-celled organisms that grow quickly when nutrients like phosphorus and nitrogen concentrate in still water. According to local reports, the nutrients feeding the bloom in Lake Atitlán stem mainly from wastewater mismanagement, although other contributing factors include pesticide runoff, garbage dumping, and increased runoff as a result of deforestation around the lake basin. Wastewater mismanagement has become a severe issue in the area since several treatment plants were destroyed during Hurricane Stan in 2005. The government of Guatemala estimates that it will cost at least \$350 million USD to clean up the lake and re-install the water treatment plants that were destroyed during the Hurricane (Fieser, 2009).

**Image 2. *Cyanobacteria lyngbya hieronymusii* bloom at a severe phase in Lake Atitlán<sup>23</sup>**



<sup>23</sup> Source: Christina Bielek, 2009

**Image 3. Satellite image (with simulated natural colour) showing the extent of the cyanobacteria bloom in November 2009<sup>24</sup>**



For the members of Aguas Claras, Atitlán, the emergence of the cyanobacteria in the lake represented a very threatening socio-environmental change that seemed beyond control. As shown in Images 2 and 3, the huge blooms of cyanobacteria began to plague the water at a rapid rate, affecting the safety of bathing and drinking water as well as the health of aquatic resources and other economic activities such as tourism. To give an example of the severity of the issue, Images 4a and 4b show a tank being filled up with water extracted from the lake at less than one meter, right next to a public dock. Several sources confirmed that these tanks of lake water are taken directly from this area to a settlement called Chuc-Muk, where hundreds of families displaced by hurricane Stan are living, and using this water for drinking after using very basic clay water

<sup>24</sup> Source: NASA, 2009

filters. Given that the group has found the government's efforts to address the situation extremely slow (without seeing any clear commitments from the government to start rebuilding treatment plants or to implement other solutions), the community group decided to take matters into their own hands and start a wetland project (using banana trees, bamboo, sugarcane and other plants) to filter wastewater that would otherwise be discharged directly into the river and then into the lake. The group has maintained that the idea is not to solve the entire issue of water contamination, which clearly requires a much larger, multifaceted effort (including the re-installment of treatment plants and widespread wetland construction), but to take immediate action to obstruct further wastewater contamination and to help protect the health and livelihoods of the surrounding communities.

**Image 4. Drinking water being extracted from the lake at less than 1 meter<sup>25</sup>**



a



b

<sup>25</sup> Source: Christina Bielek, 2010.

The wetland project is shown in Image 5 along with the new tubing that was installed by the group to redirect the waste-water (shown in Image 6). Local scientists have tested the efficacy of this project and discovered that the newly installed wetlands thus far are filtering out 65 percent of the contamination from the water sources where they are located<sup>26</sup>. The members of the group have also worked to raise awareness about risks associated with the cyanobacteria given that they are toxic to humans and animals and because they create dead zones (i.e., they can consume all of the oxygen in the water, leaving a dead zone where other plants and animals cannot survive) (NASA, 2009).

**Image 5. Community wetland project on public land in Panajachel, Sololá<sup>27</sup>**



<sup>26</sup> Interview #15, January 5, 2011

<sup>27</sup> Source: Christina Bielek, 2010



**Image 6. Tubing installed by community group through private and public land to redirect waste-water through new and pre-existing wetlands<sup>28</sup>**



Both the Ay Mayon Collective and Agua Clara Atitlán follow a philosophy that the process of finding pathways to a more sustainable, resilient and just world should be a collective, participatory, and thoroughly adaptive undertaking, allowing for learning from trial and error and the transformation of organizational strategies according to continual learning and input from diverse stakeholders. The challenge for this study, however, is that much of the existing indicators and frameworks available for assessing organizational achievements do not appear to challenge hegemonic assumptions about the “inevitability” of social hierarchy, and they also appear to value measures of growth, development and political influence over issues of social inclusion or other indicators of socio-ecological resilience. Thus permaculture’s principles can be elaborated as alternative sociological framework for analyzing organizational undertakings as well as for

<sup>28</sup> Source: Christina Bielek, 2010

exploring the meanings and manifestations of socio-ecological resilience for these organizations.

### 3.3. Permaculture and Sociological Theory

The permaculture movement was catalyzed in the 1970s when it became evident that the prevailing development model, despite the rhetoric of progress and democracy, was in fact leading to social and ecological injustices. Australians Bill Mollison and David Holmgren developed the initial conceptual and practical rubric for permaculture in 1974 involving a “jointly evolved framework for a sustainable agricultural system based on a multi-crop of perennial trees, shrubs, herbs ..., fungi, and root systems” (1991, preface). While permaculture has often been reduced by academics to a simple form of organic gardening, its sociological insights are striking:

Permaculture is a holistic system of design, based on direct observation of nature, learning from traditional knowledge and the findings of modern science. Embodying a philosophy of positive action and grassroots education, Permaculture aims to restructure society by returning control of resources for living: food, water, shelter and the means of livelihood, to ordinary people in their communities, as the only antidote to centralized power. (Permaculture Activist, 2004, p. 3)

Permaculture’s emphasis on transforming social structures, returning control of the means of production to ordinary people and decentralized decision making are certainly not new to sociology, as many comparisons could be made to Marxist, social-anarchist, post-colonial and political-ecology paradigms. Of particular semblance and relevance to this study, we can highlight Antonio Gramsci’s concept of *subaltern organization* (1930), Rosa Luxemburg’s *dialectic of spontaneity and organization* (1906) and Karl Polanyi’s notion of *the double movement of societal self-protection* (1944). Numerous contemporary scholars have used Gramsci’s notion of subaltern organization to describe and examine counter-hegemonic practices, struggles against social exclusion, movements for

self-determination and other forms of resistance to neoliberal globalization (hooks, 1990; Barham, 1997; de Sousa Santos, 2002). Focusing closely on the internal dynamics of revolutionary movements (in addition to their counter-hegemonic capacities), Rosa Luxemburg's dialectics of spontaneity and organization stems from a belief that social change can and should emerge spontaneously from below, rather than being led exclusively by a vanguard group from above, and thus should be guided by horizontal, participatory decision making structures (Negt & Kluge, 1972; Meszaros, 1995). Similarly, Karl Polanyi's concept of the double movement has been utilized to understand how the experiences of social and environmental movements reflect an ongoing struggle to define a place for nonmarket social and environmental concerns that are threatened by an increasing emphasis on competitiveness (Barham, 1997).

Another academic paradigm with strong links to permaculture is political ecology — a transdisciplinary field with roots in human geography, sociology, peasant and indigenous studies, social movement theory and community development, which analyzes environmental conditions as they relate to political, social and economic processes at a variety of nested scales, from the local to the global (Adams & Hutton 2007). Not only does political ecology share permaculture's analysis of how socio-political and environmental conditions are inextricably linked, but it also helps to elucidate the ways that nature is understood, and how these understandings are also profoundly political. Further, many recent political ecology initiatives share permaculture's emphasis on community engagement and alternative community development, by pursuing applied or participatory research in pursuit of more democratic and effective models of collaboration with social movements searching for alternative forms of sustainable development (Rocheleau, 2008). Yet several scholars have noted that one of the most pressing challenges or questions in the political ecology field remains how "to develop ways to apply the methods and findings [from academic research] in addressing socio-environmental concerns" (Paulson et al., 2003, p. 208), particularly given that the majority of political ecology research, despite its

liberatory potential, has been largely desk-bound and a-political in practice (Walker, 2007).

In this chapter, I posit that permaculture provides insightful guidelines and methods (that can provide a valuable contribution to political ecology and other sociological fields) both for analyzing socio-ecological processes and for working to build more resilient socio-ecological systems through place-based, grassroots methods. Further, permaculture's principals are already used in many everyday social movement practices (as I will explain in this study), given its pro-active and accessible guidelines, as well as its emphasis on drawing from and enhancing local and indigenous ecological knowledge. By observing and learning from how natural and social systems are linked through multiple interconnections, and by enabling an "ethics of care" and "partnership" between human and non-human entities (Merchant, 1999), permaculture further provides innovative and sustainable design solutions that can be applied both to agro-ecological and social systems<sup>29</sup>. Indeed, by designing systems through careful observation and thoughtful connections among nature and people, permaculture has the potential to help us envision and create more harmonious relations between diverse actors (Holmgren, 2009), including human and "non-human" actors such as plants and animals. While dozens of design principles have been developed over the past four decades by the permaculture movement, this chapter will focus on the

<sup>29</sup> This analysis of interconnections between humans and the environment (as well as the development of design guidelines that can be applied to both contexts) does not reflect a Darwinist or Malthusian belief in "human nature" or that humans should model themselves off of "strictly competitive" relationships in nature in a "struggle for existence." This perspective does, however, allow for an analysis of how social and environmental relations and entities are co-constructed and how they "come into being together" (Murdoch, 2001, p. 111). Without denying the social and historical construction of reality, examining forms of mutual aid in nature (Kropotkin, 1972) also allows for an acknowledgement of "our positive capability for Good" as social beings (Badiou, 2001) and an understanding of how these capacities can help unearth innovative strategies for addressing socio-ecological crises.

following given their relevance to organizational sociology and social resiliency: *observe and interact*; *use and value diversity*; and *creatively use and respond to change*.

### **3.4. Observe and Interact**

According to the permaculture framework, a good design is one that is based on free and cooperative relationships, anchored in thoughtful interaction and the conscious observation of both natural and social landscapes (Holmgren, 2009). As discussed earlier, if we step back and observe the dominant models of design in agricultural and organizational production, we can notice a strong pattern towards uniformity and hierarchical structure. As Perfecto, Vandermeer and Wright examine, most current agricultural development initiatives follow “a rigid industrial model that tends to obliterate diversity and provides a low quality matrix for movement and reproduction of organisms” (2009, p. 79). Observing the co-construction of the physical and social landscapes (Murdoch, 2001), it is important to recognize that, historically, the expansion of industrialized agriculture has not only obstructed more diversified forms of agro-ecological production, but it has also gone hand in hand with the enclosure of common property regimes, leading to the near destruction of collective decision making structures that in many places governed environmental and agricultural resource use (Merchant, 1989). The enclosure of commonly held forests and agricultural lands is particularly significant in the Guatemalan Highlands, where more collective formations of community authority have been continually eroded through processes of colonization, development and post-peace-accord “decentralization” (Wittman & Geisler, 2005).

In a context where, for centuries, indigenous modes of agricultural production, resource management *and* decision making have been systematically devalued by dominant political and economic forces, permaculture

offers principals and design guidelines that work to draw from the strengths of indigenous knowledge, traditions and production modes while integrating new agro-ecological, scientific and social innovations to support communities in building more resilient systems<sup>30</sup>. Permaculture is also primarily focused on drawing from localized and diversified knowledge, in comparison to the industrial system, premised on the dissemination of abstracted and generalized information. As Holmgren notes,

The success of modern scientific agriculture can be attributed in part to the agricultural education system which educated future farmers in modern methods, and the extension system of government, agricultural colleges and chemical companies that provided information to practicing farmers. Over time, a series of generally applicable and standardised farming systems developed replacing the previous diversity created by the unique interaction between land, culture, family history and personal character in pre-industrial times. (2009, p. 217)

Given the historical devaluation of local knowledge and resource-management systems, permaculture emphasizes the need to start with careful observation and continuous reciprocal interaction with the local social and physical environments such that communities can “build the skill and wisdom needed both to intervene sensitively in existing systems and to creatively design new ones” (Holmgren, 2009, p.14).

Such considerations were strongly emphasized by both of the organizations that I worked with in Guatemala, as the process of working towards new organizational formations and agro-ecological projects involved careful observation and interactions with the local environment, community members,

<sup>30</sup> Permaculture is not the only framework that works to strengthen and enhance indigenous modes of resource use (as well as the socio-political structures that govern environmental management), nor does it exist in isolation from similar movements. Other related frameworks include Indigenous food sovereignty (see Morrison, 2011), as well as movements for indigenous self-determination (see Mander & Tauli-Corpuz, 2006).

existing environmental organizations and local authorities. For instance, the coordinators with the Ay Mayon collective formed their group after several years of working together with a well-established environmental NGO (GERO), carefully considering the opportunities and constraints of working with a formal, incorporated organization. In considering different organizational structures, the members reflected on the issues and concerns that emerged for them over the years in relation to the hierarchical structure and top-down management system established by GERO (and other similar established organizations), which they felt excluded many stakeholders from participating and left major decisions to be made by the two directors. As one member said:

There were times when we worked well with the directors [ ... implementing community gardens to help communities recover from Hurricane Stan], but most of the time we never saw them, they would show up and give us a ton of things to do and go, and they seemed to think that they had all of the answers even though they don't live in the communities like we do ...<sup>31</sup>

According to another member of the Ay Mayon collective, the hierarchical governance and funding structure of GERO also led to a situation which fostered self-interest, inaccessible programming and at times even corruption:

When they received a big grant from some funder in the United States to buy land here to establish agricultural plots for rural families, they spent most of the money on building their own house as some supposed model of sustainability. ... And when they left and we started to work more with the community members as an assembly, and to take direction from them to orient our work, the directors claimed that this was not acceptable. They also didn't support us offering permaculture workshops to communities for discounted rates. They charge \$800 for a workshop. And we are talking about impoverished communities. Who can afford \$800?<sup>32</sup>

<sup>31</sup>Interview #18, January 14, 2010.

<sup>32</sup>Interview #4, November 16, 2009.

Given that the majority of rural inhabitants in Guatemala live in conditions of poverty, a fee of \$800 for a permaculture workshop is high. It is possible that such concerns and conflicts are particular to this specific group (rather than representing widespread organizational phenomena). However, it is important to consider how these issues might reflect large structural problems stemming from the neoliberal political-economic context, which can be seen as enforcing a rigid organizational model which is based on a competitive system (not conducive to collective decision-making) and which can be a challenging context for diversified, place-based knowledge and ideas.

The members of Agua Clara Atitlán also engaged in critical discussion of exclusive power structures; however, their analysis centred mostly on the civic government, rather than on larger or more established non-profits. Similar to the collective above, members of Agua Clara Atitlán claimed that local political leaders often lack the accountability and willingness to take affirmative action to resolve urgent issues, such as the issue of wastewater being directed straight into Lake Atitlán. Such issues were prevalent when the group proposed a wetland project to the local government as a partial solution to the problem. As one active member notes,

The government has always talked about projects to help the lake, and only once the cyanobacteria appeared did they begin to make concrete plans. But in the end, they don't do anything. Nearly five years have gone by since Hurricane Stan destroyed the industrial plants, and so the people here got tired of so many meetings and promises and no actions. And when we invited the mayor to discuss our project, he just came once to the site, and he didn't even consider our project, he told us we had to produce a ton of reports, and he told us that we had to stop the wetland project right away, and if we didn't stop, he would come and cut down all of the ecological plants.<sup>33</sup>

<sup>33</sup> Interview #14, January 5, 2010.



According to another member, the government officials' obstruction of the wetland project not only relates to their inadequate awareness of the issue, but also their fear that a more successful project could expose the inadequacies of their own policies and actions to save the lake, or lack thereof:

When we proposed the wetland project in this area, the mayor didn't even know that it was public land [and therefore land that we were entitled to use]. And we had to do a lot of research to find out this out. Then the mayor said that the only thing that our wetland project would do is to give a negative impression, leading to sickness and bringing mosquitoes.<sup>34</sup>

Much like the Ay Mayon collective's criticism of non-profit management methods, members from Agua Clara Atitlán affirmed that a major problem with the civic government's policy framework relates to the top-heavy decision making structure, which has generally failed to take the needs and proposals of the local population into consideration, and instead focusing on the preservation of self-interest and the status quo. Such critical analyses of the current governance landscape are consistent with concerns raised by scholars such as Rojas who notes, "individual leaders and organizations are constantly playing the 'fame game'- reinventing the wheel and promoting their own names instead of focusing on what is truly needed to bring about change" (2007, p. 192).

When political and organizational leaders are accused of self-interested or undemocratic actions, the claims are often minimized or framed as a simple case of "bad apples," particularly in the media. Yet, as many of my research participants asserted, the problem may have much more to do with the top-down decision-making structures that are being implemented than with the individual leaders themselves. That is, they may find the person in charge objectionable, but they believe that if decisions were made in a more fair and open way, then

<sup>34</sup> Interview #16, January 6, 2010.

different standpoints would likely not be such a problem. In this sense, the problem may have less to do with the quality of the apple and more to do with the shape of the orchard.

The permaculture activists who left their jobs at GERO and formed the Ay Mayon collective also related problems with power abuses to the logic and requirements of working with large funding entities, particularly foreign agencies. As one individual noted:

Here in Guatemala, a huge amount of funding comes from external sources, and all of our work has to be packaged carefully into neat little boxes, and directed towards achieving measurable results that are desirable to the funder, like giving credit to poor people. But this doesn't mean that we are able to resolve any of the core problems that we are facing, like food insecurity and lack of access to land.<sup>35</sup>

Another common concern regarding external funding was that organizational goals and measurable outputs have to be mapped out over an extended period of time. This can make it very difficult to modify objectives and projects based on the changing needs and concerns of the communities at large. One interviewee observed that such an acquiescent and bureaucratic relationship between donors and organizations can lead to a process in which the organization's mission and values are fundamentally compromised:

It's unfortunate, because we always try to talk about permaculture, and food sovereignty, and the self-determination of communities, to be free from external pressures, but we end up being completely dependent and controlled by external pressures and bureaucracies when we rely so heavily on large donors.<sup>36</sup>

<sup>35</sup> Interview #17, January 13, 2010.

<sup>36</sup> Interview #18, January 14, 2010.

Indeed, both groups expressed concern that as movements become non-profitized and funded by large donors, they begin to forfeit a certain level of autonomy, leading to a departure from objectives and a shifting of accountability from constituents to funders. In other words, these groups have not found the emphasis placed by large funding agencies on “high-yielding” projects to be the most suitable for the local social and ecological contexts.

Returning to permaculture’s design guideline *observe and interact*, the research participants’ observations illustrate that numerous concerns exist with the dominant models of hierarchical decision making and organizational funding which operate through a simplified, standardized and arms-length framework. As local actors interact with these extra-local structures, it becomes increasingly clear that the mainstream organizational models have not, at least in the case of these two collectives, been conducive to the goal building participatory, horizontal organizations that are capable of addressing local social and environmental concerns. With an eye to resiliency for social organizations, these reflections suggest that hierarchical decision-making and strict funding structures could pose various risks to these types of organizations, by inhibiting cooperative relationships between organizations and other stakeholders, by fostering exclusion based on existing social inequalities, by compromising organizational objectives and by restraining organizational capacities to recover from these stressors. Drawing from these observations and an analysis of how social and physical landscapes “come in being together” (Murdoch, 2001, p.111), a relationship can be observed between the global expansion of industrial agricultural systems based on uniformity and monocultures and the organization of groups in the non-profit-sector into more hierarchical, top-down decision making formations; while the agricultural landscape has come to be based on the dominance of one crop and the weeding out of others, the socio-organizational landscape tends to be based on the dominance of one agenda, or singular management style.

In contrast to the industrial/neoliberal organizational models, permaculture as an organizational framework offers insights into the process of accumulating diversified, grounded experiences so local organizations and agro-ecological projects can be advanced in more participatory ways, be carefully tailored to the local situation, and be receptive to local knowledge and value systems. As Holmgren (2009) posits, “good design depends on a free and harmonious relationships to nature and people, in which careful observation and thoughtful interaction provide the design inspiration, repertoire and patterns” (14). As one permaculture activist involved in the Ay Mayon collective noted:

Working with permaculture in my farming and teaching practices has helped me to better understand how we are not just trying to improve environmental conditions. Permaculture is also something that we do with each other, in looking at how to work together more cooperatively.<sup>37</sup>

The permaculture principal *observe and interact* provides insights into detecting the relationships and patterns that come to shape social and physical environments, providing communities with insights into envisioning and creating new or modified socio-ecological formations suitable for unique local contexts. As the next sections will explore, permaculture fosters the redesign of unhealthy systems towards more locally suitable and resilient models (McManus, 2010), not only through careful observation and interaction, but also through using and valuing diversity and creatively using and responding to change.

### **3.5. Use and Value Diversity**

Given the concerns raised in the previous section regarding mainstream organizational model and funding structures, some logical questions arise as to

<sup>37</sup> Interview #18, January 14, 2010.

what alternatives might exist for organizations in terms of decision-making and organizational structures as well as funding and sustaining their work? To start, we can assess these issues through permaculture's emphasis on using and valuing diversity.

The permaculture philosophy stresses that functional and resilient designs should allow diverse elements to coexist cooperatively, and be arranged in a way that serves the needs and accepts materials from other elements (Mollison, 1991). In the management of agro-ecological systems, an important aspect of this principal involves acknowledging the larger matrix in which these systems exist, and allowing for cooperation between agricultural and natural elements rather than fragmentation (Perfecto et. al, 2009). An example of an agricultural design that effectively integrates diversity is agro-forestry in which “shade tree cover protects crop plants against extremes in microclimate and soil moisture fluctuation,” and in which agricultural and forest elements work together as integrated wholes (Altieri, 2010, p. 125). Another example of intrinsic diversity in agriculture is the milpa system, as illustrated in the opening vignette of this chapter, which promotes web-like, reciprocal relationships between diverse elements. The permaculture movement has drawn from many of these traditional practices to create diversified agricultural designs that emphasize careful intercropping (to promote natural pest control and other benefits based on functional connections between species), that use existing biodiversity and habitats and that tie nutrient cycling with utilization of kitchen matter and other on-farm inputs (Holmgren, 2009). Given that permaculture guidelines can also be applied to the analysis and planning of social ecologies, how should we understand issues of connectivity and diversity in social organizations and their pertinence to organizational resiliency?

Carolyn Sachs (1994) posits that in the fields of biological, social and cultural studies alike, diversity has often been interpreted as difference, leading to a denial of the importance of connections between diverse groups and an

avoidance of issues of redistributing power and shifting unequal power relations. For example, in the political and non-profit world, community consultations are often undertaken with an emphasis on including stakeholders from different backgrounds. However, these forms of consultation do not always mean that a diversity of stakeholders actually participate meaningfully in decision making, project design and implementation, nor does it mean that structural power issues are addressed and reshaped. For example, Charles Hale notes that the proponents of the neoliberal doctrine in Guatemala have been successful in mobilizing a pro-active recognition of cultural rights for indigenous citizens — including new opportunities for political participation — yet such recognition entails “a dichotomy between recognized and recalcitrant indigenous subjects, which confronts the indigenous rights movement as a ‘menace’ even greater than the assimilationist policies of the previous era” (2002, p. 485).

In contrast to forms of top-down consultation without participation, Sachs notes that grassroots social movements may provide new “pathways to diversity — not a shallow diversity that merely emphasizes difference, end products or biodiversity at the expense of cultural diversity and restructuring of power relations” (1994, p. 10). Authors such as Desmarais (2007) and Eschle (2001) also maintain that the ability of a movement to provoke meaningful change hinges on its “commitment to distribute power among all participants and its ability to develop structures and mechanisms to ensure inclusive democratic decision making and participation” (Desmarais, 2008, p. 138). For many local organizations, including the two groups interviewed for this project, the process of working to incorporate more democratic and inclusive forms of decision making has involved a strong push to revalue and reintegrate participatory indigenous governance models while also working to find new pathways to using and valuing diversity through the permaculture framework. While the groups I interviewed may be new, and may have faced some initial challenges, their experiments in organizational diversity offer valuable insights into different models of organizational structuring and governance.

For the Ay Mayon collective, this process started when they were working with the organization GERO, when they worked as the main project coordinators. As one member stated:

We used to organize in an assembly with the community, which included many diverse members from the local community, a group of elderly producers, groups of women, etc., and we would talk to them about their needs, our shared needs and the projects that we should be focusing on as an organization. These assemblies were also what led us to stop having a director, as we didn't think it was appropriate to have only one person in charge with executive decision-making power, and the director agreed to step down and become a coordinator...<sup>38</sup>

The members of the collective had transformed the structure of GERO as a result of decisions that were made at regular community assembly meetings and through conscious and continual group reflections on the problems associated with top-down organizational structure (as identified in the previous section). The coordinators thus began to work together non-hierarchically, making major decisions about the direction of projects through consensus and with regular input from the assembly. The members of the collective continually expressed the many positive benefits of working collectively without a director, which allowed for a "much greater level of participation from diverse sectors," for "direction to come directly from the assembly," and for "integrating principals of permaculture and food sovereignty into everyone's everyday lives."<sup>39</sup>

While the members of Agua Clara Atitlán have chosen to elect a director to serve as the main spokesperson for the group, all of the members who I interviewed emphasized the importance of having diverse sectors of the lake's communities actively integrated in the design and implementation of projects,

<sup>38</sup> Interview #3, November 16, 2009.

<sup>39</sup> Interview # 18, January 14, 2010.

including members of diverse social classes, ages, ethnicities, educational backgrounds, and professions (including fishers, teachers, farmers, doctors, scientists and farmers.) As one fisherperson involved in the group noted: given that “we are all of the lake, we all need the lake to survive.”<sup>40</sup> Thus membership in this group is very fluid, and anyone can participate who is interested and committed to saving the lake. The group’s director also does not have any executive powers, as the group makes all major decisions by consensus in their meetings from the design of the wetland to the politics of gaining access to private land to install tubing for the re-direction of wastewaters.

Another important aspect of diversity discussed by participants was diversity in organizational funding sources and livelihood strategies. Given the Ay Mayon collective’s concerns relating to formal incorporation and working with larger donors, funding is being pursued from small and diversified sources, including gathering and selling heirloom seeds, the sale of honey from the bee-keeping project, the sale of medicinal-plant seedlings, as well as facilitating permaculture workshops with small groups or with other partner organizations such as the REDSAG. As one Ay Mayon member noted: “we all need to receive some food and revenue to survive, but if we really want to promote permaculture at a systemic level, then making money should never be our first priority.”<sup>41</sup>

Although members of Agua Clara Atitlán work on a completely voluntary, non-remunerated basis, small amounts of funding for the organization and for materials are pursued through fundraising drives on a busy street corner, which also serves as an opportunity to educate people passing-by about the contamination of the lake, the risks of swimming in and drinking the lake water,

<sup>40</sup> Interview # 13, January 4, 2010.

<sup>41</sup> Interview #23, February 2, 2010.



and the importance of pressuring policy-makers to take immediate actions and to work more cooperatively with local community groups. Another funding option pursued by the group is the production of organic fertilizer, given the large amounts of fruit and plant matter that are produced by the wetland that are not fit for direct human consumption.

The exploratory experiences of these organizations in structuring their decision-making processes non-hierarchically and in actively consulting with the larger community show a commitment from the members to sharing power and valuing diversity in all aspects of their work, as promoted through the permaculture framework. In seeking out alternative funding sources, the members also show a dedication to maintaining full autonomy in their decision making despite the financial insecurity that the organizations often experience as a result.

Although the absence of hierarchical decision-making and stable funding structures can create concerns about the regulation and durability of a movement or organization, the members of Ay Mayon Collective and Agua Clara Atitlán stressed that, after a lot of discussion and experimentation, they felt these choices were the most equitable and appropriate for their unique group situations and cultural contexts. As a member of the Ay Mayon collective explained:

I think that there are a lot of misunderstandings about what working non-hierarchically means. Some people think that if you don't have a director,

then you are an anarchist, and anarchism is associated with chaos<sup>42</sup> ... I think it's important to talk to people more about this and explain there is a structure to what we are doing.<sup>43</sup>

Thus, a significant component of the struggle to use and value organizational diversity for these groups (particularly the Ay Mayon collective) has been working to talk through and dispel dominant conceptions regarding social and organizational hierarchies, and to find new ways of reintegrating indigenous decision-making mechanisms into organizational practices, such as community assemblies.

It is interesting to note that non-hierarchical organizations have not been the only horizontal systems to be dominantly viewed as chaotic and unstable: agricultural development officers have long viewed Guatemala's *milpa* plots or "gardens of chaos" (Anderson, 1952 as cited in Wilkes, 1992) as backwards and unproductive (Scott, 1998), needing to be re-ordered in straight linear rows. As Iskason notes,

With its linear logic, Western science has been unable to fully comprehend the web-like relationship that defines the interaction among the plants in the *milpa* ecosystem. The inability of modern science to fully grasp the complexity of these gardens of chaos has led many agricultural 'experts' to label traditional *milpa* farming as ... something that needs to be eradicated or modernized (2007, p. 54)

<sup>42</sup> In a recent article, Mathew Hall (2011) offers an insightful analysis of the promise of anarchism as a broad political attitude in establishing a fair, free and equitable society in contrast to dominant portrayals of anarchism as disorderly and chaotic. Hall also promotes the concept of ecological anarchism to help "make way for the larger pragmatic actions needed to properly decentralize our relationships with the natural world" (2011: 387) and with each other. Many parallels exist between this analysis and the perspectives of members of the Ay Mayon collective and Agua Clara Atitlán, although they have drawn most of their insights from indigenous modes of decision-making and the permaculture framework, rather than explicitly anarchist philosophies.

<sup>43</sup> Interview #8, November 18, 2010.

Like non-hierarchical governance systems, many traditional indigenous agro-ecology models with diverse, non-linear principles have been systematically devalued through processes of colonization and “development.” This devaluation, however, does not mean that traditional systems are less productive or backwards. In terms of the *milpa* system, as discussed in the introduction to this chapter, research has shown that this form of traditional agriculture is at times more productive and sustainable than conventional, industrial agriculture. Permaculture as an agro-ecological paradigm works to strengthen and enhance these forms of diversified agriculture in a context where they have been systematically devalued. The potential for promoting more resilient social organizations through reintegrating and innovating traditional indigenous forms of governance and “learn[ing] to live again without dominating each other”<sup>44</sup> can also be seen as an important aspect of permaculture’s guideline of using and valuing diversity.

At the same time, it is important to recognize that not all organizations utilizing permaculture emphasize organizational diversity in the same way as the Ay Mayon collective and Agua Clara Atitlán, and some may actually be structured quite hierarchically, utilizing permaculture’s design guidelines in agricultural practices exclusively<sup>45</sup>. However, as emphasized by the two organizations, permaculture’s promotion of diversity, horizontality and reciprocity can be extended beyond the realm of agricultural production to be applied to social and organizational relations, and this application may be an important part of integrating permaculture holistically into organizational practices and creating more resilient social movements. Although permaculture emphasizes the

<sup>44</sup> Interview #2, November 11, 2009.

<sup>45</sup> In fact, members of the Ay Mayon collective cited unequal power relations as being one of the main reasons why they left their jobs with the organization GERO, even though this organization used permaculture explicitly in its environmental reconstruction efforts.

development of locally tailored designs, in many ways, these two collectives in the Guatemalan highlands challenge permaculturalists everywhere to consider integrating permaculture's principals more holistically into social as well as agricultural practices, emphasizing the value of diversity and horizontal relationships in organizational ecologies. These reflections on using and valuing organizational diversity appear to stem largely from the collectives' emphasis on and integration of indigenous models of participatory governance and organizing. Thus, while the permaculture literature has drawn from indigenous agriculture and resource-management insights fairly extensively, it may have more work to do in acknowledging, revaluating and integrating indigenous socio-political insights.

For the Ay Mayon collective and Agua Clara Atitlán, permaculture's guidelines have been helpful, particularly when combined with indigenous organizing mechanisms, in developing new ways of using and valuing diversity and fostering web-like, reciprocal social relationships in organizational practices. While it is perhaps too early to say if these choices will make the organizations more resilient or stable in the long term, they certainly offer promising models for enabling equitable and participatory decision making, and (as I will explore in the next section) creatively using and responding to change.

### **3.6. Creatively Use and Respond to Change**

While the stability of natural and social systems is an important component of permaculture, the "permanence" of these systems depends, to a very large extent, on flexibility and change (Holmgren, 2009). This symbiotic relationship between permanence and change may seem like a paradox; however, as we enter a new phase of a massive global environmental crisis, the need for drastic changes becomes more evident for the stability of the planet and the living beings that inhabit it. In the previous section, I reviewed how organizations are attempting to operationalize diverse visions of organizing

through a flexible process of engagement within their own organizations, with their respective constituents, and with diverse sources of revenue. Now I consider how such flexible processes also allow for the emergence of creative practices for using and responding to change at a wider or more societal and environmental level. The permaculture principal of “creatively using and responding to change” has two components: “designing to make use of change in a deliberate and cooperative way, and creatively responding or adapting to large-scale system change that is beyond our control or influence” (Holmgren 2008, p. 239).

For the members of Agua Clara Atitlán, the bloom of cyanobacteria clearly represented an issue that appeared beyond their control, yet with the dedication of dozens of volunteers to experiment with an innovative project, the wetland project was successfully implemented. The members of the group have, of course, dealt with some substantial design errors and difficulties along the way; however, they have taken these challenges as an opportunity to learn from experience, and have shown a great degree of flexibility in their approach. One of the biggest challenges that the group has run into relates to the pattern they used for channelling the water through the wetlands: while they used a winding design (as recommend for wetland filtration), the spaces between channels were found to be too small and the shapes were overly calculated. As one member reflects: “we made the mistake of trying to impose a winding design on the landscape, rather than using the circular design that the landscape already possessed.”<sup>46</sup> The group also make the mistake of digging a very linear line from the water pipe directed to the wetland. As a result of the straightness of this initial channel, the wetlands were flooded when a new wastewater source was added to the channel, nearly destroying the plants. Thus the channels were redesigned to

<sup>46</sup> Interview #16, January 6, 2010.

make use of larger circular shapes to slow and better maintain the flow of the water. The group was also able to take inspiration from a successful wetland project, with over 10 years of growth, in the town of San Lucas Toliman across the lake that was established for the filtration of sediment (shown in Images 7 and 8). As Agua Clara Atitlán gains momentum, there are also many opportunities for increasing the effectiveness of the project, and establishing wetlands by other wastewater pipes.

**Image 7. Previous sediment build-up blocking entrances to building in the town of San Lucas<sup>47</sup>**



<sup>47</sup> Source: Christina Bielek, 2010

**Image 8. Successful wetland project that was established to filter and impede sediment from entering the community<sup>48</sup>**



The Ay Mayon collective, in a similar manner, is working to support local families and communities in the lake area to adopt sustainable family farming models, based on the implementation of integrated farming systems, and the protection and conservation of local natural genetic resources. This work is particularly significant given that 72 percent of rural inhabitants in Guatemala live in poverty, and Sololá has the third highest rural poverty rates in the country (INE, 2006). Given these factors, Guatemalan president Alvaro Colom recently declared a “state of public calamity” over what he described as a dire hunger and nutritional crisis across Guatemala stemming from climate change (Democracy Now, 2009).

Much of the collective’s work thus involves collaborating in a flexible manner with other small cooperatives associated with the REDSAG, who are working with diversified polycultural systems to produce grains, fruit trees, vegetables, herbs while also preserving native and heirloom seeds in the

<sup>48</sup> Source: Christina Bielek, 2010

struggle against food insecurity and malnutrition (see Images 9 and 10). Partner organizations include the Mayan campesino association Tzutujil Cerro de Oro (ACOMAT by its Spanish acronym) and New Dawn Santiago Atitlán in the canton Panabaj, which have focused on the production of tree nurseries, home gardens, and medicinal plant cultivation. The Ay Mayon collective is providing support through permaculture workshops and the practice of integrated production systems, which can include assisting communities to take advantage of small and medium-sized garden spaces for raising animals and the cultivation of food and medicinal plants for local household consumption, drawing from the principals of permaculture and food sovereignty. However, the collective acknowledges that the lack of access to land in Guatemala is a huge impediment to this work — Guatemala has one of the most unequal distributions of land in the world, with an estimated 2 percent of the population owning 72 percent of the agricultural land (Krznaric, 2006; CEIBA, 2008) — thus pointing to the need for wider, more systemic changes to complement the work of agro-ecological collectives.



**Image 9.** *Permaculture garden containing a diverse arrangement of edible and medical plants for household consumption and sale at the local market<sup>49</sup>*



**Image 10.** *Seedlings being prepared for sale and exchange<sup>50</sup>*



<sup>49</sup> Source: Christina Bielek, 2009

<sup>50</sup> Source: Christina Bielek, 2009

Another important aspect of "responding creatively to change" paradigm that Ay Mayon is advocating for through the permaculture and food sovereignty frameworks calls for re-valuing and re-integrating traditional agro-ecological knowledge. As one member notes:

For me, permaculture is about living healthily and working as our ancestors did. 500 years ago, before the Spanish arrived, everyone lived off the land without money, and cement and all these cars. There was much less agriculture than what we see today, and more wild foraging, but there was an abundance and variety of food, the rivers and the forests were not contaminated like they are today. And unfortunately when they discovered this, and saw all of the riches, they came and taught the people the word development and told them that they should be developed. And they did this so that they could take away all of the riches, all of the minerals. And now the richest areas are the poorest.<sup>51</sup>

This member's emphasis on historical losses of political autonomy as well as the numerous socio-ecological consequences of colonization appear to give important meaning to his current work with the Ay Mayon collective, while informing his analysis of the current politicized environment wherein the majority of people face an exclusionary and domineering regime. In response to these forms of colonization and neo-colonization, the group emphasizes the need to integrate and revalue traditional knowledge relating to agricultural production, wild and medicinal plant gathering and uses, as well as seed saving and preservation. These activities form an integral part of the group's efforts to work with communities in establishing a more resilient and equitable food system and in regaining food sovereignty.

It is important to remember that although such approaches draw on traditional knowledge, it does not mean that they are "regressive" or hostile to technological innovation. As another member remarks:

<sup>51</sup> Interview #23, February 23, 2010.

We can't just go back to the ways things were. Our culture and environment have changed, and we can't just expect, for example, that we would be able to cure cancer using traditional plants. And we are always talking about "rescuing" traditional knowledge, but really we should be talking about "reintegration" and using this knowledge to help us find solutions that are appropriate for this time and place.<sup>52</sup>

Indeed, other proponents of integrating traditional knowledge into agro-ecological practice assert that technology is "path dependent" in that "its development is conditioned by the mode of production in which it is embedded, so that technological innovation under peasant and small-scale farming would take different paths than innovation under capitalist industrial agriculture" (Bello & Baviera, 2009). Given that the collective takes a flexible approach, allowing for agricultural designs to draw from both traditional and "modern" methods and to be adapted in site-specific ways to highly variable farm conditions, they offer a promising pathway to assisting families to protecting crop diversity and attain food security.

Such initiatives are also particularly important in the context of high levels of environmental vulnerability in Guatemala given that small-scale, diversified farms have often been found to take better care of natural resources than their large counterparts while reducing soil erosion (Rosset et al., 2006; Altieri, 2010; Frison et al., 2011). Surveys conducted after Hurricane Mitch in Central America demonstrated that farmers using practices such as intercropping, permaculture and agro-forestry suffered less from mudslides than their conventional neighbours. The study conducted in Nicaragua, Honduras and Guatemala showed that diversified plots had 20 to 40 percent more topsoil, greater soil moisture, less erosion and experienced lower economic losses than neighbours using monocultures (Holt-Gimenez, 2001).

<sup>52</sup> Interview #8, November 18, 2010.

By drawing from traditional practices and experimenting with wetland construction and agro-ecology in new and flexible ways, the two groups are working to find creative mechanisms to address some of the most pressing issues facing local populations in Sololá: climate change and food insecurity. While such mechanisms might not serve as full or final solutions to these issues, the groups have shown a willingness to creatively use and respond to change, and their flexible approach denotes that they will be able to continually adjust their projects in the future as needed to respond to socio-environmental issues in new and innovative ways.

### **3.7. Towards a Resilient Organizational Paradigm**

While the organizations reviewed in this chapter may face precarious conditions in attempting to find ways to working non-hierarchically, in attaining funding from diversified sources, and in implementing unconventional projects, such precariousness or “messiness” may actually be what helps them to contribute to stability at larger societal and environmental levels. As Holmgren notes,

We live and design in a historical context of turnover and change with no possibility of stability or sustainability. A contextual and systemic sense of the dynamic balance between stability and change contributes to design that is evolutionary rather than random. (2009, p. 239).

Not only is the organizational and programmatic flexibility exemplified by these two organizations consistent with permaculture’s design guidelines, but it also reflects some important indicators of socio-ecological resiliency. Although the word resiliency has often been associated with durability, scholars such as Walker, Holling, Carpenter and Kinzig (2004) and Folke, Carpenter, Walker, Scheffer, Chain and Rockstrom (2010) have stressed the significance of adaptability and transformability in achieving and maintaining socio-ecological resilience. Adaptability in this context refers to the capacity of socio-ecological

systems to “learn, combine experience and knowledge, adjust its responses to changing external driver and internal processes, and continue developing ... ” (Folke et al., 2010, para. 9). Transformability, similarly, refers to the capacity to change to create a new system “when ecological, economic, or social structures make the existing system untenable” (Folke et al., 2010, para. 10). Drawing from permaculture’s principles and indigenous socio-ecological knowledge, the Ay Mayon collective and Agua Clara Atitlán have both demonstrated their ability to adapt, adjust, innovate and transform in the face of multifaceted and interconnected social and environmental vulnerabilities, thus reflecting their capacity to promote and exemplify resiliency. Given that the potential of such innovative and unconventional initiatives to contribute to more resilient organizational and ecological systems, there is a great need to further investigate and support grassroots movements as we face a future of social and climatic uncertainty.

## 4. Conclusion

*The politics of partnership with nature, as it is being shaped in the everyday lives of women and communities, is a politics of rebuilding connections, and of regeneration through dynamism and diversity.*

(Shiva 1997, p. 64)

With the convergence of the climate and food-system crises, communities across the globe are increasingly organizing to take back control of food and ecological systems, territories, cultural traditions, farming practices, and modes of participation/decision making. The purpose of this thesis project has been to offer a glimpse into some of these struggles in the context of highland Guatemala, particularly as they relate to the food/seed sovereignty and permaculture paradigms, based on the lived experiences and perspectives of rural women, farmers and members of grassroots environmental collectives.

The first half of this thesis has focused on seed relations, highlighting women's (often unacknowledged) historical and contemporary roles in seed cultivation, saving and exchange practices as well as in the preservation of agrobiodiversity. Chapter two highlights how the colonial and neo-colonial agricultural "modernization" projects in Guatemala were accomplished through the continual appropriation of indigenous lands, the implementation of coerced labour systems, the widespread (and often state-sanctioned) use of violence and the marginalization (and later transformation) of indigenous and small-scale farming practices. Not only has agricultural modernization compromised subsistence production, increased the country's dependence on imported food and threatened local food sovereignty and agro-biodiversity, but it has also gone hand in hand with the expansion of gender inequalities, having varying but ongoing negative impacts on rural women's workloads, access to land, economic

power in the household as well as family nutrition and health. For these reasons, local seed saving and exchange activities, in concert with wild-plant preservation and other strategic food sovereignty mobilizations, have come to represent important sites of struggle for women in Guatemala as they are “rooted in a set of principles and values that spring from the struggle for land and territory, in order to safeguard our sovereign capacity to produce, preserve and provide food to our peoples” (La Vía Campesina, 2008, p. 8). As Jack Kloppenburg (2010, p.152) notes,

As both a foodstuff and means of production, the seed sits at a critical nexus where contemporary battles over the technical, social and environmental conditions of production and consumption converge and are made manifest. Who controls the seed gains a substantial measure of control over the shape of the entire food system.

Yet as more than a foodstuff, means of production and site of political mobilization, seeds are also embedded with cultural meanings, traditions, historical struggles and gender relations. While the gender relations embedded in seed relations and campesino movements have at times been seen as oppressive to women by some feminist researchers, I have argued that the Guatemalan context merits a more nuanced analysis, taking into account the indigenous principals of gender balance and complementarity; the colonial and neo-colonial processes that have led to rising gender inequalities, gender violence and the systematic devaluation of women’s agro-ecological knowledge; as well as the fact that strategic gender analyses can and are happening within the Guatemalan food sovereignty movement. In this sense, it is important to acknowledge how the movement towards seed sovereignty does not only apply to issues of production, consumption and the struggle for equality in the larger global food system, but also to efforts to create greater equality within local movements, households and everyday personal interactions and experiences. Thus my thesis topic moves as a matter of course from seeds to syndicates.

The second half of this thesis has focused on two community movements in the department of Sololá Guatemala that, as an alternative to the top-down power structures inherent in mainstream development models, are organizing as grassroots collectives and drawing from permaculture's design guidelines to find innovative approaches to address socio-ecological vulnerabilities without significant support from the state, corporations, or incorporated non-governmental organizations. Drawing from permaculture's principles such as *observe and interact*, *use and value diversity* and *creatively use and respond to change*, these organizations are offering important critiques of industrial food and development models (not only as they relate to agro-ecological issues, but also to organizational structures); emphasizing horizontal, collective structures, inclusive community participation and non-hierarchical decision making; as well as experimenting with flexible and creative approaches for addressing vulnerabilities at the wider agricultural, environmental and societal levels. While these collectives may face varying levels of financial insecurity, transience, and instability in working non-hierarchically and implementing unconventional projects, the adaptability and transformability of their approaches exemplify the principals of socio-ecological resiliency as they demonstrate a willingness and capacity to create a new system "when ecological, economic, or social structures make the existing system untenable" (Folke et. al, 2010, para. 10).

In challenging the dominant food and development models and in formulating collective visions of the future, social movement obstacles are not merely technical, but also political and social. The struggle to put seeds back in the hands of farmers, (re)integrate ecological farming and resource-management models, and ensure access to safe and nutritious food necessitates strategic actions to wrestle control from the hands of corporations and centralized power (GRAIN, 2009). These transformative agro-ecological and political goals in turn necessitate strategic social commitments and actions to distribute power and allow for democratic and inclusive participation *within* social movements (Desmarais, 2007), particularly as relating to issues of gender, race and class



(Patel, 2007b). As a whole, this thesis has explored how the experiences of small-scale farmers and grassroots collectives offer insights into the process of working towards these goals in the context of highland Guatemala.

Given that these goals are a process as much as an end, and given that constraints and opportunities for food sovereignty, permaculture and resiliency will inevitably change across temporal and spatial scales, there is a great need to further investigate the thousands of movements across the globe working towards sustainable agricultural production and environmental management, self-determination, democratization, and social equality. In particular, there is a need to further investigate and foster greater awareness of grassroots seed preservation and exchange activities (especially in areas such as Guatemala where these exchange practices have been historically devalued and under-researched), such as the creation and maintenance of seed banks and the revitalization of seed *casamiento* events. With the proposed establishment of areas free of mining, transgenics, agrochemicals — and potentially adding areas free of violence against women to this list —, future studies could examine the opportunities and challenges for these projects as they are implemented and expanded. Quantitative research would be useful to map and document the extent to which these projects contribute to agro-biodiversity, household food security, nutrition, as well as other aspects of farmer livelihoods and women's rights. Future qualitative research could help bring greater awareness of the experience of these movements in working holistically to address converging agro-ecological vulnerabilities and power asymmetries.

A very notable, and extremely alarming aspect of current social-movement experiences in the global south, and particularly in Guatemalan context, which I was not able to touch on extensively in this thesis is systemic violence. The acknowledgement and investigation of this violence is extremely important in the study of radical social and environmental change given that it is often poor, *campesino* and indigenous peoples who are targeted and put into direct physical

harm when exercising their rights (Patel 2007a), when challenging the illegal appropriation and contamination of their lands by mining companies and mega-developments, when unveiling the artificial nature of neoliberal technologies of “democratic consultation” and when attempting to cultivate alternative production and governance regimes. It is an extremely troubling irony that the people working to cultivate and share some of the most valuable mechanisms for addressing the food and climate crises are often the ones who are subjected the most to violence and other forms of economic and social exclusion. Exposing and challenging these forms of violence and exclusion can thus be seen as vital to promoting more resilient and equitable social, environmental and food regimes.

The individuals and groups that I had the opportunity to interview and work with for this thesis project have demonstrated an incredible level of bravery, creativity and perseverance in challenging dominant development paradigms that have for centuries prioritized corporate profits over environmental protection and local food security. Their struggles contribute to our understanding of the promise of small-scale farming systems and grassroots movements who, in the face of an incredibly destructive, violent and domineering political-economic regime, continue fighting for food sovereignty, social equality, socio-ecological resiliency and authentic democratic participation.

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