

# Food for Thought: The Role of University Institutions in Reforming the Food System

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**FOOD FOR THOUGHT:  
THE ROLE OF UNIVERSITY INSTITUTIONS IN  
REFORMING THE FOOD SYSTEM**

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## ABSTRACT

This paper examines the capacity of post-secondary institutions, namely colleges and universities, to assist in the development of more sustainable, socially just food systems. The global, industrial paradigm of food production and distribution creates innumerable problems related to human health and ecological degradation. Due to its reliance on cheap energy and government subsidies, in conjunction with the social and environmental costs associated with it, the industrial food system is not sustainable in the long-term. The opening chapters of this thesis analyzes the dominant trends of food production and distribution, and explores the alternative movements that have propagated in response to the devastating failures of the industrial food system. Alternative food initiatives in the United States range from direct marketing opportunities like farmers markets and fair trade organizations, to political movements like Farm Bill reform efforts.

For various reasons, the education sector has demonstrated vast potential to incubate and advance these alternatives. This thesis explores the main initiatives gaining momentum throughout the education system, and attempts to discern the potential for educational institutions—in particular, institutions of higher education—to support local, sustainable agriculture and to empower the next generation of producers and consumers to take back control of their food system. Since the unique role of higher education in reforming the industrial food system remains in the realm of speculation for the time being, this paper also provides a concrete case study of sustainable food initiatives at Boston College, in hopes that further studies of this kind will continue to encourage the transition from speculation to reality.

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Also, a sincere thanks goes out to all of those members of the Boston College community that took time out of their hectic schedules to assist my case study research. Perhaps the most gratifying aspect of this thesis has been the personal connections I have made while interviewing colleagues, acquaintances, and friends.

## INTRODUCTION

The corporate, industrial food system provides us with large amounts of food at cheap prices. Unfortunately, the price tags attached to our groceries do not take into account the detrimental costs endured by our environment, our farmers, our local communities, and our health. From seed to plate, it takes 7-10 times more energy to grow, process, and transport food than is contained in the food itself. Food production accounts for 1/3 of all green house gas emissions, while about 40 percent of agricultural emissions come from the widespread use of chemical fertilizers and pesticides integral to conventional farming techniques. Industrial, monocropping methods produce additional ecological damages including: contamination from fertilizer, pesticides, and factory farm wastes, carbon emissions from processing and transportation, and soil exhaustion. Beyond ecological degradation, modern methods of food production and distribution directly contribute to chronic health epidemics and food-borne illnesses.

The global food system is based on a model of neoliberal capitalism that is ecologically inefficient and utterly unsustainable. A handful of transnational food conglomerates control the global food system, making billions of dollars while more people than ever before suffer from food related illnesses ranging from starvation to obesity. These corporations rule from the top down, and their decisions about how the rest of the world eats are based on quarterly profit margins instead of long-term human and environmental health. Meanwhile, most consumers have become so alienated from the processes of food production that they do not consider the politics underlying the food they eat. In the United States we have been taught to value food as a commodity, as fuel for our bodies that needs to be able to affordable to us. We have not been taught about the

costs we pay in the form of health care bills and government subsidies. Even worse, we have lost valuable knowledge about the intrinsic value of food that nourishes our communities, our culture, and our physical beings.

Citizens and organizations throughout the world have begun to mobilize around the prominent failures of the food system and to demand sovereignty over the processes responsible for feeding them. In the US alone, diverse groups of people are working together to create alternative methods of food production and distribution that benefit them and their communities as opposed to the CEOs of agribusiness companies like Cargill and Tyson Foods. The burgeoning “food movement,” as popular media has dubbed it in recent years, encompasses an extremely wide range of grassroots initiatives—from the proliferation of small-scale, sustainable farming operations, to the formation of city Food Policy Councils, to campaigns against the slave conditions of immigrant farmworkers. As a collective movement, the efforts of people and institutions across the country seek democracy and the decentralization of power within the food system.

Educational institutions of all sorts can be found among the growing grassroots initiatives that seek alternatives to the industrial food system model. The food service operations of these institutions enable them to influence economic markets through purchasing practices (i.e. buying fresh ingredients from local farmers instead of processed food from corporate catering companies), and their academic function creates boundless opportunities to educate students about the social and environmental issues related to the food system. For example, some initiatives have targeted child nutrition and the national school lunch program, while others have focused on connecting school

cafeterias to local farms. A few educational institutions have even begun to blur the lines between the cafeteria and the classroom, developing experiential education models that teach students to grow and cook their own food. Colleges and universities have the chance to lead the way in areas of education and research, and to empower the future leaders of society to establish a more just, sustainable food system. Institutions of higher education have taken up this calling to varying degrees over the past few years, but their impact on the larger food system is yet to be seen.

This thesis represents an attempt to discern the potential for post-secondary institutions to leverage change within the larger food system. The following chapters can be sorted (based on theme and scale) into three parts. The first part (chapters one and two) is a macro-level analysis of the industrial food system, the manifestations of its fundamental flaws, and the alternative solutions propagating throughout the U.S. These opening chapters introduce the logic behind my main argument, and provide the context for my analysis of specific reform efforts happening amongst colleges and universities. The second part (chapter three and some of chapter five) examines the role of higher education in the creation of a more resilient, democratically controlled food system. In order to contribute original, place-based research to the limited data available on this subject, the third part of my thesis (chapter four) presents a case study of the sustainable food initiatives at Boston College.



## USEFUL DEFINITIONS

**Agroecology:** The application of ecological concepts to the design and management of food systems sustainable over the long-term.

**Conventional/Industrial Agriculture:** Method of manufacturing food in a capital-intensive, market-oriented, uniform manner. Relies on intensive artificial inputs and the externalization of wastes. Linear

**Ecosystem:** “A functional system of complementary relations between living organisms and their environment, delimited by arbitrarily chosen boundaries, which in space and time appear to maintain a steady yet dynamic equilibrium.”

**Farm to School:** A school-based program that connects schools (K-12) and local farms with the general objectives of serving local, healthy foods in school cafeterias, providing health and nutrition education opportunities, and supporting small- to medium-sized farmers within the region.

**Food Miles:** The distance between where food is grown to where it is eaten by the consumer. The physical measurement of the transportation from “seed to plate.”

**Food Security:** a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. (FAO, The state of Food Insecurity, 2002)

**Food Sovereignty:** the right of people and sovereign states to democratically determine their own agricultural and food policies. (Agriculture at a Crossroads Synthesis Report)

**Food system:** The interlocking activities, institutions and individuals involved in the production, processing, distribution, consumption and disposal of food; representing the entire economic and geographic journey of food, from the supply of inputs (e.g. seeds and water) to its final consumption.

**Green Revolution:** The spread of the US industrial farming methods throughout the world, beginning in the late 1950s. It began as a publically funded research effort to use agricultural technologies such as chemical pesticides and fertilizers to meet the needs of rapidly growing populations in developing nations. Originally considered successful based on the massive global increase of production yields, the Green Revolution is now considered the root of many ecological difficulties that negate its initial accomplishments.

**Local:** Definitions of “local” range from precise geographic distances such as 50-100 miles, to statewide, to a specific region. In the context of food systems, the term “local” can be associated with organic or sustainable farming methods, or grown and sold by a small-scale, family-owned farming enterprise.

**Permaculture:** The conscious design and maintenance of human communities and agriculturally productive systems that emulate the diversity, stability, and resilience of natural ecosystems.

**Sustainable food system:** The definition of “sustainable” is highly contentious, but here is one definition offered by Stephen Gliessman in his textbook on agroecology: “A sustainable food system is one that recognized the whole-systems nature of food, feed, and fiber production in balancing the multifaceted concerns of environmental soundness, social equity, and economic viability among all sectors of society, across all nations and generations. Inherent in this definition is the idea that agricultural sustainability has no limits in space or time—it involves all nations of the world, all living organisms, and all the globe’s ecosystems, and extends into the future indefinitely.”<sup>1</sup>

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<sup>1</sup> Gliessman, Stephen R. *Agroecology the Ecology of Sustainable Food Systems*. (Boca Raton, Fla: CRC, 2007), 345.

## CHAPTER ONE

### THE FAILING FOOD SYSTEM

Whether we and our politicians know it or not, Nature is party to all our deals and decisions, and she has more votes, a longer memory, and a sterner sense of justice than we do.

-Wendell Berry

#### Overview

A century ago, food production and distribution in the United States was locally based. Food was grown, processed, and consumed within a regional radius. Post-WWII, agricultural production shifted to mechanized methods of industrial, single-crop farms controlled by large corporations. These food companies have expanded overseas, creating a food chain that sources and ships food commodities all around the world. This may seem like progress within our economic paradigm of neoliberal capitalism, but in terms of basic ecological and social realities, it is highly inefficient, unsustainable, and utterly unjust.

This thesis explores the unique capacity for institutions of higher education to serve as incubators for creating solutions to our failing food system. In order to set the stage for my case study research on Boston College, this opening chapter illustrates the systematic flaws of the global-industrial paradigm of food production and distribution, with a focus on trends based in the United States. In chapter two, I will continue a big-picture analysis of the food system with a description of the grassroots counter-movement being generated within communities across the country that seeks more sustainable alternatives.

Instead of cementing my macro-level analysis of the food system into a prescribed mold of social or environmental theory, I have chosen a logistical framework rooted in concepts of agroecological sustainability and adaptive capacity. Based on these principles, I have structured my argument into a systems-based analysis that incorporates social, political, economic, and environmental perspectives. After a brief explanation of the concepts that inform my logic, I will use them to show how the industrial food system directly contradicts ecological realities, resulting in a model of food production and distribution that is highly vulnerable, inefficient and unsustainable.

### **Social-Ecological Systems**

The global food system is an incredibly complex web of actors, institutions, and raw materials that interact in subtle and overt ways to form a dynamic whole. It includes every component and activity related to food production and distribution, from the supply of inputs (seeds, water, soil, etc) to the final consumption and disposal of food. Since it involves complex interactions between humans and the biophysical world, the food system can be regarded as a social-ecological system that is constantly in flux.

In his textbook entitled, *Agroecology: The Ecology of Sustainable Food Systems*, Stephen Gliessman describes the value of applying ecological concepts to the design of food systems:

Agroecological research studies the environmental background of the agroecosystem, as well as the complex processes involved in the maintenance of long-term productivity. It establishes the ecological basis of sustainability in terms of resource use and conservation, including soil, water, genetic resources, and air quality. Then it examines the interactions between many organisms of the agroecosystem, beginning with interactions at the individual species level and culminating at the ecosystem level as the dynamics of the entire system are revealed.

Gliessman uses this framework to discuss the value of applying principles of ecology to the design and management of sustainable food systems. Gliessman defines sustainable food production in ecological terms: “The condition of being able to harvest biomass from a system in perpetuity because the ability of the system to renew itself is not compromised.”<sup>1</sup> Although a system cannot be proven to be perpetually sustainable in the present (only time can tell), there are definite ways showing that a particular practice or behavior is moving away from sustainability. As Gliessman explains in his book, there are several practices common to modern, industrial agriculture that are not sustainable in the long term due to the ecological and social damages that result from these methods of production.

The primary goals of industrial agriculture are the maximization of production and the maximization of profit. The practices that define conventional agriculture are: intensive tillage, irrigation, monoculture, application of synthetic fertilizer, chemical pesticide and herbicide use, genetic manipulation of plant and animal organisms, and “factory farming” of animals. According to Gliessman, each of these practices serves to increase productivity on its own, but each also depends on the others to be used in concert. For example, pesticide and herbicide use requires genetic modification to produce food crop resistance to those chemicals, and intensive tillage and depletion of natural soil nutrients necessitates increased application of synthetic fertilizers. In essence, the industrial framework that defines these practices defines a linear model of maximizing outputs (commodity crops) via appropriate inputs (seeds, water, fertilizer, pesticides), without recycling any materials or worrying about the consequent waste stream. In order to increase its short-term productive efficiency, industrial agriculture

relies on genetic manipulation and the creation of rigidly controlled, homogenized landscapes.

The agricultural techniques described above are based on the economic and social systems in which food production is embedded. Nonetheless, these reductionist techniques directly oppose the natural ecosystem processes of energy flow and nutrient cycling. In purely agricultural terms, the health of a farm depends not only on the activities that occur within that specific ecosystem (known as an agroecosystems), but also on the greater ecosystems that surround the specific plot of farmland. “Ecosystem services enhance agroecosystem resilience and sustain agricultural productivity. Thus, promoting the healthy functioning of ecosystems ensures the sustainability of agriculture as it intensifies to meet the growing demands for food production.” In an ecological context, resilience relates to a system’s capacity to tolerate disturbances without fundamentally disrupting the processes that determine how it functions. Sustainability in agricultural terms refers to the ability to harvest biomass from an agroecosystem in perpetuity, without compromising the system’s ability to renew itself for future harvests. Although the food system involves much more than just agriculture, same principles of resilience and sustainability can be applied to every aspect of food production and distribution.

### **Cheap and Efficient**

Viewed from a very narrow (and distorted) lens, the global-industrial food system is a marvelous success. Modern agricultural practices yield an abundance of food, more than enough to feed the global population. According to World Bank estimates, between

70 percent and 90 percent of the worldwide upsurge in food production over the last 50 years can be attributed to increased productivity (measured in total yields) of agricultural methods rather than the cultivation of more acreage. Due to technical advances in fertilizers, pesticides, and genetically modified (GM) crop hybrids, modern agriculture produces more food per hectare and per worker than ever before. Specialization in the form of monoculture has also greatly bolstered productivity rates, since growing only one crop on a gigantic field facilitates efficient use of farm machinery (for cultivation, weed control and harvest) and creates an economy of scale for purchasing supplies such as seeds, fertilizers, and pesticides.

The differences in overall yields can be seen very clearly in the past few decades of corn production. In 1945, 100 bushels of corn grown on two acres of land required 14 hours of labor. By 1987, 100 bushels of corn could be grown on just over one acre with less than three hours of labor. In 2002, the same 100 bushels of corn were produced on less than an acre of land.<sup>ii</sup> While mechanical farm equipment played a major role in improving the efficiency of individual farm workers, the development of synthetic fertilizers proved a much greater innovation. The Haber-Bosch process of nitrogen fixation, which captures nitrogen from the air to use as artificial fertilizer, emerged in the early 20<sup>th</sup> century, marking an integral turning point in global agricultural production. From 1939 to the end of the century, the worldwide application of synthetic nitrogen fertilizer to agriculture increased from three million tons to 85 million tons, enabling rapid human population growth.<sup>iii</sup> In the U.S. alone, the application of synthetic, chemical fertilizer to agricultural fields increased from 9 million tons in 1940 to over 47 million

tons in 1980. Without this rapid augmentation of fossil fuel-based fertilizer, the remarkable rise in food crop yields would not have been possible.<sup>iv</sup>

This increase in productivity, a result of innovative nitrogen-fixing fertilizers, artificial pesticide use and mechanical farm equipment, allowed a smaller amount of farmers to grow more of the population's food. Today, there are approximately 5 million fewer American farms than there were in the 1930s.<sup>v</sup> In effect, modern agriculture freed people from having to grow and prepare their own food. The price of food has also steadily dropped since the 1950s, allowing people to spend money on other things, such as cars, refrigerators and microwaves—three essential commodities for feeding oneself in the present age.

Thanks to the modern, industrial food system, American consumers enjoy abundant and inexpensive food at their convenience, regardless of how it was grown or processed. People living in the United States spend less on their food than anywhere else in the world. U.S. citizens spend an average of 10 percent of their income on food (half of what they spent fifty years ago).<sup>vi</sup> Meanwhile, citizens of other industrialized nations spend double that amount, and citizens of non-industrialized countries spend between 50-85 percent of their income on food.<sup>vii</sup> While these statistics could be viewed as a technical triumph on the part of the United States, the reasons behind our relatively cheap food—government subsidies along with innumerable social and ecological externalities—give us less cause for celebration.



### **Externalized Costs**

Food can only be considered “cheap” within an economic scheme of modern capitalism that externalizes all of the *real* social and ecological costs of food production and distribution. Outside of these artificial markets, the price of food production includes damages incurred by people and their environments—prices that will be paid for by society as a whole.

### **Personal Health Concerns**

Many costs are paid in the form of medical bills. Prevalent public health problems attributed to our food system are obesity, malnourishment, antibiotic-resistance, and food-borne illnesses. Within our \$2.3 trillion health care system, we currently devote \$147 billion to treat obesity, \$116 billion to treat diabetes, and hundreds of billions more to treat diet-related cancer and cardiovascular disease.<sup>viii</sup> An estimated \$30-60 billion of public health costs is directly linked to excess meat consumption.<sup>ix</sup> Perhaps more disconcerting is the childhood obesity epidemic, a disturbing phenomenon that has reduced the life expectancy of this generation’s youth to below that of their parents. Almost a quarter of all children from two to five years old are overweight or obese before they enter kindergarten.<sup>x</sup> These children are not the only ones suffering from dietary decisions made on their behalf. Most adults do not have absolute control over their food choices either.

Like many other areas of personal health, individual access to nutritious food has become a privilege that few can afford. In 2004, *The American Journal of Clinical Nutrition* published a study saying that one dollar could buy a 250 calories of vegetables

and 170 calories of fresh fruit, compared with 1,200 calories of potato chips and 875 calories of soda.<sup>xi</sup> Consequently, there are a great number of people who cannot afford to eat healthful food that may also have a lower ecological impact. As community activist Mark Winston Griffith of Brooklyn, New York writes, “One of the great, often unspoken, forms of oppression that low- and moderate-income communities suffer through is the lack of access to healthy food.”<sup>xii</sup> There are even low-income areas (rural and urban) of the United States known as food deserts, where the only food distributors are liquor stores and fast food chains. When treated as a commodity within the modern capitalist economy, safe, nutritious food is a privilege, not a right. As a result, people in our country with the least amount of disposable income, suffer the most from food-related illnesses.

Another common trend of food distribution that threatens the health of individual American consumers (even those with access to unprocessed produce from grocery stores) is food-borne illness. Mounting evidence suggests that mass-scale farming and the factory farm methods of producing meat greatly increase the frequency and gravity of food-borne illnesses and bacterial outbreaks. In order to bring animal products (meat, eggs, milk, etc.) to market as cheaply as possible, factory farm operations crowd as many animals as possible into cages and pens where they are given high doses of antibiotics to prevent the spread of diseases (to which they are more susceptible due to their close quarters). Even with preventative measures such as antibiotics and vaccines, the managers of factory farm operations cannot always prevent the spread of pathogens. In the wet, cramped conditions of factory farms, viruses can quickly mutate into more dangerous and transmissible forms that become lethal to humans.

The global exchange of food products, in particular the increase of imported food, increases risks of food-borne diseases as well. For decades the United States has been a primary global exporter of food, often dumping surplus commodities in the form of “food-aid” into other countries, undermining smaller-scale, unsubsidized local food economies abroad. In the past few years, the U.S. has begun to import more produce from foreign countries, and along with that food comes greater health risks. According to a recent FDA survey of imported and domestic produce, imported produce (fresh fruits and vegetables) and processed juices are three times more likely to contain illness-causing bacteria *Salmonella* and *Shigella*, and four times more likely to contain illegal amounts of pesticides and than equivalent domestic products. In spite of this knowledge, the FDA inspects less than one percent of produce bought from other countries.

Consumers are not the only one negatively affected by the practices of industrial food production and distribution. The people involved in the production and processing of food (farm laborers, factory workers, etc.) often work in deplorable conditions for very low wages. Many of these jobs require monotonous, unskilled labor, so the people who perform them are regarded as expendable and easily exploited. An extreme (but not extraordinary) example of this can be seen in the modern slavery rings in Florida, where farmworkers are kept against their will by their employers through threats (and frequent acts) of physical violence, such as beatings and shootings. In the past decade, seven cases of modern slavery involving farm labor have been prosecuted in Florida, cases that involved over 1,000 workers and over a dozen employers.<sup>xiii</sup>

## Ecological Degradation

The innumerable costs associated with environmental degradation are difficult to determine but will eventually be paid in the future. In his book *The Value of Nothing: How to Reshape Market Society and Redefine Democracy*, food activist Raj Patel references a valuation study published by the University of Iowa: “By adding together the indirect costs to natural resources, wildlife, ecosystem biodiversity and human health, it [the study] estimated that the hidden price of U.S. agriculture lies between \$5.7 an \$16.9 billion per year.”<sup>xiv</sup> Studies such as this serve as a reality check for a society that has grown accustomed to using money as a measurement for the worth of all things. It is important to note, however, that many ecosystem services (pollination, erosion control, soil fertility, water filtration, etc.) are much harder to evaluate in monetary terms.

Monocropping and factory farming methods make agroecosystems more susceptible to the ravaging effects of blights and diseases. Every year, livestock and crop diseases cost the U.S. economy almost 50 billion dollars. As a result, pesticides and herbicides are used in mass quantities to protect crops and livestock. Commercial pesticides often affect non-target organisms within their habitats, such as beneficial insects that normally act as pollinators. This occurred in the 1970s, when pesticides killed off 10-15 percent of the total honeybee colonies in California, leading to major economic losses in the honey industry, as well as other agricultural sectors dependent on bees for pollination purposes.<sup>xv</sup> Pesticides and herbicides also cause adverse health effects amongst farm workers that directly handle them and the consumers who eventually ingest agrochemical residues present on food products. Over time, insects and bacteria become

resistant to pesticides and herbicides, necessitating the constant reinvention of agrochemicals.

Due to the vast amounts of water used in conventional agriculture, the agricultural sector uses up to 80 percent of irrigated water in the U.S. At the same time, agriculture is the number one source of water pollution, owing to the amount of agrochemicals, salts, fertilizers, and concentrated animal wastes that contaminate watersheds. Agricultural runoff of synthetic pesticides and animal waste seepage from concentrated livestock operations contaminate watersheds, causing costly damage on the quality of drinking water, fish habitat, and the safety of aquatic food. An infamous and commonly cited example of water pollution traced to agriculture is the 6,000 square mile dead zone that exists in the Gulf of Mexico. Agricultural nutrient runoff in the form of nitrogen fertilizers and animal waste cause an excess abundance of plants to grow in the waters of the Gulf. When these plants die and begin to decompose, the bacteria breaking the plant matter down uses up all of the oxygen in the water, exterminating the fisheries. The cost of this eutrophication process to the 2.8 billion dollar fishing industry in the Gulf of Mexico is immense.

Since conventional farming methods cause the erosion and degradation of soil fertility, arable land is shrinking at a dangerous rate. This has led to increased destruction of forest and grassland systems, causing the massive release of carbon dioxide that was formerly sequestered in the soil of these systems. Encroachment of industrial agriculture also leads to major biodiversity loss at multiple levels (genetic biodiversity, species biodiversity, and ecosystem biodiversity). According to the Millennium Ecosystem Assessment Report, agriculture is the number one threat to wild biodiversity.<sup>xvi</sup>

Monoculture techniques also cause the loss of wild seed varieties that might prove useful for future food production or medicinal treatments.

As previously mentioned, the industrial model of agriculture extends to the livestock industry. Before specialization and maximizing yields were the driving forces behind agricultural operations, farmers raised animals such as pigs, goats, chickens, ducks and cows, as part of their farms' self-sufficiency. Within our modern food system, however, animal husbandry on family farms has been replaced by large-scale, industrial operations known as "confined animal feeding operations" (CAFOs), or factory farming of livestock. Instead of allowing the livestock to graze on open pastures and consume their natural diets, those who manage factory farm operations feed their animals highly processed (corn- or soybean-based) feed supplemented with vitamins and hormones to speed up their growth and development. Not surprisingly, the high concentration of animals crowded together in CAFOs also produces immense quantities of waste in the form of manure, urine that include the antibiotics and hormones fed to them. Since CAFOs are disconnected—geographically and functionally—from agricultural fields that could use the nitrogen-rich manure as fertilizer, factory farms try to treat the animal waste in large anaerobic lagoons that contaminate surface streams and groundwater with nitrates, and release ammonia into the atmosphere. Animal waste represents a significant health threat to those living down-stream from factory farms. Among the many infections transmitted to humans via manure include salmonella, which can survive up to a year in liquid manure.

Although factory farming allows more people to eat meat in much greater quantities, the ecological problems that result from the livestock industry are devastating.

Since most of the grain and soy crops turned into livestock feed are grown with irrigation, the meat industry places a huge strain on water resources. Estimates about the amount of water used to produce just one pound of U.S. beef range from 2,500-12,500 gallons.<sup>xvii</sup> The livestock sector is also responsible for 18 percent of green house gas emissions (greater than the transportation sector), mostly in the form of methane, a more potent GHG than carbon dioxide. Finally, up to one-third of all arable land is required to grow animal feed.<sup>xviii</sup> Food activist Raj Patel aptly articulates the worisome trends of the global livestock industry: “If the whole world were to demand the amount of meat currently consumed per capita in the U.S., we would need seven planets just to grow the grain to feed that meat, yet the U.S. continues to export their beef and promote cattle consumption around the world.”<sup>xix</sup> In fact, the global consumption of meat and poultry is set to rise 25 percent in the next five years.<sup>xx</sup>

### **Who is responsible?**

In order to identify who is responsible for the social disparities and ecological devastation plaguing food production and distribution, it is necessary to start at the top of the food chain, where giant conglomerates dictate food commodity markets down to the manufacturing of seeds. From the confines of corporate boardrooms, agribusiness CEO’s who specialize in making short-term profits, wield a disturbing amount of influence over farmers and consumers alike. They also reap the biggest rewards.

Theoretically, free market capitalism promotes competition and increased efficiency. This is simply not the case for commercial food products. Economists agree that an industry has lost its competitive nature when the concentration ration of the top

four firms (CR4) reaches 40 percent or higher.<sup>xxi</sup> According to this standard alone, several industries related to food and agriculture can be represent market failures. For example, four companies process at least 85 percent of U.S. beef cattle, only two companies sell 50 percent of American corn seed, and one company controls 40 percent of the U.S. milk supply.<sup>xxii</sup> In the seed industry, the top four firms account for 50 percent of the world's proprietary seed market for major food crops, and 43 percent of the commercial market (which includes both proprietary and public seed varieties).<sup>xxiii</sup> Instead of fostering efficiency and competition, this level of concentration at the top of the seed market reduces the amount of seed variety while increasing the prices for farmers.

U.S. agribusiness functions as an oligopoly because in every staple food commodity sector, four companies control more than 40 percent of the market and some firms (such as Cargill, Archer Daniels Midland, and ConAgra) are in the top four of multiple sectors.<sup>xxiv</sup> These transnational companies have centralized ownership in the U.S., but they operate on a global scale—shifting capital and technology all over the world in order to capitalize on supply costs, labor availability, and less stringent regulations. As long as oil prices remain relatively low, the international supply chains that source and distribute food around the globe are highly lucrative.

On a global scale, the corporate industrial model of agriculture is largely a product of the United States. More agribusinesses are based in the U.S. than any other country.<sup>xxv</sup> Additionally, among the world's 500 most lucrative corporations (companies that registered the highest revenues for 2009), 153 are based in the United States, and



within these 153 corporations, 20 of them<sup>1</sup> earn a significant amount of revenue from food and agriculture.<sup>xxvi</sup> This means that U.S.-based corporations have substantial influence over methods of food production and distribution throughout the world.

In order to prevent federal regulation that might curb their astronomical profit margins, corporate agribusinesses mount aggressive media and lobbying campaigns that target Congress and multilateral organizations such as the WTO and World Bank. By pouring substantial monetary resources into these campaigns, food conglomerates successfully sway domestic policy and international trade agreements to their advantage. For example, companies involved with GM seed production have united to form the Biotechnology Industry Organization (BIO), so as to collectively influence public opinion and policy regarding biotechnology.<sup>xxvii</sup> As a result, GM seeds have not been banned in the U.S. despite their potentially adverse health effects that have led many European countries to outlaw them. On the contrary, more than 80 percent of corn acres and 90 percent of soybean acres in the U.S. feature genetically engineered (GE) traits.

The legislative influence enjoyed by agribusiness lobbyists allows corporations to further conceal their methods of food production from consumers. In effect, government policy grants more rights to corporations than to citizens. Even when consumers know about certain health concerns or environmental impacts associated with conventionally grown and processed commodities, federal regulations deny citizens full disclosure rights. “Consumers wishing to avoid transgenic foods cannot, because the industry has successfully blocked any requirement that transgenic crops be labeled—despite surveys showing that nine out of ten consumers want such labels.”<sup>xxviii</sup> Legislation such as this

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<sup>1</sup> Wal-Mart stores, Kroger, Costco Wholesale, Archer Daniels Midland, Target, Dow Chemical, Bunge, Supervalu, Safeway, PepsiCo, Kraft Foods, Sysco, CHS, Coca-Cola, DuPont, Deere, Tyson Foods, Publix Supermarkets, McDonald’s, and Coca-Cola Enterprises.

provides a veil for food companies to hide their often immoral and dangerous practices from their customers in order to avoid public outcry.

Food conglomerates exercise absolute hegemony over farmers and consumers alike. Intense vertical and horizontal integration allows food conglomerates to control so much of the food chain that they can pay farmers less on one end while charging consumers more on the other end. For example, since five firms dominate the grocery sector, they can ensure that the low prices paid to the farmers are not passed on to the consumers at the store. Instead, large profits are soaked up in the middle through all of the profit-capturing processes of processing and packaging. Out of every consumer dollar spent within the corporate, industrial food system, a mere 19 percent goes to the farmer (regardless of whether the farmer is independent and small-scale, or produces large quantities of commodity crops for agribusiness corporations).<sup>xxix</sup> As a result, many farmers—especially those involved with large-scale operations—rely on federal subsidies to stay afloat.

Apart from economic inequalities, there is a fundamental flaw in the centralized, hierarchical power structure of the food system that creates a very unrealistic and uninformed decision-making process. Of the two million working farms in the US, more than half of them are corporately owned.<sup>xxx</sup> Even farms that are not corporately owned fall under the dominion of a small number of agribusiness companies that supply seeds, agrochemicals, and farm machinery. Since monopolies also exist amongst the retailers that purchase farm commodities, farmers feel the squeeze at both ends. “Rapid consolidation, initially in the seed and manufacturing sectors, but now in the food retailing sector, means that about six multinational retail firms will determine not only the

size of America's farms, but also the type of management decisions made on those farms.<sup>xxxix</sup> In other words, a handful of businessmen in suits and ties—whose expertise does not expand beyond boardroom discussions of profit margins and marketing—determine the day-to-day proceedings of American agriculture, without stepping foot on the farms themselves.

The fundamental flaw of a food system created and controlled by a small number of vertically and horizontally integrated corporations can be traced to the inherently counter-ecological functioning of corporate entities within our capitalist economic order. Counter-ecological in this context refers to the inefficiencies and externalizations that directly result from an economic model that refuses to consider certain ecological realities, such as the finite nature of certain resources. The following section describes these ecological inefficiencies in depth and illustrates the dangerous vulnerabilities of a food system determined by corporate values.

### **The Long and the Short of It**

In his 1867 treatise *Capital*, Karl Marx made a keen observation that “the capitalist system runs counter to rational agriculture, or that rational agriculture is incompatible with the capitalist system (even if the latter promotes technical development in agriculture).<sup>xxxix</sup> He reasoned that capitalist production methods presupposed man's domination over Nature, leading to the exhaustion of soil fertility, and he was right. The industrialization of agricultural methods coupled with a capitalist obsession with maximizing yields at all other costs has led to a serious depletion of the natural resources that agriculture depends upon. The reason behind the counter-ecological nature of the

modern food system is the economic model, i.e. neoliberal capitalism that affects every link in the industrial food chain because it refuses to account for the externalities of resource extraction methods.

As a result, the capitalist model of food production and distribution may be economically efficient for giant food conglomerates, but in basic ecological terms, the food system is highly *inefficient*. The high amounts of energy inputs provide a perfect example of inefficiencies within the food system. From seed to plate, it takes seven to ten times more energy—mostly in the form of non-renewable fossil fuels—to grow, process, and transport food than is contained in the food itself (in the form of calories). As Diane Dumanoski writes in her book *The End of The Long Summer*, “Today the U.S. food system uses ten kilocalories of fossil energy to deliver a single kilocalorie of food energy to the supermarket.”<sup>xxxiii</sup>

A large portion of this energy inefficiency can be attributed to methods of distribution within the global food chain. As large, industrial agriculture expands, driving small and midsized farming operations out of business, urban regions increasingly depend on food shipped from farther and farther away. In the U.S., raw agricultural produce travels between 1,500 and 2,400 miles from where it is produced to where it is sold for consumption.<sup>xxxiv</sup> This results in the further emission of green house gasses and a greater dependence on fossil fuel energy to deliver food to the global population. Additionally, the farther food (unprocessed food that is) travels, the more nutritional value it loses in the process. Energy inefficiencies do not end with transportation of

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<sup>2</sup> Take into consideration that these “food miles” account for the distance traveled by raw produce, which actually accounts for a miniscule portion of the food that Americans purchase. A great majority of food commodities sold in the U.S. have been industrially processed at multiple locations. As a result, food shipping is difficult to track, but inevitably more energy intensive than the referenced study reports.

food, however. Every level of industrial agriculture requires massive energy inputs: natural gas creates fertilizers, while oil is used to power farm machinery and irrigation pumps, make pesticides and herbicides, store and dry crops, maintain animal operations, and transport all farm inputs and outputs. As a result, the American diet is not just high in sugar (namely high fructose corn syrup) and saturated fat; it is also dangerously high in petroleum. About 350 gallons of oil equivalents are used to feed the average American for one year. Agriculture accounts for an estimated 17 percent of the U.S. annual energy budget, more than any other industry, and more than double the U.S. military.<sup>xxxv</sup> In sum, the entire food system depends on oil, and is therefore profoundly vulnerable to inevitable fuel shortages.

Other inefficiencies of the industrial food system can be attributed to dietary habits, such as the increased consumption of meat. Since 1961, the world's cereal production has tripled, while the global population has doubled; yet more people face hunger today than ever before. This is partially due to the fact that people consume less than half of total grain outputs directly, since the majority of cereals are used for livestock feed and biofuels.<sup>xxxvi</sup> From a purely ecological standpoint, the increased global consumption of meat places a huge strain on food production resources such as arable land and water. Since the conversion of plant biomass to animal protein is naturally inefficient, it takes up to 43 kg of plant biomass to produce 1 kg of meat protein.<sup>xxxvii</sup> Despite this major inefficiency, the price of meat remains very cheap within capitalist markets due to massive ecological and social externalities. For this reason, Raj Patel, political activist and author of *Stuffed and Starved: The Hidden Battle of the World Food System*, describes U.S. food commodities as “cheat” food as opposed to “cheap” food. To

prove his point, he references a report released by the Centre for Science and the Environment in India that estimates the ecological cost of a hamburger grown from beef raised on a clear-cut forest to be roughly two hundred dollars. In comparison, American consumers pay a mere four dollars for hamburgers from fast food chains that are able to externalize ecological and social costs in order to make money by offering costs below those of their competitors.

The same protein inefficiency occurs within aquaculture, or the farming of fish. Humans have relied on fish protein to feed themselves longer than they have on agricultural production, but due to the over-exploitation of ocean ecosystems during the past century, fish stocks have been heavily depleted. An estimated 75 percent of the planet's fisheries are threatened by elimination.<sup>xxxviii</sup> Geared toward taking the pressure off wild fish populations, aquaculture has vastly increased over the last twenty years. Between 1986 and 1996, the number of fish raised on farms more than doubled.<sup>xxxix</sup> Beyond the ecological degradation associated with aquaculture—largely due to their effluent waste streams of nitrogen, phosphorous, antibiotics, and fungal diseases that contaminate surrounding water bodies—the most popular species of farmed fish, shrimp and salmon, require greater protein inputs than they provide in outputs. For every kilo of salmon protein raised on a farm, 3.16 kilos of protein (in the form of “trash fish” that could be used to supplement the diets of people instead) are required for fish feed. A kilo of shrimp raised on a farm requires 2.81 kilos.<sup>xl</sup> These inefficiencies reflect basic dietary decisions that could be modified in order to mitigate serious ecological and social harm. As long as the monetary costs of these harms continue to be externalized, however,

agribusinesses will continue to drive imprudent consumptive patterns that increase profits.

Unlike other commodities that can be produced and shipped around the world without deteriorating in quality, food is subject to certain natural processes of decay. In order to effectively ship food products thousands of miles from their soil source, companies must preserve, process and package their raw food products. Processing and packaging the food serves an additional purpose of adding monetary value to the initial commodity in order to offset the distribution expenses. While processing and distributing food around the globe might make economic sense for transnational food companies looking to capitalize on lower supply costs, labor availability, and less stringent regulations in other countries; environmentally it is ludicrous. A long food chain that involves many steps of processing and transporting food also depletes the nutritional value of that food. In general, plants are most nutritious when eaten straight from the ground. “Quality of food, in terms of its nutritional value, is determined by freshness or processing and handling techniques, variety, and chemical composition.”<sup>xli</sup> There are ways of preparing foods that help release certain nutrients, but overall, plants are at their nutritional peak the moment they are harvested. The rate at which nutrient levels diminish depends on storage and shipping methods. For example, bagged spinach stored at 10°C has been found to lose half of its vitamin C content in only 3 days.<sup>xlii</sup>

The commoditization of food also creates inefficiencies in the form of extreme wastefulness, especially in wealthy countries where food is artificially cheap. In the U.S., 30 percent of all food, amounting to \$48.3 billion, is thrown away each year. This means that all of the resources used to produce that food, such as about half of the water, are

wasted as well. Some of these losses, 15-35 percent, occur at the production and retail levels, since only certain parts of commodity crops (and not the whole plant) hold value within the market system. Nonetheless, consumers are the most culpable for food waste. According to Cornell sociologist Jeffery Sobal, more than half of food waste occurs at the consumer level.<sup>xliii</sup> When this food is thrown into a garbage can instead of a compost bin, it rots in landfills and releases green house gasses. In the U.S., organic waste is the second highest component of landfills, which are the largest source of U.S. anthropogenic methane emissions in the whole economy.<sup>xliv</sup> Within natural systems there is no final waste because matter and energy are recycled through cyclic, ecological processes. In a capitalist economic system, on the other hand, specialization and the intentional division of natural processes inhibits most recycling efforts, so the end of the line is always waste.

All of the above inefficiencies create a food system that is ecologically unsustainable in the long-term. Conventional agriculture, like other industrial practices that define the modern food system, focuses on short-term productivity as opposed to longevity. As Gliessman points out, “The practices of conventional agriculture all tend to compromise future productivity in favor of higher productivity in the present.”<sup>xlv</sup> The techniques used to increase productivity within the food system have serious ecological consequences that undermine the productivity of agricultural lands over the long-term. Furthermore, many researchers, including Gliessman, believe that conventional methods of agriculture are quickly approaching their physical and practical limits. On a global scale, rates of agricultural productivity have visibly slowed, a trend that can be directly linked to soil degradation caused by intensive tillage, monoculture, and short crop rotations (all practices geared toward increasing short-term yields). Soil fertility relies on



the presence of large amounts of topsoil, nutrients (such as nitrogen and phosphorous), minerals, and microorganisms necessary for plant growth. Soil also needs to maintain a structure that enables proper drainage and contain enough organic matter to retain moisture. Industrial practices in agriculture rapidly degrade soil fertility by ruining soil structure through compaction; contaminating the soil with pesticides; and removing topsoil and organic matter through erosive irrigation and intensive tillage techniques. Once soil fertility has been degraded by conventional agriculture, the land can remain temporarily productive through the use of synthetic fertilizers that replace some lost nutrients, but no artificial inputs can restore soil health or ensure long-term fertility.

### **Hypercoherence**

The current global network of increasingly integrated food chains is defined by a capitalist system that values economic efficiency over food security. From a purely ecological standpoint, this shift from local and regional crop exchange to a globalized food production model seriously threatens food security because it creates a wide scale interdependency that could prove detrimental. Hypercoherence is an ecological term used to describe the excessive interdependence of species within an ecosystem. The over-reliance of various species on one another makes the entire ecosystem susceptible to a failure of one or two species. For clarification purposes, hypercoherence is different from species diversity, which decreases dependence on any one component of the system. When applied to the industrial food system, the concept of hypercoherence adequately characterizes the imprudent vertical and horizontal integration of food system components that contributes to the system's vulnerability by eliminating diversity and

democratic decision-making. In her book *The End of a Long Summer*, Diane Dumanoski explains the vulnerability that results from hypercoherence: “As the number and strength of connections increases, the system becomes vulnerable to any number of disruptions, which can spread rapidly across markets and societies.”<sup>xlvi</sup> In agricultural systems, “disruptions” take the form of natural disasters such as extreme weather, blights, or bacteria contamination.

One example of the danger associated with excess integration of our food system is evident in the number of food-borne illnesses that have erupted in the past decade. A recent case of salmonella contamination that occurred in March of 2010 perfectly illustrates the fateful hypercoherence of the food industry. The FDA traced the outbreak back to a ubiquitous flavor-enhancing ingredient, hydrolyzed vegetable protein (HVP), used by a Las Vegas food manufacturer named Basic Food Flavors. Since this ingredient is found in so many different processed food products (from salad dressing and soup bases to potato chips and sauce mixes), the FDA ordered a massive recall on nearly sixty different products. Although no reported deaths resulted from the outbreak, as food-safety attorney Bill Marler commented in an interview, “It underscores how a potentially contaminated ingredient can have such an enormous impact upstream and downstream, on re-manufacturers and retailers.”<sup>xlvii</sup>

Excessively integrated methods of food production and distribution are a matter of national security. For example, corporate, large-scale, farm operations prove more susceptible to agroterrorism, the intentional introduction of harmful agents (biological or otherwise) into food production and processing systems. If an act (or even the threat of an act) of agroterrorism were to occur in the U.S., the potential for disrupting the export

market would be immense, since exports generate 30 percent of farm cash receipts. Large agricultural operations such as farms, processing plants, and packinghouses may have substantial economies of scale, but they also lead to vulnerabilities, since an attack on just one facility could impact a great number of people. For example, the introduction of foot-and-mouth disease in a large cattle operation would quickly spread to a lot more animals and harm a lot more people than if that disease were confined to a small, geographically distinct herd. CAFOs may benefit the cattle industry by creating economies of scale, but these production methods lead to serious vulnerabilities.

The drive to increase profits within our capitalist system has also led to the reduction of surplus food reserves as a way of decreasing inventory items. The growing trend among grocery retailers is to adopt an inventory management model referred to as “efficient consumer response,” or ECR. This model implements a “just-in-time” supply chain that effectively eliminates warehouses and intermediate suppliers through a computer system that automatically reorders whatever food products are scanned for sale at the checkout counters. Although this management trend cuts costs for food distributors, it also diminishes backup food supplies, especially in cities. “Urban areas now have only three- to four-day supply of perishable foods, and the stock of dry grocery products has been reduced by more than 40 percent.”<sup>xlvi</sup> While perishable goods should be consumed soon after their harvest, a certain quantity of dried grocery products can be stored in preparation of emergencies. Due to the reduction of back-up food supplies, a variety of disruptions, both natural and artificial, along the global food chain could lead to the rapid depletion of food supplies that would incite major public panic.

A recent example of this vulnerability occurred in February of 2010, when a Chilean earthquake (of magnitude 8.8) triggered a tsunami that traveled across the Pacific Ocean toward Hawaii. In anticipation of a massive tidal wave, The U.S. government issued an evacuation of the Hawaiian costs and advised people to stock up on a week's worth of food supplies. This advice, however, was impossible to heed. Since the Hawaiian population imports up to 85 percent of its food, there are only 3-5 days worth of food reserves available on the island. Additionally, Hawaiian food banks have already been stretched beyond their capacity due to the economic crisis. Thankfully the tsunami died out before reaching the islands, and no catastrophe ensued. Nonetheless, the event served as a sober warning for Hawaiian natives dependent on cheap, processed goods produced by mainland food monopolies. Considering the geography of the islands—their lush tropical rainforests and rich volcanic soil—there is little doubt that local agriculture could feed the Hawaiian population, even in the wake of natural hazards. To date, Hawaii remains susceptible to volatile economic markets and a limited number of commercial commodity crops.

Another integral aspect of food insecurity results from the loss of biodiversity within species of food plants and farm animals. The demand for maximum economic efficiency within our capitalist system has led to the mechanization of agricultural production methods and the homogenization of food commodities. U.S. agribusinesses drive the cultivation of food-crop varieties that grow well, travel easily, and appear uniform on grocery shelves. This leads to the homogenization of food products and a great loss of food diversity. An estimated three quarters of the genetic diversity in food crops has been lost over the past century.<sup>xlix</sup> Over the span of human history, several

thousand plant species have been used for food. While more than 10,000 edible plant species have been identified, just 10 annual cereal grains, oilseeds, and legumes comprise 80 percent of global cropland.<sup>1</sup> Only four species on the global market—rice, maize, wheat, and soybean—provide a vast majority of the world’s calorie intake. The Food and Agriculture Organization (FAO) estimates that in the past 100 years, 90 percent of food crop varieties have disappeared from farms, and cultivated agricultural plant varieties continue to disappear at a disturbing rate of two percent annually.<sup>li</sup> Furthermore, due to corporate control of global food chains, dietary trends that originate in the United States spread to the rest of the world, causing the erosion of food diversity and resilience on a global scale.

Jack Kloppenburg, author of *First the Seed: The Political Economy of Plant Biotechnology* posits, “Genetic variability is the enemy of mechanization. But the principle phenotype characteristic of hybrid corn is uniformity.”<sup>lii</sup> Genetic diversity might make mechanization difficult, but genetic uniformity, the dependence on a narrow base of germplasm, decreases a plant species’ ability to survive natural disasters. The vulnerability of genetically homogenous crops first became obvious in 1970, when 15 percent of the U.S. corn crop was lost to an epidemic of southern corn leaf blight (a disease organism). The blight attacked the cytoplasmic character trait carried by over 90 percent of U.S. corn varieties. After the corn blight, a National Academy of Sciences study declared American crops to be “impressively uniform genetically and impressively vulnerable.”<sup>liii</sup> Despite this observation, genetic homogenization has continued undeterred over the past 40 years, creating agroecosystems that are even more fragile due to new methods of gene splicing.

Since food is regarded first and foremost as an economic commodity in our society, the food system is also susceptible to any disturbances that occur within the economy. This type of vulnerability can be seen on the most fundamental level in the relationship between individual income levels and access to food in our society. Even though food in the United States is more abundant and less costly than ever before, the amount of Americans who lack access to nutritious food has increased to nearly 50 million, according to a USDA 2008 report.<sup>liv</sup> While the economic crisis and higher levels of unemployment partially account for widespread food shortages, other economic factors, such as a rise in oil prices and the increased conversion of food-crops into biofuels, greatly exacerbate the problem.

When food enters into the economic system of commodity markets, the decisions concerning its production and distribution primarily focus on short-term economic profits for a small number of corporations. This helps explain why in 2008, while sharp raises in food prices led to civil unrest and riots in 33 countries around the world, a select group of agribusiness firms registered huge revenue gains. This escalation of food prices may have caused an additional 130 million people to become malnourished, but it also gave the managers and CEOs of food companies a reason to pat themselves on the back. After all, their jobs do not entail feeding people, but rather earning the highest revenue possible for their shareholders. The leaders of these corporations acted in accordance with the rules set by a neoliberal economic system, and they achieved great success.

Agribusiness CEOs make decisions that directly oppose and undermine the long-term sustainability of food production. Corporate-industrial agriculture fixates on short-term yields and quarterly profit margins, employing practices that degrade the natural

resources (water, soil, biodiversity) necessary for future production. Arable land cannot effectively produce crops over a long period of time unless the farmer has long-term incentives to protect the agroecosystems and ensure that it will yield food crops for generations to come. Farmers and farm laborers need to regain control of agricultural practices because they are in the best position to be long-term stewards of farmland and resources.

### **Climate Change**

Food production focused on immediate economic returns within our capitalist system leads to ecologically harmful agricultural methods that contribute to global warming. In terms of global green house gas (GHG) emissions, agriculture is believed to be responsible for 25 percent of CO<sub>2</sub>, 65 percent of methane and 90 percent of nitrous oxide emitted.<sup>lv</sup> Since the nitrogen fertilizers used in conventional agriculture cause the release of nitrous oxide (a greenhouse gas with 300 times the potency of carbon dioxide), chemically fertilized soils release more than 2 billion tons (the carbon equivalent) of greenhouse gasses annually. Overall, studies attribute roughly 30 percent of total GHG emissions to agricultural activities. This includes modifications of land use, such as deforestation that converts forest landscapes into crop fields, and grasslands converted into grazing areas for livestock.<sup>lvi</sup>

At the same time, global warming poses many threats to current and future agricultural yields. Even if the human population were to miraculously cease all carbon emissions tonight, temperatures would still continue to rise over the next thirty years due to the carbon that is already present in our atmosphere. Many researchers report that

global agricultural production is extremely vulnerable to climate change. Precipitation patterns will change, causing an increase in immediate crop failures and an overall decline in production in both rain-fed and irrigated crops. Higher global temperatures will reduce yields of major food-crops and facilitate the proliferation of weeds and pests. These trends are not based on speculations for the future. Rather, they have already been observed in certain regions of the world such as Central and Sub-Saharan Africa.

In sum, our fossil-fuel dependent, industrial food system substantially accelerates climate change, the effects of which will greatly hinder our capacity to produce food in the future. Nevertheless, the impending catastrophes that will result from global warming should not be the primary impetus behind food system reform. There are more pressing problems related to the food system that citizen groups have already begun to target, such as food-borne illness and childhood obesity, since these are issues that evoke widespread concern. When it comes to more abstract issues such as global warming, on the other hand, governments and individuals alike have been very slow to effectively mobilize. Nevertheless, agricultural production is so closely linked to climate change that the same solutions necessary for creating a more just, sustainable food system for present generations will simultaneously mitigate the negative impacts of anthropogenic global warming that will effect future generations.

For example, although the effects of future climate patterns on agricultural yields are difficult to predict, another crisis related to the modern food system is not difficult to predict: the end of cheap oil. Industrial methods of food production and distribution are unsustainable in the long term due to their absolute dependence on cheap energy in the form of fossil fuel. Global oil projection is expected to peak this year (2010), and North



American natural gas extraction rates are already in decline.<sup>lvii</sup> As mentioned above, other shortages currently threatening the food system are the availability of arable land, and the scarcity of fresh water necessary for agricultural irrigation. Fortunately, the solutions to these shortages, which include more sustainable farming methods and a democratization of the food system, will create the necessary resilience to face the long-term challenges of climate change.

### **Federal Legislation**

Political reform in the U.S. is absolutely crucial for lessening the corporate stronghold on global food chains. Despite the profound dangers and inherent inefficiencies associated with the industrial food system, the United States government continues to cater to the interests of corporate agribusiness. As the Obama administration takes on issues such as health care reform and climate change, there are ample opportunities to address the related systemic failures of food production and distribution methods. Little progress has been made, however, due to the embedded nature of food conglomerates within Congress. In order to understand the implications this relationship, it helps to know the conditions under which it was forged in the first place. Years of shortsighted federal legislation in the form of the Farm Bill has led to a severe mismanagement of America's agricultural resources. For decades, U.S. agricultural policies have lowered the price of farm products in order to facilitate increased exports to other countries.

The original intent of federal policies pertaining to the agricultural sector was to stabilize farm prices. Beginning in the 1930s, the New Deal established programs that

managed supplies of major food staples such as wheat and corn; required farmers to take a certain amount of their land out of production each year; and created a federal reserve of surplus crops in years of high-yield. The purpose of these programs was to avoid a surplus that would drive down crop prices. The reserve also ensured greater security during agricultural seasons afflicted by pest infestations and droughts. Then, in the 1970s, federal policymakers decided to start exporting all of the surplus grain at competitive global market prices. Farmers were encouraged to plant as many commodity crops as possible, and increase their yields through massive technological inputs such as synthetic fertilizers and pesticides

When the global price of commodities collapsed in the 1980's, U.S. farmers dependent on exporting their crops faced imminent crises, resulting in increased federal farm payments. Seeking to undercut foreign competition through lower crop prices but higher crop yields, U.S. policymakers continued to heavily subsidize the agricultural sector. In 1996, the "Freedom to Farm" Act eliminated previous policy measures intended to stabilize farm prices and regulate crop supplies. In order to encourage overproduction, farmers were no longer required to keep a portion of their land idle, and federal grain reserves disappeared as all harvested cereals entered the market. A year later, as farm prices plummeted, Congress authorized emergency payments to farmers that reached \$20 billion in 1999.<sup>lviii</sup> Instead of addressing the cause of agricultural price drops, Congress then voted to make these emergency payments permanent in the 2002 Farm Bill. As a result of these federal payments, the costs and risks of industrial agriculture become socialized, while the benefits remain entirely privatized.

Still today, agriculture payments perpetuate the pervasive inequalities and inefficiencies of the food system by indirectly subsidizing agribusinesses that greatly benefit from low commodity prices. Between 1995 and 2004, the American government paid \$144 billion in agricultural subsidies, a vast majority (72 percent) of which went to just 10 percent of U.S. farms.<sup>lix</sup> Clearly, large-scale, industrial farms receive a lot more federal funding than smaller operations. The current Farm Bill encourages the overproduction of commodity crops such as corn and soybeans, allowing food corporations to purchase these raw materials for less than the cost of growing them.<sup>lx</sup> According to a Tufts University report, the American beef industry saves an average of \$562 million a year by feeding their cattle with subsidized corn.<sup>lxi</sup> While the government continues to subsidize large-scale, monocropping operations in order to prevent widespread farm failures, food companies can purchase massive amounts of cheap crops that they turn into highly processed products for consumption. Lower prices of crops, however, do not necessarily translate to lower prices for consumers. “In the past 20 years, the real price (adjusted for inflation) of food for consumers has actually increased by 2.8 percent, while the real price paid to farmers for their crops has decreased by 35.7 percent.”<sup>lxii</sup>

Although it is clear that agribusinesses are the real benefactors of government subsidies, simply cutting off government support will not resolve the inequality, since the oligopoly of food conglomerates can collectively decide to pass off costs to customers. The corporate stronghold of the global food system did not occur without the help of the U.S. government, but subsidies make up only part of the problem—they are not the root cause of it. The real issue lies in the corporate-controlled power structure that

manipulates every aspect of global food system to the advantage of a few hegemonic corporations.

### **Loss of Critical Knowledge**

A just and resilient food system needs to prioritize long-term community and ecosystem health, instead of short-term, shareholder profits. Control needs to be decentralized and democratized so that many more people take active roles in determining a food system that most benefits them without compromising the needs of future generations. Unfortunately, food conglomerates have been able to prevent this type of democratization through very strategic methods of divide and conquer that go beyond Congressional influence.

The modern, industrial food system relies on a fundamental disconnect between the people who produce food, and those who consume it. As farmers continue to constitute a rare breed in our society, consumers know less and less about origins of their food and the invaluable services that farmers provide. When giant food conglomerates act as the monetary middlemen, farmers, farm laborers, and the people who purchase the final food products interact solely through money. This severs the human relationships between producers and consumers, allowing agribusiness corporations (that capture up to 92 percent of the consumer dollar) to control and exploit the food system at both ends.<sup>lxiii</sup> This disconnect forces consumers to regard food as any other commodity—they value it in accordance with skewed market perceptions of its worth as opposed to its real nutritional content or ecological impact.

Consumers lack even the most basic information about where their food comes from, where it was grown and processed, and under what conditions. The type of literacy available on modern nutritional labels is limited to caloric values and unpronounceable ingredients. People have grown accustomed to looking for this data, somehow thinking that it will act as a guide for their personal health. They are not provided with any information about how that food item truly affects their personal health, the health of the farmers and farm workers who produced it, or the health of the agroecosystems where the food was produced. As Gliessman puts it, “Isolated from the production and distribution process, consumers are also isolated from the information and knowledge that might allow them to become conscious of the negative impacts of their behaviors, diets, and food choices.”<sup>lxiv</sup> Corporations capitalize on this lack of consciousness—they manipulate consumer choices by promoting fetishized eating behaviors that revolve around diet fads, convenience, and body image.

Meanwhile, on the production end of the equation, farmers are at the mercy of agribusiness rules that often run contrary to their values as stewards of the land that they depend upon. As the farming population disappears, so does the knowledge of traditional farming practices based in more sustainable, agro-ecological principles. Without this knowledge, farmers become increasingly dependent on the companies that produce agricultural inputs such as fertilizers, seeds, pesticides, and machinery. “Day by day, the world is losing hard-won traditional knowledge of how to farm without fossil fuels, as well as the unique and valuable traits carried in the diversity of traditional crop varieties and farm-animal breeds.”<sup>lxv</sup> There are viable alternatives to mechanized monocropping, but they exist (literally and figuratively) in the margins—many small-scale, independent

farms are literally forced onto less fertile land by larger, corporate operations—where they risk extinction. In order to stay in business, farmers must continually adhere to the demands of commodity markets as opposed to the actual nutritional needs of their local communities or to the health of the land that they cultivate.

### **Conclusion**

As a human society, we have created an economic system separate from the ecological realities that dictate natural processes of our earth, and we (some of us more than others) are suffering the consequences. Current crises combined with the foresight of future catastrophes force us to re-examine modern paradigms of resource extraction and use that are profoundly counter-ecological and unsustainable. While alternative energy sources may be developed to replace fossil fuels for the maintenance of our industrial infrastructure, there is no substitute for the soil in which we grow the energy needed to fuel our own bodies. There is also no substitute for the fresh water we need to irrigate our crops. As fuel, water, and arable land become scarcer, the global population continues to grow—every day there are more mouths to feed with fewer natural resources. The “Food Crisis Report” published by the Food First Institute in Oakland predicts that current agricultural yields will decrease an additional 5–25 percent by 2050 (in the absence of policy intervention), due to infestations of pathogens, weeds and insects, combined with water scarcity from overuse and the melting of the Himalayas glaciers, soil depletion, and climate change.<sup>lxvi</sup>

Even though the industrial model of agriculture sustained high production yields for a certain period of time, these rates relied on a massive increase in artificial inputs, creating a positive feedback loop that further amplified the dependence on synthetic

agrochemicals. For decades, farmers, public health representatives, and grassroots activists have warned about the serious dangers associated with the industrial food system. Recently, however, much larger, centralized bodies of power have echoed the alarms sounding from the margins. In response to the current and future catastrophes detailed above, a growing number of political entities, private companies, and consumer organizations have begun to address the problems associated with corporate, industrial methods of food production and distribution. Despite the assertions of agribusiness companies responsible for our food fiasco, it is very doubtful that the current food system can continue to feed the global population without causing widespread human suffering. The real question up for debate is: *how can we as a human society implement the proper systematic changes that will increase food production efficiency (in ecological terms, not just economic ones) while ensuring long-term sustainability and social justice?*

Traditional agroecological systems that have sufficiently fed human societies for centuries remain largely outside the global, capitalist economic order. As a result, the types of agriculture that provide vital ecosystem services such as long-term investments in soil productivity are not adequately rewarded within the distorted valuation systems of our economic markets. One study estimates the value of ecosystem services in organic fields to be between \$460 and \$5,420 per hectare annually, compared with \$50-1,240 per hectare in conventional fields.<sup>lxvii</sup> Since the profit-driven markets remain so isolated from economic realities, other social values (apart from economic self-interest) must be embedded in the food system in order for human societies to feed themselves for many generations to come. The creation of a sustainable food system will require a much greater consideration of long-term consequences as well as the re-internalization of

ecological externalities. Therefore the economic context in which food production and distribution exists must undergo a fundamental shift.<sup>lxviii</sup>

The following chapter provides an overview of the diverse and prolific “food movements” propagating around the world that seek the answer to this question. I will begin the chapter by mentioning the solutions proposed by American agribusiness representatives—solutions that will fail humankind while increasing agribusiness revenues. I will then move into a more detailed discussion of the pragmatic and diverse grassroots initiatives that are building momentum toward profound, systematic reform.

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<sup>i</sup> Gliessman, 17.

<sup>ii</sup> USDA National Institute of Food and Agriculture Archive, *About Us: Extension*, <http://www.nifa.usda.gov/qlinks/extension.html> (Oct. 12, 2009).

<sup>iii</sup> Smil Vaclav, *Enriching the Earth* (Cambridge, MA: MIT Press, 2001), xv.

<sup>iv</sup> Gliessman, 19.

<sup>v</sup> Dan Barber, FORATV Lecture: Slow Food Nation, San Francisco, Aug. 29, 2008:

[http://fora.tv/2008/08/29/Slow\\_Food\\_Nation\\_Re-Localizing\\_Food](http://fora.tv/2008/08/29/Slow_Food_Nation_Re-Localizing_Food)

<sup>vi</sup> Sandor Ellix Katz, *The Revolution Will Not Be Microwaved: Inside America's Underground Food Movements* (White River Junction, Vt.: Chelsea Green Pub., 2006), 12.

<sup>vii</sup> Community Alliance with Family Farmers. *Building Local Food Programs on College Campuses Guide* <http://www.caff.org/> (Nov. 2, 2009).

<sup>viii</sup> American Diabetes Association. *Economic Costs of Diabetes in the U.S. in 2007*, <http://care.diabetesjournals.org/content/31/3/596.full> (Nov. 5, 2009).

Economic Costs of Diabetes in the U.S. in 2007 -American Diabetes Association

<sup>ix</sup> Raj Patel, *The Value of Nothing: How to Reshape Market Society and Redefine Democracy* (New York: Picador, 2009), 45.

<sup>x</sup> Carolyn Lochhead, *School Chef Pushes Fresh Food*, Chronicle Washington Bureau. Oct. 9, 2009:

<http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2009/10/09/MN681A309R.DTL>

<sup>xi</sup> Peter Dizikes, *Good food nation*, MIT News. Nov. 10, 2009

(<http://web.mit.edu/newsoffice/2009/foodshed.html>).

<sup>xii</sup> Katz, 11.

<sup>xiii</sup> Coalition of Immokalee Workers, *CIW Anti-Slavery Campaign*, <http://www.ciw-online.org/slavery.html> (Dec. 20, 2009).

<sup>xiv</sup> Patel, 46.

<sup>xv</sup> Thomas F. Pawlick, *The End of Food* (Greystone Books, 2006), 128.

<sup>xvi</sup> Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Biodiversity Synthesis*, <http://www.millenniumassessment.org/en/Synthesis.aspx> (Jan. 12, 2010).

<sup>xvii</sup> Small Planet Institute, *Table Tents: Food and Climate Change*, [http://www.smallplanet.org/features/item/table\\_tents\\_on\\_food\\_and\\_climate\\_change](http://www.smallplanet.org/features/item/table_tents_on_food_and_climate_change) (Dec. 22, 2009).

<sup>xviii</sup> Food and Agriculture Organization of the United Nations, *Livestock's Long Shadow*,

<http://www.fao.org/newsroom/en/news/2006/1000448/index.html> (Jan 12, 2010).

<sup>xix</sup> Raj Patel, “Is Meat Off the Menu?”, *The Observer*. Sunday 22 June 2008

(<http://www.guardian.co.uk/lifeandstyle/2008/jun/22/foodanddrink.food>).



- <sup>xx</sup> Bryan Walsh, "Getting Real About the High Price of Cheap Food," *Time Magazine* Aug. 21, 2009 (<http://www.time.com/time/health/article/0,8599,1917458,00.html?iid=sphere-inline-sidebar#ixzz0iCmS9VC2>).
- <sup>xxi</sup> USDA, Rural Business Cooperative Report 157: *Cooperatives in Changing Global Food System*, (Oct. 1997).
- <sup>xxii</sup> Food and Agriculture Organization of the United Nations, *Livestock's Long Shadow*, <http://www.fao.org/newsroom/en/news/2006/1000448/index.html> (Jan 12, 2010).
- <sup>xxiii</sup> Kristina Hubbard, *Out of Hand: Farmers Face the Consequences of a Consolidated Seed Industry*, Farmer to Farmer Campaign on Genetic Engineering, National Family Farm Coalition. Dec. 2009.
- <sup>xxiv</sup> USDA, Rural Business Cooperative Report 157: *Cooperatives in Changing Global Food System*, (Oct. 1997).
- <sup>xxv</sup> Molly D. Anderson, *A Question of Governance: To Protect Agribusiness Profits or the Right to Food?* Agribusiness Action Initiatives, Nov. 2009.
- <sup>xxvi</sup> Anderson, 2009.
- <sup>xxvii</sup> Anderson, 2009.
- <sup>xxviii</sup> Paul Roberts, *The End of Food*, (New York, Houghton Mifflin Company: 2008), 256.
- <sup>xxix</sup> Katz, 24.
- <sup>xxx</sup> Dan Barber, FORATV Lecture: Slow Food Nation, San Francisco, Aug. 29, 2008: [http://fora.tv/2008/08/29/Slow\\_Food\\_Nation\\_Re-Localizing\\_Food](http://fora.tv/2008/08/29/Slow_Food_Nation_Re-Localizing_Food)
- <sup>xxxi</sup> Norman Wirzba, *The Essential Agrarian Reader: The Future of Culture, Community, and the Land*, (Kentucky, University Press: 2003) 104.
- <sup>xxxii</sup> John Bellamy Foster, *The Vulnerable Planet: A Short Economic History of the Environment*, (New York: Monthly Review Press, 1999), 65.
- <sup>xxxiii</sup> Dianne Dumanoski, *The End of a Long Summer: Why We Must Remake Our Civilization to Survive on a Volatile Earth*, (New York, Crown Publishers: 2009), 25.
- <sup>xxxiv</sup> Michael R. M'Gonigle and Justine Starke, *Planet U: Sustaining the World, Reinventing the University*, (Gabriola Island, BC: New Society, 2006), 75.
- <sup>xxxv</sup> Richard Heinberg, "Fifty Million Farmers," *Energy Bull*, Nov. 17, 2006, (<http://www.energybulletin.net/node/22584>)
- <sup>xxxvi</sup> GRAIN, "Making a Killing from Hunger," *Against the Grain*, April 2008 (<http://www.grain.org/articles/?id=39>).
- <sup>xxxvii</sup> Gliessman, 45.
- <sup>xxxviii</sup> Slow Food Foundation for Biodiversity. <http://www.slowfoodfoundation.com/> (Feb. 7, 2010).
- <sup>xxxix</sup> Richard Manning, *Against the Grain: How Agriculture Has Hijacked the World* (New York: North Point Press, 2004), 203.
- <sup>xl</sup> Manning, 176.
- <sup>xli</sup> Beverly D. McIntyre. International Assessment of Agricultural Knowledge, Science, and Technology for Development, Global Report, *Agriculture at a Crossroads*, (Washington D.C.: Island Press, 2009), 10.
- <sup>xlii</sup> Jason George, Corinne Porter, Alysia Werger, "Factors Affecting the Nutritional Value of Food" *A Report for Farmers' Markets of Nova Scotia* (Nova Scotia, St. Vincent University: April 4, 2006), 54. <http://www.docstoc.com/docs/22971422/Factors-Affecting-the-Nutritional-Value-of-Food-A-Report/>
- <sup>xliiii</sup> Robert Britt, "Americans Toss Out 40 Percent of All Food," *LiveScience*, (<http://www.livescience.com/culture/091126-food-waste.html>), Nov, 2009.
- <sup>xliiv</sup> Power Partners Resource Guide, "Landfill Methane," (<http://uspowerpartners.org/Topics/SECTION6Topic-LandfillMethane.htm>), April 4, 2010.
- <sup>xlv</sup> Gliessman, 8.
- <sup>xlvi</sup> Dumanoski, 210.
- <sup>xlvii</sup> Dan Mitchell, "Salmonella Scare Exposes the Dangers of Industrial Food," *WashingtonPost.Newsweek Interactive Co.*, (<http://www.thebigmoney.com/blogs/daily-bread/2010/03/05/dangers-industrial-food>), Oct. 8, 2009.
- <sup>xlviii</sup> Dumanoski, 186.
- <sup>lix</sup> Elisabeth Rosenthal, "In Backyard Europe, fading Biodiversity," *New York Times, Europe*, Nov. 5, 2007, (<http://www.nytimes.com/2007/11/05/world/europe/05iht-seed.4.8200169.html>).
- <sup>1</sup> Linda Starke, Worldwatch Report on Progress Toward a Sustainable Society, *State of the World: Into a Warming World*, (New York, W.W. Norton & Company: 2009).

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- <sup>li</sup> Food and Agriculture Organization of the United Nations, *Livestock's Long Shadow*, <http://www.fao.org/newsroom/en/news/2006/1000448/index.html> (Jan 12, 2010).
- <sup>lii</sup> Jack Ralph Kloppenburg, *First the Seed: the Political Economy of Plant Biotechnology, 1492-2000* (Madison, Wis.: University of Wisconsin, 2004), 117.
- <sup>liii</sup> Kloppenburg, 122.
- <sup>liv</sup> USDA Economic Research Report Number 83, "Household Food Security in the United States, 2008," Nov. 2009.
- <sup>lv</sup> [http://www.foodcarbon.co.uk/carbon\\_emissions.html](http://www.foodcarbon.co.uk/carbon_emissions.html)
- <sup>lvi</sup> International Assessment of Agricultural Knowledge, Science and Technology for Development: *Agriculture at a Crossroads*. Island Press, Washington, D.C.: 2009.
- <sup>lvii</sup> Fifty Million Farmers. <http://www.energybulletin.net/node/22584>
- <sup>lviii</sup> Food & Water Watch, "Farm Bill 101," <http://www.foodandwaterwatch.org/food/agricultural-policy/us-farbill/farm-bill-101/>, March 1, 2010.
- <sup>lix</sup> Katz, 8.
- <sup>lx</sup> Ray, Daryll E. "Current commodity programs: Are they for the producers or the users?" *MidAmerica Farmer Grower*, 21(44), October 31, 2003.
- <sup>lxi</sup> Alicia Harvie and Timothy A. Wise, "Sweetening the Pot: Implicit Subsidies to Corn Sweeteners and the U.S. Obesity Epidemic," in *Policy Brief 09-0*, Global Development and Environment Institute, Tufts University, 2009.
- <sup>lxii</sup> Food & Water Watch, "The Farm Bill and Your Health"
- <sup>lxiii</sup> Gliessman, 334.
- <sup>lxiv</sup> Gliessman, 332.
- <sup>lxv</sup> Dumanoski, 188.
- <sup>lxvi</sup> Food Crisis Report, 33.
- <sup>lxvii</sup> Patel, 48.
- <sup>lxviii</sup> Gliessman, 343.

## CHAPTER TWO

### ALTERNATIVE MODELS TAKING ROOT

“Of all the things that need fixing in this country, none is more immediately fixable or better positioned to effect lasting cultural and economic healing than local food systems.”

-Woody Tasch, Chairman of Slow Money

#### Overview

From local to global scales, the food system substantially contributes to the some of the most serious social and ecological problems faced by our world today. The impact that modern methods of food production and distribution have on our earth and all of its inhabitants is so significant that it needs to be addressed urgently, in a variety of ways, on many different levels, and above all else, it needs to involve a great number of people from diverse backgrounds. The situation is dire, and is set to become worse. The consequences of inaction are too great to ignore.

In this chapter, I will briefly outline the potential solutions being debated within multiple realms of public, academic, and governmental discourse. In doing so, I will focus on the growth of diverse grassroots movements that focus on varying aspects food sustainability. Taken together, these grassroots initiatives form what is often referred to as “the food movement.” After highlighting a few organizations and trends within this movement, I will narrow in on the crux of my thesis project—investigating the role of college and university institutions in the creation of a more just, ecologically sound food system.

## The Global Spotlight

The failures of the industrial food system are so prevalent that popular media has turned its attention to the issues. Food issues are all over television, whether it be in the form of news headlines warning about Salmonella outbreaks, or reality television shows like Jamie Oliver's "Food Revolution."<sup>3</sup> Meanwhile, books about unhealthy American dietary patterns and the dangers of conventional agriculture top bestseller lists. Notable authors of these books include Michael Pollan (*The Omnivore's Dilemma*), Eric Schlosser (*Fast Food Nation*), and Raj Patel (*Stuffed and Starved*). Meanwhile, documentaries such as *Food Inc.* and *Supersize Me* have pulled back the veil of our corporately controlled food system, showing audiences across the country the horrors of factory farming, and introducing them to issues ranging from personal health to unsustainable resource depletion.

One result of this emerging public preoccupation with the food system has been negative media attention directed toward food conglomerates and the products that they sell. In order to combat negative media criticism, while catering to consumer cries for more "organic" and "local" food products, companies such as Archer Daniels Midland and Cargill have acted quickly to construct new, "all-natural" images that supposedly make them proponents of sustainable food initiatives. These companies find various ways of "green-washing" their marketing campaigns in order to sell the same ecologically and socially degrading commodities in brand new ways.

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<sup>3</sup> Jamie Oliver is a British chef who stars in his own ABC Reality series about nutrition in American public schools. In the show, Oliver attempts to reform the atrocious school-lunch program in the least healthy town in the U.S., Huntington, West Virginia. Even though the series just launched in March (2010), it had the second highest viewer ratings on television. Its popularity speaks to the growing interest of U.S. citizens in their food supply.

## **Monsanto's Solution**

In the face of worldwide hunger and the greater challenges of population increase and climate change, the agribusiness companies responsible for manufacturing the current food system have also thought up a plethora of technology solutions in the form of further genetic modification. Agribusiness companies are the among the loudest voices that hark investment in agricultural production as absolutely necessary in order to feed a global population expected to reach 9 billion by 2050.<sup>i</sup> They see impending doom as an opportunity for making more money.

Multinational corporations that control the global agricultural system are not interested in alleviating starvation; they are concerned about making profits—something that comes very easily when there is a food shortage. When the amount of starving people increased to 1 billion in 2008, agribusiness oligopolies that produce and distribute a majority of global food staples such as wheat, rice, and soybean oil, reported outrageously high profit margins. For example, Cargill Inc., one of the largest privately owned companies in the U.S., reported a profit margin increase of 86 percent to \$1 billion during the first quarter of 2008.<sup>ii</sup> By the end of that year, as food prices continued to exacerbate the hunger crisis, Cargill's profits amounted to nearly \$4 billion.<sup>iii</sup> Social unrest erupted around the world, while food conglomerates celebrated their foolproof business models.

When faced with bad publicity during the 2008 food rebellions, agribusiness companies earning colossal profits tried to assuage public fury by promising to use their profits to invest in solutions to solve the hunger crisis. Around that time, Victoria Podesta, the vice president of corporate communications at Archer Daniels Midland,

defended ADM's profit margins to Wall Street Journal reporter. Podesta emphasized the tools under development at ADM to mitigate supply disruptions, stating, "Maybe the question should be not, 'Are you making money?' but, 'What are you doing with the money that you make?'"<sup>iv</sup> Although Podesta implies that ADM will use the profits to invest in a solution, what will really happen is that ADM will invest their profits in manufacturing very costly solutions that may not solve (and may actually create more) problems, but they will definitely earn the company more money.

The American impulse to name technology as the comprehensive solution to problems rooted in social, political, and economic conditions contributed to the shortsighted investment in the Green Revolution that began in the late 1950s. The Green Revolution refers to the publically funded research effort to export agricultural technologies such as chemical pesticides and fertilizers to developing nations, often in the form of mandatory aid agreements. Originally considered successful based on the massive global increase of production yields, Green Revolution technologies resulted in severe ecological degradation that negated its initial accomplishments. "In the last 15 years, for example, all countries in which Green Revolution practices were adopted at a large scale have experienced declines in the annual growth rate of the agricultural sector."<sup>v</sup> Instead of admitting to the long-term consequences of the original Green Revolution, agribusiness companies like ADM and Monsanto are preparing for the advent of a second Green Revolution that promotes the same technological solutions as the first (GM hybrid seed varieties, artificial fertilizers, pesticides, herbicides, etc). Agribusinesses fund numerous research reports and publications that claim the only way to feed the growing human population is through the maximization of technology-based

inputs, such as the seeds and fertilizers that these companies are trying to sell. The following is an excerpt from a 2009 publication called, “Accelerating Productivity Growth: The 21<sup>st</sup> Century Global Agricultural Challenge” by the Global Harvest Initiative:<sup>4</sup>

As the use of improved technologies has continued to expand, a new frontier—biotechnology—has emerged with the capacity to provide important benefits for both developed and developing countries, and to target technologies more specifically to local needs and conditions. Biotechnology is accelerating the pace of traditional plant hybridization as well as bringing wholly new performance characteristics to crops.

In essence, agribusiness companies are busy developing certain “climate-resistant” crop varieties to sell to farmers around the world. Since these crops will undoubtedly depend on the continual application of costly agrochemicals, the farmers that choose (or are forced through international legislation) to plant the seeds will become dependent on the agribusiness firms to supply them with a variety of additional inputs that are expensive and ecologically degrading.

There are many reasons to believe that these propositions will fail, regardless of agribusiness assertions. In very basic terms, there is no singular gene that will ever be “climate-proof.” Our world’s geography is incredibly diverse, making local knowledge of the land and the best ways of farming it essential to producing high-yields that are sustainable over time. In general, global warming will result in increased world temperatures, which does not mean that every region of the world will become drier and hotter. Droughts already happening in some places will continue to worsen, and water levels will continue to rise as the ice caps melt, but the one predictable feature of our

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<sup>4</sup> The Global Harvest Initiative is a Washington, D.C.-based think tank founded by agribusiness interests Archer Daniels Midland Company, Conservation International, DuPont, John Deere, and Monsanto. On its website the stated mission of the Global Harvest Initiative is to end global hunger by doubling agricultural outputs and decreasing global productivity gaps.

planetary ecosystems is their instability. No one can predetermine exactly how the earth's climates and ecosystems will continue to change, so manufacturing specific crops that rely on this predetermination makes little sense. Even if one believes that gene-splicing can feed the global population, the production and distribution of GM seeds relies on the same fuel-fed, centralized industrial system in question. The GM monocropping techniques propagated by the original Green Revolution demanded huge amounts of energy for synthetic fertilizers, pesticides, and irrigation. A second Green Revolution would demand similar amounts of cheap energy—non-renewable energy that is becoming harder to find. Finally, technology-based solutions proposed by companies with patents on that technology should be highly suspect, since the legally-prescribed purpose of those corporations is to increase profits for their shareholders, not to solve world hunger.

Over the past decade, while agribusiness giants like Monsanto and DuPont have been researching new seed and fertilizer products to advertise as miracle solutions for the current food crisis, a group of major international organizations such as the UN, the World Bank and Global Environment Facility were busy researching the long-term challenges facing global agriculture, and the most effective ways to meet those challenges without compromising the survival of future generations. An unprecedented collaboration involving more than 900 participants and 110 countries, the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) set out to determine the impacts of different types of agricultural knowledge and technology on human health and the reduction of global hunger and poverty. In 2009, the IAASTD officially released its culminating report called “Agriculture at a Crossroads” on the future of agriculture and the necessary changes that need to be



implemented in order for the human population to feed itself in a socially and environmentally responsible manner. The central question asked by the authors and researchers of the report was: How can agricultural knowledge, science and technology overcome persistent poverty and hunger, achieve equitable and sustainable development and sustain productive and resilient farming in the face of environmental crises?

For the purpose of this thesis, the results of the almost 600-page report can be summarized as follows: Rather than investing in single generation, GM monoculture that destroys arable land, consumes more energy than it creates, and exhausts precious resources such as water and fossil fuels; there needs to be a more investment in people (namely peasant farmers) and the accumulated agricultural knowledge of many generations around the world. The reports executive summary states, “There is an urgent need to diversify and strengthen AKST, recognizing differences in agroecologies and social and cultural conditions.” With an emphasis on the importance of diversity, the reports advocates for a shift away from the centralized, models of food production brought about by globalization of the food system. According to the conclusions drawn by the IAASTD report, a greater investment in traditional, localized knowledge would create a more ecologically sustainable and socially equitable food system. It would not, however, sustain the massive profit margins realized by U.S.-based agribusiness corporations that direct the large-scale, industrial farming operations that feed into global supply chains. It should come as no surprise, then, that among the endorsement seals of the countries that approved the IAASTD report, a signature from the United States (agribusiness headquarters) is conspicuously absent.

Despite an obvious lack of commitment from Washington, there are growing efforts within the U.S. and around the world that are challenging the corporate-controlled, industrial food system. Grassroots initiatives continue to sprout up in some of the darkest cracks of our food system, in places where people do not have time to wait for top-down reform. Agribusiness companies should feel threatened by propagating alternatives to the industrial food system because most alternative models of production and distribution methods promote decentralization and diversity. For example, many grassroots initiatives seek to develop more direct marketing opportunities for farmers, in order to cut out the insatiable middlemen that currently devour most of the profits. Since the industrial food system is a relatively recent development in the history of mankind, one does not have to look far into the past to find alternative methods of growing and distributing food.

### **Putting Agriculture to Good Use**

Agribusiness companies would like people to believe that high-input, monoculture farming is the only way to produce enough food to adequately feed the global population. This is simply false. The intensive tillage and irrigation necessitated by conventional agriculture lead to fertility loss through salinization, soil erosion, and exhaustion of nutrients. All of these adverse environmental effects damage our ability to grow food now, necessitating the continual use of artificial fertilizers and pesticides, while contributing to climate change that will have even greater negative impacts on agricultural production in the future. “At every level, the state of the environment affects food production, which depends on the availability of water (both groundwater and surface water for irrigation) and soil nutrients, climate and weather (rainfall as well as

growth seasons), as well as the availability of insects that serve as potential pollinators.”<sup>vi</sup> For this reason, a capitalist economic system that externalizes environmental costs in the name of productivity and linear growth should not serve as a blueprint for the creation of a sustainable food system.

Agroecology, on the other hand, illustrates how agricultural productivity does not have to run counter to ecological sustainability. In-depth knowledge of ecological processes at the farm level (and within its greater context) can help create a food production model that is environmentally sound and highly productive. A fundamental characteristic of agroecosystems is their multifunctionality—the “ability to perform a variety of functions in addition to food and fiber production, including land conservation, maintenance of landscape structure, biodiversity conservation, environmental services, economic viability, and social good.”<sup>vii</sup> For example, agroecological farming techniques that are sustainable and organic could potentially sequester up to 40 percent of current carbon emissions through rich soil fertility.<sup>viii</sup> Although land only comprises a quarter of the Earth’s surface, soil and plants contain three times as much carbon as the atmosphere—soil alone being the third largest carbon pool of our planet.<sup>ix</sup> Proper management of agricultural soils—which entails minimizing tillage, reducing the use of nitrogen fertilizers, and preventing soil erosion—is therefore crucial to sequestering greenhouse gasses such as carbon that can then contribute to greater crop production by building up soil organic matter.<sup>x</sup>

Furthermore, studies have shown that biodynamic, small-scale farming can be, in many ways, more efficient than large-scale, industrial monocropping. A 2003 peer-reviewed analysis of 208 agricultural projects that involved close to 9 million farmers in

50 developing countries found a 93 percent increase in food production when these farmers converted to the sustainable practices described above.<sup>xi</sup> A 2007 study conducted by researchers at the University of Michigan echoed these findings. Comparing data from 100 different studies on conventional and sustainable agriculture, these researchers concluded that a worldwide switch to organic methods could increase global food production up to 50 percent, which would be enough to feed a human population of 9 billion without bringing more land under production.<sup>xii</sup> As previously mentioned, industrial agriculture has achieved high yields for half a century, but these yields have already begun to decline and are clearly not ecologically sustainable in the long-term. Organic in this context refers to agroecological farm practices such as mixed cropping, composting, crop rotations, and cover crops that replace conventional methods of high agrochemical inputs and heavy tillage that exhaust soil fertility. Moreover, dense and diversified farms and gardens (especially in urban areas) can be more productive than large, conventional farms in terms of yield per unit of land, since small-scale, biointensive plots maximize use of limited land resources.

Although these small-scale operations can produce high per capita yields, there needs to be a lot more of them than there are currently in order to feed the global population. The Obama administration's emphasis on "green jobs" fits well with the future needs of farming, since agroecological food production entails more employment than conventional farm operations that replace people with mechanical and agrochemical inputs in order to reduce labor costs. One study on agricultural employment in the United Kingdom posited that merely shifting 20 percent of farmland from conventional to organic (not even to fully agroecological practices) would create 73,200 jobs. In his book

about budding food movements, *The Revolution Will Not Be Microwaved*, author Sandor Katz contends, “Fertile land is much more scarce than the people needed to work it. And actually, holistic, diversified, sustainable farming systems . . . can be far more productive than conventional agribusiness models in terms of yield per unit of land.”<sup>xiii</sup>

Agroecological management also requires more knowledge and technical skill on the part of farmers, thereby providing people with respectable and fulfilling livelihoods.

### **Resilience**

The solutions provided by vertically and horizontally integrated food conglomerates such as Monsanto will not solve the current inefficiencies and injustices attributed to the food system, nor will they be able to adequately address the vulnerabilities of the system that might lead to unprecedented catastrophes in the future. Another form of resilience needs to be in place within our social and ecological systems in order to prepare for future disturbances. Ecosystems are not static, but dynamic. It makes little sense to establish social systems that are very rigid and slow to adapt within a world that is constantly in flux. Instead, the structures of social institutions should be based on antireductionist and whole-systems thinking that emphasizes long-term resilience. Ecologists define resilience as “the capacity of an ecosystem to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes.”<sup>xiv</sup> Humans, as part of the natural environment, depend on ecosystems for survival while simultaneously impacting these ecosystems on local and global levels. Thus the concept of resilience can be applied to the integrated systems of people and their natural environment to describe the amount of change a system can

undergo without compromising its function and structure. In more concrete political and economic terms, a resilient form of social organization requires the decentralization of power and accountability. Food markets still exist within this theoretically “resilient” economy, but they would be reoriented around geographic regions.

The more resilient a system is, the less vulnerable it is to disturbances. In conjunction with her warnings about the climate surprises that await mankind in the future, Dumanoski suggests that human civilizations should strive for increased adaptability, which she defines as, “the social capacity to respond to future changes.”<sup>xv</sup> Humans’ ability to effectively respond to shifting natural systems (in which changes may be very abrupt rather than gradual) depends on resilience, not efficiency. Systems with high adaptive capacity can adapt to disturbances by re-configuring themselves without significantly compromising their overall functions and structures. The characteristics of an ecological system that contribute to its adaptive capacity are genetic and biological diversity, and the heterogeneity of landscapes. For example, when Hurricane Mitch ravaged agricultural lands throughout Central America in the 1990s, researchers found that farmers using sustainable practices suffered much less money and soil loss and were able to recover more rapidly than farmers using conventional methods.<sup>xvi</sup> When applied to social systems, the concept of adaptive capacity refers to the existence of networks and institutions that balance power among diverse interest groups and facilitate flexibility in problem solving through the accumulation and preservation of collective knowledge and experience.<sup>xvii</sup>

Adaptive capacity is extremely crucial in a warming world, and the key to adaptability is diversity. There is no single genetic trait that can safeguard food crops

against the various types natural disasters that climate change might bring. The key to creating climate-resilient crops does not lie in genetic modification and homogenization, but rather in a systematic approach to food production that incorporates principles of agroecology such as crop rotations, natural pest control, and better management of soil and water resources. To that end, a number of people argue for a shift back to smaller-scale, labor-intensive agriculture coupled with localized distribution networks. Although there are many different ways to define “local” food systems, they are all rooted in the concept of the foodshed, “a geographically limited sphere of land, people, and businesses tied together by food relationships.”<sup>xviii</sup> Although the concept of a foodshed may seem revolutionary in the context of our globalized food networks, in the greater scheme of human history, it is not. In fact, this type of farming is still the norm in less industrialized places of the world. About 40 percent of the world’s population is involved with farming, and small, non-industrial farms make up about 60 percent of arable land. Small farms not involved with international export are more subject to direct biological factors such as climate, pests, and diseases, and less affected by markets, external inputs, and infrastructure. These types of farms also have a tendency to incorporate built-in mitigation factors in order to increase resilience, since long-term sustainability is in their best interest. This is not to suggest that scaling down and re-localizing agriculture provides the solution to the social injustices created by the global, industrial food system, since local farms can be just as responsible for exploitative production methods as large agricultural operations. The idea is that a model for ecologically resilient farming has existed for centuries in the form of peasant farming, a model that can be melded with

modern agricultural knowledge of sustainable practices to develop regionally-controlled, socially just, and environmentally savvy food systems.

In *The End of the Long Summer*, Dumanoski discusses the ecological concept of functional redundancy, which is the opposite of hypercoherence (excessive integration that leads to increased susceptibility to system disruptions). Related to the concept of diversity, functional redundancy refers to the presence of multiple species that perform that same role in an ecosystem. Different species occupying the same ecological niche provides insurance against system disturbances that might affect some species more than others. As Dumanoski relates this functional redundancy to the resilience of agricultural systems: “If, for example, a species that is now a major player falters as the climate becomes drier, another species may be more tolerant of the new conditions and able to carry on such critical tasks such as nitrogen fixation or carbon recycling.”<sup>xix</sup> Applied to the greater food system, functional redundancy supports the argument for the decentralization and diversification of food production enterprises. Theoretically, if more people begin to grow food through a variety of techniques, food production will become less vulnerable to potential disruptions such as climate change and market fluctuations.

The shift back to bioregional food production may be inevitable, since diversity and opportunities for self-organization are absolutely essential for achieving system-wide sustainability. As activist Raj Patel writes in his book *The Value of Nothing*, “The answer to the market’s valuing of the world at naught is not a democracy run by experts, but the democratization of expertise and resources.”<sup>xx</sup> There is not one solution to profound failures of the industrial food system, but rather many solutions in many different places that should be pursued simultaneously in order to bolster the adaptive capacity of



communities everywhere. Over the past two decades, as more and more people have realized the present and future dangers associated with industrial agriculture and food processing and marketing, a burgeoning “food movement” has emerged that runs counter to the excessive integration of the modern food system paradigm. Not only is the “food movement” itself very diverse, but most of the efforts associated with it strive towards increasing diversity and the distribution of power. Dumanoski describes the growing activism in the U.S. and internationally as “rich and multi-faceted.” She continues, “Many individuals, nongovernmental groups, and governments around the world are already working to minimize risk through diversification of the crops, cultivars, and the places where food is grown.”<sup>xxi</sup> It is important to note that the process of diversification and localization described by Dumanoski absolutely requires a democratic sharing of power to accompany it, since human capital must be valued as much as natural capital.

### **Seed Savors**

Diversity is a very important requirement for resilient systems on every scale. As discussed in the previous chapter, the worldwide consolidation of seed production has led to the reckless waste of genetic resources in the form of different seed varieties. Meanwhile, giant seed companies, such as Monsanto, favor hybrid varieties that necessitate the use of pesticides and herbicides (which they also manufacture) and cannot be used for more than one harvest (thereby ensuring repeat customers). Newer varieties of seed are also more likely to be patented or protected by plant variety protection laws.<sup>xxii</sup> As global markets replace local ones, thousands of unique food plants that might prove more resistant to future crop diseases or droughts become extinct. This type of

erosion of biodiversity is very detrimental to the resilience of food production systems everywhere.

In response to the disappearance of plant genetic material, a plethora of organic farmers, citizens groups, and individual home gardeners form an integral part of a burgeoning movement to preserve traditional heritage seeds of rare or common plant varieties that have not been genetically altered. Hundreds of groups around the world engage in seed saving efforts, from individual household gardens grown from heirloom seeds, to major seed banks that safeguard germplasm for future generations. These efforts range from indigenous farmers planting the heritage seeds that have been passed down for many generations, to first-time gardeners re-discovering the heirloom crop breeds that are native to their region.

One major project undertaken by the Norwegian government is the construction of a \$3 million seed storage center in the Arctic Circle that will safeguard millions of seed types in a chamber surrounded by permafrost and rock. The Svalbard International Seed Vault will serve the global community by ensuring that the germplasm remains frozen even in the case of an electricity failure. Funded by the Norwegian government and the Global Crop Diversity Trust (an independent international organization), the Seed Vault provides security for a human population dependent on long-term agricultural production. In the United States, the largest non-governmental seed bank is managed by a non-profit, member supported organization called Seed Savers Exchange. Since its foundation 35 years ago, Seed Savers Exchange has accumulated roughly 1 million samples of heirloom seeds that it saves and shares. According to the organization's website, "Those seeds now are widely used by seed companies, small farmers supplying

local and regional markets, chefs and home gardeners and cooks, alike.<sup>»xxiii</sup> The organization also provides growers with all the information they need to raise these heritage crops.

In truth, most seed saving efforts are not as far-reaching as the above seed banks. As world-renowned environmental philosopher and activist Vandana Shiva writes in her book *Stolen Harvest*, “Local markets and local cultures have allowed crop diversity to thrive in our fields, enabling farmers to continue evolving diverse breeds and conserving seeds and plant varieties. Ensuring the continued use of these seeds and plants is the best way to conserve them.”<sup>»xxiv</sup> The most fundamental way to preserve agricultural diversity for present and future generations is to encourage more people to cultivate as many plant varieties as possible. That is one of the reasons why the proliferation of personal and community gardens is so important.

### **Growing Growers**

There is a fundamental disconnect between many people and the natural world especially as more and more people live within urban settings. Home gardens and community gardens are crucial tools for reconnecting people to the earth’s natural energy system. People plant seeds and watch their food plants grow using energy from the sun, effectively converting that energy into a form ready for human consumption. Individuals with gardens develop a consciousness that allows them to reconnect with the vital natural resources, such as fertile soil, that physically sustain them. Through the acts of planting their own seeds and harvesting their own produce, gardeners might also feel empathy for bigger farmers, or feel more inclined to weigh in on federal legislation like the Farm Bill.

A recent survey from the National Gardening Association's (NGA) entitled *The Impact of Home and Community Gardening in America* indicates that food gardening in the United States increased by 19 percent from 2008 to 2009. This means that seven million more people planned on growing their own vegetables, fruits, herbs or berries in the past year, spending a total of \$2.5 billion to purchase supplies such as seeds, fertilizer, and tools. According to NGA estimates, a well-maintained food garden yields an average \$500 return when comparing a typical gardener's initial investment with the market price of produce.<sup>xxv</sup> In dense urban environments, people have begun to grow food in any space available—windowsills, rooftops, abandoned parking lots, etc. Cities have certain advantages for agriculture, such as a longer growing season due to their thermal bubbles, and less agricultural pests. For those people who lack the time and energy to engage in urban gardening on their own, there are organizations that are more the willing to grow food for these people. Green City Growers (GCG) is a Boston-based group of organic farmers that specialize in urban agriculture. In order to provide fresh, affordable produce to city dwellers, the GCG design and install low-input, raised-bed produce farms on any private property where people commission them.

Personal and community gardens can also provide fresh produce to people who normally lack nutritious food. Since many low-income, urban communities suffer from “food deserts,” the people who live in these areas can benefit the most from home and community gardens that increase their access to fresh produce. California gardener and activist Cleo Woelfle-Erskine (editor of a book on urban gardening) proclaims, “While gardens aren't a cure-all to the problems of economic racism and environmental injustice, unequal access to resources and an exploitative profit system, they can help us get by a

little easier, give us space to breath, to learn from the earth, and to begin to reweave relationships based on respect for the land and for the people around us.” Organizations based in urban communities across the country utilize sustainable agriculture to foster the type of community development described by Woelfle-Erskine.

In West Oakland, California (a food desert described in the previous chapter), a mobile market called the People’s Grocery sells affordable, locally grown produce to community members that would otherwise subsist on overprocessed junk food from convenience stores. A substantial amount of the food sold by the People’s Grocery is grown in community gardens at a local land trust, YMCA, and an elementary school. The People’s Grocery has been nationally recognized for its creation of an inner city food environment dedicated to improving the health and economy of West Oakland.

According to the nonprofit organization’s website, members of the People’s Grocery view the universal and intimate nature of food as a means of addressing many aspects of community development:

People’s Grocery is focusing on the basic human right to food as an organizing tool for justice and health in West Oakland. We combine grassroots and street-level marketing/organizing techniques with socially responsible business practices and sustainable agriculture to create new approaches to addressing food justice.

The People’s Grocery also fosters youth development through two distinct programs: the Urban Rootz Food & Justice Camp that introduces young children to the world of local food systems, and the Collards ‘n Commerce Youth Entrepreneurship Program that engages teenagers in the all aspects of food production and marketing. This youth development model has been successfully implemented by other food justice organizations as well, such as The Food Project of Boston. Since 1991, The Food Project

has worked with over a hundred inner city and suburban teens to grow and distribute food through several CSA programs, farmers markets, and hunger relief organizations. By participating in sustainable agriculture and alternative distribution streams, Boston youth that participate in The Food Project programs engage in personal and social change that will prepare them for future leadership roles.

Even though more people need to grow their own food in order to increase community resilience through biodiversity and food security, not everyone living in modern societies can produce enough food to subsist on. There still needs to be a great number of professional farmers that utilize the most effective and ecologically viable methods of agricultural production to feed their surrounding communities. The world's geography is incredibly diverse, making local knowledge of the land and the best ways of farming it essential to producing high-yields that are sustainable over time. As the population of farmers in the United States and Europe dwindles, so does their invaluable knowledge of food production. Less than a century ago, thirty percent of the U.S. population was employed as farmers. Today the number of farmers in our country has decreased below two percent.<sup>xxvi</sup> The farming population is growing older (the average age of the American farmer is 57), due to the lack of economic incentives for younger generations to become farmers. The inability of farmers to support themselves without outside income deters young people from choosing careers in agricultural production.

In response to the aging farmer population, a number of organizations have begun to place major investments in the future of American agriculture: the next generation of farmers. The Greenhorns is an organization that empowers young, American farmers ("young" defined as less than 57 years old) by providing them with networking

opportunities and educational resources. The organization—whose membership includes more than 3,000 young farmers coast-to-coast—also promotes the efforts of these “greenhorns,” new entrants into agriculture, by producing media (radio shows, blogs, and films) as part of a publicity campaign. Based in the Hudson Valley, Greenhorns assists the USDA with the Beginning Farmers program in the Northeast region. The Greenhorns have also founded a national coalition of young farmers working on Farm Bill legislation for 2011. Since the transition back to bioregional systems of food production will necessitate a greater percentage of the U.S. population to take up farming professionally, the Greenhorns movement may concurrently reverse the trends of job outsourcing and unemployment.

### **Direct Markets: Shortening the Chain**

In his textbook on agroecology, Gliessman defines a short food supply chain as, “A route from production of a food product to consumption by the consumer that requires a minimum number of steps.” The shortest food chain entails each person growing and eating all of his or her own food. Since this is not possible (or desirable) within modern society, the next shortest food chain involves marketing opportunities that allow farmers to sell their crops directly to consumers. By cutting out the corporate middlemen, farmers are able to secure more of the profits for themselves. In addition, direct marketing opportunities, also known as alternative food networks (AFNs), enable consumers to meet their producers, learn about the ways in which their food is grown and harvested. It gives farmers and consumers a chance to build meaningful relationships based on mutual trust. They can then negotiate directly with one another and look out for one another’s

interests. Initiating this dialogue is absolutely essential in the rebuilding of the food system and establishing food sovereignty. Currently, the direct market infrastructure includes farmers markets, U-pick operations, farm stands, CSAs, and food Co-ops.

An ancient form of farmer distribution, farmers markets are places where growers and producers from a specific local area gather to sell their products—which they have grown, raised, caught, processed or prepared on their own—directly to the public. In the 1970s, the number of registered U.S. farmers markets totaled about 300. Since then, American farmers markets have grown at phenomenal rates. In 2009, the number of farmers markets in the U.S. expanded from 4,685 to 5,274, a growth rate of 13 percent.<sup>xxvii</sup> As farmers markets continue to expand, especially in urban areas, infrastructure and legislation emerges to foster their development.

One leading example is Greenmarket, a program run by the Council on the Environment of New York City that supports local agriculture as a way of providing fresh produce to NYC neighborhoods. Through Greenmarket, the Council has been organizing open-air farmers markets since 1976. Today, their operations have expanded to almost 50 locations throughout the city, some of which operate year-round. According to the Greenmarket website, the Hudson Valley farms that attend Greenmarket “preserve over 30,000 acres of regional open space.”<sup>xxviii</sup> In addition to open-air market sales, Greenmarket also facilitates vital wholesale transactions between institutions, restaurants, and small grocers small and small to medium sized growers from New York and adjacent states. Consequently, 80 percent of Greenmarket farmers report that without the direct marketing opportunities facilitated by Greenmarket (where they receive fair prices for their crops), they would be out of business.<sup>xxix</sup>



Like all farmers markets, Greenmarket promotes regional investments—both in the economical sense of supporting the local economy, and in the philosophical sense of strengthening community resilience by healing the fractured relationships between growers and consumers. The market provides a public space where neighbors come together, meet the farmers that grow their food, and hear about the farmers’ production methods. The educational opportunities provided by farmers markets extend to the school system as well. In New York City, thousands of school children visit the Greenmarket every year to taste and fresh food and hear about its origins.

Greenmarket also claims to bolster NYC food security in several ways. The local farms that participate in these markets ensure food availability in times of crises such as blackouts and fuel shortages (disturbances that pose great threats to industrial food system supply chains). On a related note, Greenmarket works with city agencies to bring fresh produce to neighborhoods considered “food deserts”<sup>5</sup> and it participates in the NYS Farmers Market Nutrition Program that provides food to families at nutritional risk. In 2005, roughly 250,000 such households redeemed three million dollars worth of vouchers for locally grown fruits and vegetables at NYC farmers markets, many of which accept Electronic Benefit Transfer (EBT) food stamps.<sup>6</sup> Although this is a small fraction of the 200 million dollars received by New York’s food stamp population, it represents a significant portion of business for farmers. In addition, the New York Department of Health and Mental Hygiene encourages the consumption of fruits and vegetables by

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<sup>5</sup> The South Bronx is one of these low-income areas that severely lack grocery stores and supermarkets. The Poe Park Greenmarket that serves this community accounts for more than 50,000 dollars of food stamp sales.

<sup>6</sup> The city of Boston—along with another half dozen communities across the country—has a similar voucher program dubbed “Boston Bounty Bucks” that awards double credits for food vouchers spent at farmers markets. These programs increase the consumption of locally grown food, while providing low-income residents with healthier food choices.

providing a bonus subsidy of a two-dollar coupon for every five dollars spent on produce at farmers markets. Finally, Greenmarket donates unsold produce (more than 300,000 pounds annually) to emergency food agencies such as City Harvest.

Another popular form of direct marketing, community-supported agriculture (CSA), differs from the farmers market model in a few key ways. Basically, CSA consists of a community of consumers who pledge support to a farm operation, making a mutual agreement with the farmers of that land to share the risks and benefits of whatever food is produced. In return for paying either a regular subscription cost throughout the season, or an advanced payment to cover the farmer's salary in the off-season, the members, or "shareholders," of the farm receive a weekly or biweekly share of the farm's fresh bounty throughout the growing season. Depending on the farm, CSA shares offer a great diversity of fruits, vegetables, and herbs that are in season. Some CSAs also provide animal products such as meat, eggs, milk, and honey, or processed products such as homemade baked goods. Farms even collaborate amongst one another to supply their members with fresh produce on a more year-round basis.

The CSA model benefits farmers in numerous ways: through CSAs, farmers receive working capital to cover costs of farm operations, without depending on bank loans; they have secure markets for in-season produce; and they share the risks of unforeseeable poor harvests due to pests or unfavorable weather. Not all CSAs build a face-to-face relationship between the growers and the CSA members—although some farms encourage members to help harvest their own shares, or at least visit the farms to see their food being grown—but they all rely on a cooperative economic model and the democratic sharing of information, since everyone has a real stake in the farmland and

the food that it yields. Despite their relatively recent inception (they were introduced to the U.S. in mid-1980s), CSAs, like farmers markets, have grown rapidly in the past couple decades. In 1990, the number of CSAs in the United States was estimated to be about 50. That total has since grown to several thousand.<sup>xxx</sup>

A transition back to local markets does not necessarily entail the end of all global food trade. Some areas of the world will always depend on imported food to supplement their local agriculture. There are also a limited number of global commodities—coffee, spices, tea, and chocolate, for example—can only be sourced from select climates in the world, but are good candidates for “extended” alternative food networks. Due to their high value and relatively non-perishable nature, these products can be shipped throughout the world using modern communication and distribution infrastructures that allow consumers and producers (or their representative bodies) to transact directly despite the physical distance between them. Coffee, the second most valuable commodity traded on a global scale after oil, is grown in places very far from where it is primary consumed. Since only a handful of transnational corporations control the roasting and distribution of coffee beans grown by over 25 million (mostly) small-scale growers, coffee trade represents one of the most exploitative industries in the food system. In the past decade, coffee farmers in the global south have experienced some of the lowest wages in history, while consumers in the global north continue to pay more for coffee products.

In response to this gross inequity, two major types of extended alternative networks have been developed to shorten the food chain by cutting out the corporate middleman. One type entails consumers purchasing coffee directly from a cooperative of growers, a transaction normally facilitated by a nonprofit organization. One example of

an organization that facilitates such trade is a worker-owned co-op called Equal Exchange, based out of West Bridgewater, Massachusetts. Equal Exchange partners directly with democratically organized small farmer cooperatives that produce organic coffee, tea, and chocolate, using ecologically sound methods. Among Equal Exchange's guiding principles are: to pay producers a minimum price that provides adequate income and improved social services, to support sustainable, low-external-input growing practices that counter industrial methods, and to build a democratically-run, nonhierarchical workplace. The second type of extended network relates to "Fair Trade"—a broad movement towards standards that seek to ensure equitable international trade and fair partnerships between producers and buyers.<sup>7</sup> The "Fair Trade" model utilizes traditional retail channels, yet eliminated certain steps in the distribution process to guarantee that growers receive a much higher rate of return than they would via conventional commodity networks. Many U.S. food stores and websites now sell Fair Trade Certified coffee, a testament to the willingness of consumers to make more ethical purchasing decisions. Also, direct, international trade systems help to promote ecologically sustainable production methods based on long-term viability, since farmers are ensured higher, more consistent wages that are less susceptible to volatile global markets.

Even though these direct markets represent a miniscule portion of total food sales in the United States, the positive impact on small- and mid-sized farmers and local economies should not be underestimated. According to the Maine Organic Farmers and

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<sup>7</sup> Another organization, known as the Community Agroecology Network (CAN), connects coffee farmers in Central America to North American consumers, reducing the distribution links to the bare minimum. In 2003, for every pound of CAN coffee sold to consumers, farmers received \$3.77. This was compared to the \$1.26 they received for Fair Trade coffee and the \$0.55 they received for conventionally sold coffee. (Gliessman, 338)

Gardeners Association, by “encouraging Maine residents to spend just \$10 a week on local food, \$100 million dollars will be invested back into farmers’ pockets and the Maine economy each growing season.”<sup>xxxix</sup> Another study at the New Economics Foundation in the UK found that when the same amount money was spent at a CSA and a supermarket, the CSA purchase was multiplied 250 percent in the local area, whereas the supermarket money was multiplied a mere 140 percent in the local area. In fact, without direct marketing opportunities, smaller-scale and beginning farmers would not be able to survive. Direct marketing opportunities give them a niche within an industrial food system defined by economies of scale and standardization.

Direct marketing networks like farmers markets also play a key role in promoting regional ecological resilience. Many farmers that sell directly to consumers use sustainable production practices because their income relies on the long-term health of the agroecosystems where they live and farm. Instead of relying on government subsidies to stay afloat, these farmers depend on the water, air, and soil quality of their land. In looking out for their personal interests, these farmers help protect regional watersheds and preserve biodiversity by growing thousands of varieties of heirloom crops and raising heritage-breed livestock. By cutting down transportation of food products from their farms to the markets, these farmers also conserve energy and reduce fossil fuel consumption that leads to GHG emissions, acid rain, and smog. Overall, direct marketing routes small- to mid-sized family owned farms and the communities that they support to regard natural resources as finite social goods and to make decisions based on long-term ecological principles rather than present economic conditions.

Despite their intrinsic value and growing popularity, alternative food networks are nowhere near strong enough to replace conventional distribution networks and retail systems. Gliessman argues:

It is important to change this system [of traditional distribution] from within and have it concentrate as much as possible on local food. In any particular agricultural bioregion, many food retailers, restaurant owners, and managers of institutions serving food may be open to purchasing more of their food from local farmers, dairies, breweries, and other producers. In doing so, they may be able to reduce costs, increase their customer base, and stimulate the local economy.<sup>xxxii</sup>

An increasing number of U.S. retailers have already proven the economic viability of selling locally produced food. As more continue to do so, there can be coordinated efforts to gain the support of local government, chambers of commerce, merchant's associations, and farm bureaus. This type of coordination includes growers' cooperatives and associations that allow farmers to sell their produce to larger buyers such as supermarkets, schools, and hospitals; local retail stores and restaurants that feature regionally produced products; and the labeling of all food products to denote their origins. Over time, if these practices become the norm, then alternative food networks will have a much greater chance of comprising a new food system paradigm, as long as their integrity is not lost in the process.

### **Turning Away from the Golden Arches**

Other alternative movements focus on the culture that surrounds food in order to counter-act the homogenization spread through global, industrial food chains. A well-known organization that leads the traditional food culture front is called Slow Food. The Slow Food movement began in Rome in 1986, when indignant Italians protested the

opening of a McDonald's near the Spanish Steps. Led by Carlo Petrini, these locals formed Slow Food, a non-profit, member-supported organization, to counteract the globalization of fast food culture, the disappearance of local food traditions, and people's dwindling knowledge about the origins of their food and the affects of its production on the rest of the world. Today, over 100,000 members representing 132 countries form various levels of decentralized Slow Food organization: Slow Food International, National Associations (including Slow Food USA), and community chapters known as *convivia*. These diverse chapters agree operate under the basic principle that Slow Food is "good, clean, and fair."<sup>xxxiii</sup> That is, food should taste "good"; it should be produced in a "clean" manner that does not degrade the environment or the welfare of any living organisms; and the people responsible for producing food should receive "fair" compensation. Slow Food philosophy also incorporates the concept of eco-gastronomy—the recognition of fundamental connections between people's plates and earthly ecosystems.

The major projects and events organized by Slow Food chapters on global and local levels revolve around four central themes: biodiversity, food and taste education, shortening the food supply chain by connecting consumers (or rather, "co-producers" as Slow Food refers to them) with producers, and developing support networks. The Slow Food Foundation for Biodiversity supports programs such as the Ark of Taste project, which celebrates local culinary traditions of various eco-regions and preserves heritage varieties of plant and animal species. A plethora of educational programs teach people about the risks of fast food, and the dangers of commercial agribusiness, monoculture, and factory farming. Slow Food also sponsors "taste workshops" that reawaken people to

the pleasure of local, sustainable food. Their educational programs specifically target the youth of nations in primary and secondary schools by providing structural frameworks for school gardens and workshops that introduce the new generation to the art of farming. Lastly, through their networking capabilities, Slow Food groups organize to develop political programs that lobby for new agricultural policy that promotes sustainable agricultural practices, preserves family farms, and restricts harmful technologies such as genetic engineering and pesticide use.

The national U.S. chapter of Slow Food USA reports a membership total of more than 16,000 people, including prominent food activists such as Alice Waters, Michael Pollan, and Eric Schlosser. In 2008, Slow Food USA organized the largest celebration of American food in history, when 50,000 people attended the inaugural Slow Food Nation gathering in San Francisco. Held over a three-day weekend, the event featured panel discussions led by Carlo Petrini and other famous sustainable food advocates, the creation of a “victory garden” in front of City Hall, and other activities such as informative tastings that showcase sustainable agriculture and artisan food production, while connecting producers with consumers.

### **Money That’s Worth Something**

As previously mentioned, the neoliberal economic system presents major challenges to the establishment of a more bioregional, equitable food system that seeks to nourish all people in a sustainable manner. The prospect of restructuring our socio-economic paradigm seems daunting indeed, but the sustainable food movements outlined above have actually stimulated and co-evolved alongside other movements that promote



regionally-based economic systems. For example, The Slow Food movement in the United States has led to the development of another national movement quickly catching public attention: the Slow Money movement. A non-profit organization started by veteran financial manager, Woody Tasch,<sup>8</sup> and cited by Business Week as one of the “big ideas for 2010,” Slow Money’s mission is twofold: “To steer significant new sources of capital to small food enterprises, appropriate-scale organic farming and local food systems; and, to catalyze the emergence of the nurture capital industry—entrepreneurial finance supporting soil fertility, carrying capacity, sense of place, culture, and ecological diversity, and nonviolence.”<sup>xxxiv</sup> Since these objectives are more philosophical than pragmatic, the 165 founding members of Slow Money—many of them leaders in organic food, sustainable agriculture, social investing, and philanthropy—have translated this mission statement into a more concrete, immediate goal: one million people investing one percent of their personal assets into local food systems.

According to Slow Money advocates, increased investment in local food networks—whether it be through a CSA subscription or shopping at a farmers market—would not only improve the health of social and ecological systems, but it would also “accelerate the transition from an economy based on extraction and consumption to an economy based on preservation and restoration.”<sup>xxxv</sup> Small, alternative food enterprises include: farmers markets, CSAs, biodynamic farms, community vegetable gardens, green rooftops, vertical growing operations, hydroponics, sustainable fisheries, organic and heritage seed companies, local food restaurants, composting operations of various sizes,

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<sup>8</sup> Woody Tasch is the chairman emeritus of Investors' Circle, a nonprofit network of investors, venture capitalists, foundations and family offices that has contributed \$130 million to hundreds of upstart sustainable social enterprises. Tasch is also the author of a recently published book entitled, *Inquiries Into the Nature of Slow Money: Investing as if Food, Farms, and Fertility Mattered* (2009).

artisan cheese makers, grocery co-operatives, raw milk distributors, microbreweries, regional slaughterhouses and grain mills, and farm to school programs. The list of creative enterprises goes on and on. According to the leaders of the Slow Money campaign, the task at hand is to connect investors and investment capital to these enterprises, so that they can proliferate and flourish, in ways that are realistic, healthy and sensible, preserving their independence and missions, rebuilding the health of communities, bioregions and local economies. In the words of Slow Money founder, Tasch, “It is a new kind of financial engineering... it is the work of earthworms—investors and entrepreneurs who understand that in today’s world, our happiness, our quality of life, and, perhaps, our very survival depend upon discovering new ways to put back as much as we take out.”

### **From the Darkest Crevasses**

Even the most marginalized sectors of society have begun to challenge giant agribusiness companies. One of the most extraordinary examples of disempowered people organizing to combat U.S. food conglomerates is underway in Immokalee, Florida (the state’s largest farm worker community), where tomato pickers suffer from brutal working conditions and destitute wages. As mentioned in chapter one, the federal courts have found multiple privately owned tomato farms in Florida to be guilty of modern-slavery. In order for these cases to be brought to trial, a group of immigrant farm laborers had to organize and take a stand against the atrocious working conditions of Florida’s expansive agricultural fields. The Coalition of Immokalee Workers (CIW) is a community-based organization of mostly immigrant laborers working in low-wage jobs

in Florida. On behalf of these exploited laborers, the CIW has organized successful campaigns against the world's four largest restaurant companies (Yum! Brands, McDonald's, Burger King and Subway) that purchase tremendous amounts of produce from Florida fields, especially during winter months. After organizing several boycotts and marches that strategically targeted companies concerned with their brand reputations, the CIW earned a place at the negotiating table with these giant corporations, resulting in a wage raise of a penny more per pound of tomatoes.<sup>9</sup>

While this may seem like a trivial victory in the grand scheme of laborer abuses within the capitalist economy, the efforts of the CIW have received national recognition. In 2003 the CIW won the Robert F. Kennedy Human Rights Award, and in 2008, the Obama Administrations' newly appointed secretary of labor, Hilda Soli, pledged federal support to the organization. Yet as advocates for laborers' rights everywhere, the CIW's countermovement extends beyond the federal government to address a fundamental flaw in an economic system that transforms people into tools of production. One of the organizers in the coalition, Silvia Perez, comments on the CIW slogan "Yo No Soy Tractor" (I am not a tractor), "Seeing us as human beings will be the first step to changing things."<sup>xxxvi</sup> CIW ask for their civil rights, nothing more. Rights are central to their movement because as organizer Lucas Benitez laments, "Sadly, the U.S. public thinks rights are respected here, which is why they don't know how to ask for them."<sup>xxxvii</sup> American citizens need to be taught to demand their rights, such as their right to define what they put into their bodies three times a day. Without this education, the people who

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<sup>9</sup> For the sake of the subsequent chapters of this thesis, it is important to note that students have played an integral role in bolstering the efforts of Florida farmworkers.

grow and eat food in this country will continue to suffer at the hands of profit-driven corporations.

### **Federal Steps Forward**

While the federal government has been slow to enact any policy reform that would weed out corporate interests from Farm Bill legislation, there have been small legislative changes that signal steps in the right direction. The 2008 Farm Bill may have disappointed many food activists pushing for greater reform, but the bill incorporated a few minor modifications that foster progress toward more sustainable food systems. The new legislation includes: \$5 million mandatory funding for community projects that address food security issues, preference to local products for schools serving federally funded meals, \$33 million mandatory funding for the Farmers Market Promotion Program, \$1.2 billion to expand the Fresh Fruit and Vegetable Program that will enable 3 million children in low-income areas access to healthier food, increased GMO oversight by the USDA, \$75 million mandatory funding to a competitive grant program for groups that provide technical assistance to beginning farmers and ranchers, minority and socially disadvantaged farmers access to USDA programs, implementation of the Country-of-Origin Labeling (COOL) standards for all food, and finally, \$78 million of mandatory funding for the Organic Research and Extension Initiative.<sup>xxxviii</sup> This list of initiatives does not target the corporate stronghold of the food system, but it does signal more support for grassroots efforts engaged in the building of alternative food systems.

Now that the Obama Administration is in office, there is more opportunity for continued progress, despite the new president's hesitation to support any sustainability

initiatives that would challenge the status quo. The most visible change in the federal landscape has arrived in the form of a vegetable garden established by Michelle Obama on the South Lawn of the Whitehouse in March of 2009. Under the patronage of the First Lady, the garden's first harvest yielded 963 pounds of fresh produce for the President's kitchen and a local food bank.<sup>xxxix</sup> The Whitehouse garden also serves as an educational tool for young schoolchildren in the D.C. area, to teach them about healthy eating habits. Whether or not the Whitehouse garden will bear other fruits in the form of policy change is yet to be determined.

One federal undertaking that directly challenges the economic hegemony of food conglomerates within the global food system began in March of this year, when the U.S. Department of Justice initiated a series of workshops to determine whether or not a handful of food and farming companies currently exercise monopoly control over the agrifood industry. In short, the Antitrust Division of the U.S. Department of Justice will investigate whether or not giant food conglomerates, such as Monsanto, are guilty of violating antitrust laws. Although the Justice Department workshops might cater to corporate special interests (per usual), they could potentially compel regulators to break up these horizontally consolidated corporations.

At the same time, the U.S. Department of Agriculture has directed more funds toward sustainable food efforts that circumvent corporate-controlled markets. In September of 2009, Agriculture Deputy Secretary Kathleen Merrigan announced that \$4.8 million would be awarded to community-based organizations in 14 states that combat hunger and food insecurity through local food production. As part of the USDA's broader initiative known as the "Know Your Farmer, Know Your Food," the

funding promotes regionally based food networks that involve nutritious, local food grown in a sustainable manner. “Building local sustainable food systems to be proactive in fighting hunger and obesity is a priority for the Obama Administration,” Merrigan stated during her announcement. “These grants put funds in low-income communities that struggle with access to healthy food and they are an important step toward achieving our goal of having healthy, nutritious food available to everyone, especially children.”<sup>xi</sup> The types of local projects funded by the USDA include: urban agriculture, promotion of food sovereignty, youth food production projects, rural development projects, food policy council training, and new farmers on preservation farmland.

Another recent development in legislative efforts pertains to school cafeterias within the public education system. In response to U.S. health epidemics (particularly related to dietary diseases) a federal overhaul of school nutrition programs is currently underway. Congressional representatives are drawing on the ideology of food gurus such as Alice Waters in order to promote healthier relationships between children and their food. Since children receive one-third to a half of their caloric intake at school, there have been many initiatives that focus on improving the nutritional content of school lunch programs. These efforts cite practical economic benefits as well. Every year, the federal government spends \$14 billion on breakfast and lunchtime meals to feed 32 million school children.<sup>xli</sup> If this money were spent on fresh, nutritional food instead of packaged, processed foods high in saturated fat, then the nearly \$150 billion spent per year on health care for obesity-related diseases might be reduced.

Democrat George Miller, the House Education and Labor Committee chairman, leads the effort to renew the National School Lunch Act and the Child Nutrition Act.

Miller advocates an expansion of school lunch programs that emphasizes and increase in fresh produce and farm-to-school programs. According to one of the Baltimore schools chef that spoke on one of Miller's congressional panels that took place in October of 2009, school gardens can be "the single most important tool to reconnect kids to their food."<sup>xlii</sup> Gardens offer children the hands-on learning experience about food that they eat and grow themselves. Although this may not seem like a big deal, within a society of people who have mostly stopped growing and preparing their own food, gardens can be very powerful tools of subversion and reform.

### **Corporate Co-option**

Oftentimes, the seeds of progressive federal legislation often fail to flourish in the form of real positive change. As alternative food networks and farming methods gain national attention, they risk being co-opted by giant food companies that view them as marketing opportunities. A perfect example of this can be seen in the evolution of the U.S. organic movement. While organic food only accounts for 1–2 percent of total food sales worldwide, the organic food market is growing rapidly, far ahead of the rest of the food industry, in both developed and developing nations. The world organic market has been growing by 20 percent a year since the early 1990s, with future growth estimates ranging from 10-50 percent annually depending on the country.<sup>xliii</sup> Organic food sales within the U.S. have grown 17-20 percent in the past few years, (conversely, conventional food sales have only grown 2-3 percent). As the demand for organic food has increased, however, its success has aroused the interest of the same agribusiness corporations that the organic movement sought to combat in the first place.

Consequently, major food conglomerates now own a majority of the nationally distributed organic products (Wal-Mart specifically leads the pack in organic sales). In a New York Times Magazine article, As Michael Pollan points out, “Now that organic food has established itself as a viable alternative food chain, agribusiness has decided the best way to deal with that alternative is simply to own it.”<sup>xliv</sup> Agribusinesses do not just control the organic marketing niche—they also wield major influence on the federal legislation regarding organic standards.

American farms and businesses can obtain the U.S. Department of Agriculture organic certification as long as they adhere to specific national standards that ban the use of chemical fertilizers, pesticides, GMO seeds, and irradiation. Certified organic meat, eggs, and dairy items must be free of antibiotics and growth hormones, be fed 100 percent organic feed, and have access to open pasture. Although the creation of organic standards allows consumers to make semi-informed decisions about the food that they buy, these standards continue to be watered down due to the embedded nature of agribusiness interests in the federal government. Moreover, these standards do not address the devastating distribution chains that deny consumer access to healthy food products and farmer access to fair wages. As Katz eloquently writes, “Organic products in national distribution are an upscale market niche available through the desire-gratifying magic of constant convenience consumerism and produced by factory-style monocultures.”<sup>xlv</sup> Labeling standards begin to point consumers in the right direction, but they do not provide citizens the power to create food systems that truly benefit them and the planet. For this reason, people need to be educated about their food in other ways so that they can begin to take back control of the system.



## **Food Sovereignty**

Food sovereignty is the principle that people have the right to democratically decide their own food and agricultural policies. A plethora of consumer movements demanding food sovereignty have emerged in response to the industrial agribusiness model that allows a handful of corporations to dominate agricultural activities through vertical and horizontal integration. These movements seek more than just “organic” or “local” labels in Wal-Mart grocery aisles. They seek unbiased information about where their food comes from and how it is produced, and they want a hand in the determination of these processes.

The international peasant farmer movement called La Via Campesina was the first group to rally around the concept of food sovereignty. Formed in 1993 through an international conference held in Belgium, La Via Campesina emphasizes national and state control of food policy, and self-sufficient farming geared toward the interests of local communities as opposed to the production of commodity crops for export within global markets. In order to combat the flooding of local markets with subsidized food commodities from other countries, the 148 members (mostly small farmer organizations) of La Via Campesina that represent 69 countries, advocate fair economic practices, preservation of natural resources, and sustainable agriculture based on small and medium-sized producers.

Within the United States, an emerging trend geared toward the development of food sovereignty is the establishment of Food Policy Councils (FPCs) within local and state governments. Food Policy Councils consist of representatives from many sectors of

the food system (production, processing, distribution, consumption, and waste recycling) who come together to discuss methods of improving local or state food systems, to make these systems ecologically sustainable and socially equitable. FPCs provide a crucial forum for this group of representatives—often comprised anti-hunger advocates, farmers, educators, non-profit organizations, government officials, food processors, chefs, grocers, and concerned citizens—to identify the prevalent public concerns of their food system and to collaborate with one another to develop innovative policy solutions that consider all areas of that food system. Government actors initiate Food Policy Councils through executive orders, public or joint resolutions, so most FPCs enjoy a formal relationship with local or state officials. Since the first Food Policy Council was formed in Knoxville, Tennessee in 1982, there are now more than 50 FPCs in cities across the U.S. For example, there are currently five Food Policy Councils in the State of Massachusetts. The Boston Food Policy Council, instituted in 2008 as one of several community health initiatives proposed by Mayor Thomas Menino’s office, seeks to expand local food production capacity, help Boston residents access healthy food, and to utilize food as a tool for equitable economic development. Whether or not the council will effectively instate these initiatives remains to be seen.

## **Conclusion**

In order for consumers and producers to determine a food system that best suits their health and health of future generations, a democratic exchange of information must be in place that has not been distorted by corporate interests. Channels of communication need to be fully opened between various stakeholders within each community, so that

farmers and consumers alike can understand the full implications of their decisions and work with one another to increase the resilience of the food systems that feed them. Alternative food networks that allow growers to establish direct relationships with the people who eat their food represent the beginnings of food sovereignty, but these initiatives remain at a very small scale and have not prompted mass policy reform. Instead, corporate agribusiness companies have co-opted the values that instill alternative food networks and used them to market the same types of food commodities to consumers who still lack control over the system that feeds them.

In order for food sovereignty to become a reality on the scale necessary for creating resilient food systems, more citizens need to be educated about the origins of their food, and sustainable food initiatives need to be institutionalized in a manner that does not compromise their intended purpose. Thankfully, another sector of the emerging food movement, the educational sector, has the potential to serve in both of these capacities. Institutions of learning at all levels have begun to incorporate sustainable food efforts into their operational facilities (i.e., school cafeterias), as well as their formal curricula. In this way, sustainable food trends within the education system show major potential to empower local producers by establishing a semi-permanent market niche, ensure healthful food to all student populations, and encourage the next generation of people to participate in the creation of more ecologically sustainable and socially just food systems. The following chapter discusses the progress made by educational institutions, specifically colleges and universities, toward fulfilling this potential.

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<sup>1</sup> International Food Policy Research Institute, "Climate change: Impact on Agriculture and Costs of Adaptation," Nov. 6, 2009.  
<http://www.ifpri.org/publication/climate-change-impact-agriculture-and-costs-adaptation>

- <sup>ii</sup> David Kesmodel, Lauren Etter, Aaron O. Patrick, “Grain Companies’ Profits Soar as Global Food Crisis Mounts” *Wall Street Journal*, April 30, 2008, (<http://www.globalpolicy.org/component/content/article/217/46151.html>).
- <sup>iii</sup> “Cargill: A Threat to Food and Farming” Food & Water Watch, May 6, 2008, (<http://www.foodandwaterwatch.org/food/report/cargill-a-threat-to-food-and-farming>).
- <sup>iv</sup> David Kesmodel, Lauren Etter, Aaron O. Patrick, “Grain Companies’ Profits Soar As Global Food Crisis Mounts,” *Wall Street Journal*, April 30, 2008, (<http://www.globalpolicy.org/component/content/article/217/46151.html>).
- <sup>v</sup> Gliessman, 8
- <sup>vi</sup> Food Crisis Report, 33
- <sup>vii</sup> Gliessman, 326.
- <sup>viii</sup> Patel, 97.
- <sup>ix</sup> Sara J. Scherr, Sajal Sthapit, Worldwatch Report 179, 2008, *Mitigating Climate Change Through Food and Land Use*, 7.
- <sup>x</sup> Scherr, 12.
- <sup>xi</sup> J.N. Pretty, J.I.L. Morison and R.E. Hine. “Reducing Food Poverty by Increasing Agricultural Sustainability in Developing Countries.” *Agriculture, Ecosystems & Environment*. 2003, 105.
- <sup>xii</sup> C. Badgley, J.K. Moghtader, E. Quintero, E. Zakem, M.J. Chappell, K.R. Avilés Vázquez, A. Samulon, and I. Perfecto. “Organic Agriculture and the Global Food Supply.” *Renewable Agriculture and Food Systems*. Feb. 22, 2007. 91.
- <sup>xiii</sup> Katz, 4.
- <sup>xiv</sup> Scheffer et al. 2000, Berkes et al. 2002. <http://www.resalliance.org/576.php>.
- <sup>xv</sup> Dumanoski, 104.
- <sup>xvi</sup> Eric Holt-Giménez. “Measuring Farmers’ Agroecological Resistance after Hurricane Mitch in Nicaragua: a Case Study in Participatory, Sustainable Land Management Impact Monitoring.” *Agriculture, Ecosystems & Environment*. 93, 2002. 93.
- <sup>xvii</sup> Scheffer et al. 2000, Berkes et al. 2002. <http://www.resalliance.org/565.php>.
- <sup>xviii</sup> Gliessman, 333.
- <sup>xix</sup> Dumanoski, 197.
- <sup>xx</sup> Patel, 171.
- <sup>xxi</sup> Dumanoski, 203.
- <sup>xxii</sup> Pawlick, 63.
- <sup>xxiii</sup> <http://www.seedsavers.org/Content.aspx?src=aboutus.htm>.
- <sup>xxiv</sup> Vandana Shiva, *Stolen Harvest* (Cambridge, South End Press: 2000), 80.
- <sup>xxv</sup> Garden Market Research: The Impact of Home and Community Gardening in America. National
- <sup>xxvi</sup> USDA National Institute of Food and Agriculture. Last Updated: 6/9/09
- <sup>xxvii</sup> Top Five Sustainable Food Stories of 2009 by Katherine Gustafson at [change.org](http://change.org)
- <sup>xxviii</sup> <http://www.cenyc.org/greenmarket/whygreenmarket>
- <sup>xxix</sup> <http://www.cenyc.org/greenmarket/whygreenmarket>
- <sup>xxx</sup> Local Harvest
- <sup>xxxi</sup> Tufts Website
- <sup>xxxii</sup> Gliessman, 337.
- <sup>xxxiii</sup> <http://www.slowfood.com/>
- <sup>xxxiv</sup> Slow Money, <http://www.slowmoneyalliance.org/about.html>
- <sup>xxxv</sup> <http://www.slowmoneyalliance.org/about.html>.
- <sup>xxxvi</sup> Patel, 130.
- <sup>xxxvii</sup> Patel, 129.
- <sup>xxxviii</sup> Zachariah Baker, Ferd Hoefner, Martha Noble, Aimee Witteman. Sustainable Agriculture Coalition. “Sustainable Agriculture Coalition’s Grassroots Guide to the 2008 Farm Bill.” Oct, 2008.
- <sup>xxxix</sup> “Michelle Obama Reaps Bonanza From White House Garden,” *Politics Daily*, <http://www.politicsdaily.com/2009/10/30/michelle-obama-reaps-bonanza-from-white-house-garden/>
- <sup>xl</sup> USDA Release No. 0447.09 “Agricultural Deputy Secretary Merrigan Awards \$4.8 Million for Community Food Projects as Part of ‘Know Your Farmer, Know Your Food,’” June, 17 2009, (<http://www.usda.gov/wps/portal/usdahome?contentidonly=true&contentid=2009/09/0447.xml>).

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<sup>xli</sup> Carolyn, Lochhead, “School Chef Pushes Fresh Food.” *Chronicle Washington Bureau*. Oct, 9 2009, (<http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2009/10/09/MN681A309R.DTL>).

<sup>xlii</sup> <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2009/10/09/MN681A309R.DTL>

<sup>xliii</sup> [www.organicconsumers.org](http://www.organicconsumers.org)

<sup>xliv</sup> Pollan, Michael, “Naturally: How Organic Became a Marketing Niche and a Multi-Billion-Dollar Industry,” *New York Times Magazine*, May 13, 2001, 32.

<sup>xlv</sup> Katz, 19.

## CHAPTER THREE

### NEW SCHOOLS OF THOUGHT

Make lunch a mandatory subject.  
-Alice Waters

#### **Overview**

Chapter three introduces the grassroots movement central to this thesis: the sustainable food initiatives sprouting up on college and university campuses across the United States. Before narrowing the focus to institutions of higher education, I will first outline the food systems educational reforms happening at multiple levels of education, from elementary schools to high schools. This chapter will then provide an overview of the diverse initiatives—student-run gardens and farms, dining services that buy from local sustainable sources, educational programs in areas such as agroecology, and high-level research studies that focus on food policy and production—that are growing in popularity amongst institutions of higher education. After providing a summary of the varying campus commitments geared towards creating more sustainable food systems, this chapter will segue into a case study analysis of sustainable food initiatives at Boston College.

On the one hand, this chapter provides a thematic transition from the macro-level analysis of the food system outlined in chapters one and two, to the micro-level examination of the Boston College food initiatives, in order to draw out the implications of certain types of institutional organization at both levels. On the other hand, chapter three demonstrates how the educational sector may be a critical catalyst that sparks a larger structural change contemplated in the opening two chapters.

## **Lessons in Education**

Reforming the industrial food system begins with education. In order to re-instill cultural values within the food system that promote social and environmental sustainability, consumers need to reconnect with the people, processes, and agroecosystems responsible for the production of their food. Education, therefore, is essential in the creation of a more sustainable food system. Policy reform is necessary on many different levels to enable the decentralization and democratization of food production, but politicians will not enact adequate change until enough citizens demand it. As seen in the previous chapter, certain groups of people have already developed alternative routes to food procurement, but most American consumers still do not understand the major flaws of the industrial food system and how these structural failures relate to environmental and human health catastrophes. If more people are going to have a say in determining food production and distribution, they need to first learn about current paradigms and the ways in which the industrial food system model is fundamentally vulnerable and unsustainable.

Education that will truly empower individuals to work toward food sovereignty will not come from marketing campaigns run by large corporations that rely on the lack of consumer consciousness about food issues. As explained in chapter one, agribusiness companies capitalize on the disconnect between farmers and consumers. It is simply not in the best interest of food corporations to educate their consumer base about the adverse consequences of global-industrial production and distribution methods. Instead, consumers need to be educated by individuals and organizations that truly promote

sustainability and social justice as their primary goals. Some of this crucial information has begun to circulate via alternative food networks that enable direct, uncensored communication between independent producers and the communities they feed. A vast majority of U.S. citizens, however, do not have access to direct marketing venues. For this reason, knowledge about the food system should be imparted through other means, such as educational institutions.

An integral aspect of the burgeoning U.S. “food movement” exists within elementary, middle, and high schools that have begun to interweave food justice with student nutrition and education. These efforts range from the purchasing of local food for school lunches to installing campus gardens and revamping curricula through horticulture. Some of these school programs have failed in the face of budgetary constraints and logistical challenges, but many have succeeded in improving child nutrition and educating students about the origins of food. The following sections highlight some of the prominent food movement models being tested in educational institutions throughout the United States.

### **Farm to School**

Spurred by frighteningly high rates of childhood obesity and type 2 diabetes, a number of concerned parents and community groups have compelled school districts across the county to serve more nutritious meals within their cafeteria programs. At the same time, many activists have used these overhaul periods as an opportunity to strengthen local food networks by sourcing school dining food from regional farms. The National Farm to School Network—a collaborative project of the Community Food



Security Coalition (CFSC)<sup>10</sup> and the Center for Food and Justice (CFJ), a division of Occidental College’s Urban & Environmental Policy Institute—is one of the largest organizations that supports community-based projects that connect educational institutions with local farmers. The overall objective of the Farm to School Network is “to create a viable and sustainable structure to promote, institutionalize and catalyze farm to school programs as viable models for improving the economic viability of family-scale farmers and child nutrition.”<sup>i</sup> The farm to school movement began with a handful of programs in the late 1990s, and has since grown to include over 2,111 programs in 44 states across the U.S. Involving close to 9,000 different (K-12) educational institutions, farm to school programs forge working relationships between school administrators and local farmers in order to simultaneously serve healthier meals in cafeterias and support regional agriculture.

Beyond the nutritional and economic aims of farm to school programs, they also generate valuable educational opportunities to teach children about where food comes from, how it is grown and how to prepare it. Through the development of curriculum that utilizes school gardens, field trips to local farm and farmers markets, farmer and chef visits to the classroom, schools increase student knowledge about agriculture, nutrition, and the environment. Depending on the local landscape of each community and agricultural region, farm to school educational programming adopts unique strategies and approaches. One example is the “Harvest of the Month” program conducted by elementary schools in Riverside, California, that teaches children about local, seasonal fruits and vegetables through monthly taste tests. Since the same fresh produce is

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<sup>10</sup> The Community Food Security Coalition is a national organization that advocates for federal policies that promote community-based food sovereignty initiatives. CFSC also provides informational resources, training, and technical assistance for community food security projects.

available on a daily basis in cafeteria salad bars, the “Harvest of the Month” program also encourages students to choose healthier lunch options that also support local agriculture.

Another aspect of farm to school projects, school gardens have spread prolifically throughout the U.S. educational system. These gardens serve as key instructional tools for teaching children about ecology, nutrition, and taste. Even though minimal research has been conducted to analyze the impacts of school gardening programs, anecdotal evidence from teachers, parents, and school administrators suggests that hands-on gardening activities foster healthful eating habits (by increasing knowledge of and preference for vegetables), promote physical activity, and enhance academic performance.<sup>ii</sup> While information is not yet available on the long-term impacts of experiential garden education, K-12 schools with access to adequate funds continue to establish gardens on their campuses. Mentioned in chapter two, Slow Food USA is one example of an NGO that assists schools in establishing educational gardens.

The increasing number of sustainable food programs within schools and other food-service institutions (hospitals, prisons, etc.) has led to an annual Farm to Cafeteria Conference—the 5<sup>th</sup> of which will take place in May of 2010. Two decades after farm to institution initiatives began to crop up throughout the U.S., these projects have caught the attention of community groups, local and state policy makers, and even administrators within the USDA.<sup>11</sup> At the conference, entitled “Taking Root,” attendees from all around the country will learn about successful collaborative efforts between food sovereignty advocates and institutional dining services, especially within the education system. The weekend-long program includes a variety of workshops and informational courses on

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<sup>11</sup> See: the National School Lunch Act and the Child Nutrition Act in the “Federal Steps Forward” section of chapter two.

subjects such as the integration of local, sustainable seafood into cafeteria menus, policy advocacy, and media training. Finally, the annual conference serves as a crucial networking opportunity for school organizers looking to extend their grassroots food security initiatives to state and federal policy levels.

### **Edible Schoolyard**

One of the most revolutionary farm to school programs in the U.S. is accredited to Alice Waters' Chez Panisse Foundation based out of Berkeley, California. Waters, a pioneering chef and famous food activist, created the Chez Panisse Foundation in 1996 to improve food education and promote greater access to fresh, healthy food in the public school system. According to Waters' website, "The Chez Panisse Foundation envisions a school curriculum and school lunch program where growing, cooking, and sharing food at the table gives students the knowledge and values to build a humane and sustainable future."<sup>iii</sup> To this end, the Foundation has developed a middle school curriculum model, the Edible Schoolyard (ESY) that incorporates an educational garden and a kitchen classroom at the local Martin Luther King, Jr. Middle School. In the one-acre organic garden, every student learns about the origins of their food, the life cycles of plants, and the value of physical work. The students then use the produce harvested from the garden to learn nutritious preparation methods during their kitchen classes. The new "Dining Commons" lunchroom at the King School further engages students in the life cycle of food through on-site composting and recycling stations.

The Chez Panisse Foundation also aims to improve school lunch programs so that cafeterias and dining service operations reflect the same educational values as the garden

and kitchen curriculum. With the support of key administrators, the Foundation has transformed the lunch programs of 16 elementary and middle schools within the Berkeley Unified School District that are collectively responsible for feeding nearly 10,000 public school children every day. After designing a school lunch program that emphasized personal nutrition environmental responsibility and community values, the Foundation provided grant money for the hiring of a new head chef, Ann Cooper, to oversee the cafeteria overhaul. In 2006, Cooper succeeded in replacing almost all processed foods with fresh, organic items, without exceeding the district's food service budget. Presently, the Chez Panisse Foundation seeks to expand its ESY and lunch reform programs to school districts throughout U.S. public school system, by offering informational and training resources to other educators interested in the "Edible Education" model that utilizes gardens and kitchen classrooms. Since most public schools already struggle with inadequate budgets, government funding for public education (and the National School Lunch Program) needs to increase in order to implement these programs on a wider scale. Seeking ways to inform local, state, and national legislation regarding food and education, the Chez Panisse Foundation publishes policy papers such as *Lunch Matters: How to Feed Our Children Better* that stress the value and success of the EYS model.

The Chez Panisse Foundation is one of many organizations advocating for more nutritious school lunch programs and experiential learning models centered on food. Even if the Foundation's educational and operational prototypes achieve long-term success in Berkeley, the EYS model will inevitably assume distinct forms when applied to different regions of the country. Regardless, the programs implemented by the

Foundation demonstrate the vast potential for educational institutions to increase community-based food sovereignty while improving public and private school education.

### **Farm to College: Proliferation Patterns**

Institutions of higher education have powerful reputations, resources, and community clout. Due to the unique nature of higher education, farm to school type programs have taken different forms within U.S. colleges and universities. The sheer size of colleges and universities allows them to wield substantial influence over greater social systems through research, by educating the future leaders of our country, and through operational impacts on local markets. A statistic from the year 2000 stated that U.S. universities purchased more than all but 20 countries in the world.<sup>iv</sup> While this number has no doubt changed somewhat in the past decade, it remains a testament to the enormous buying power of university institutions. Furthermore, catering services such as campus dining operations are the largest employers within the national food industry.<sup>v</sup> While dining service operations create employment opportunities related to food preparation, they can further support the local economy by sourcing ingredients from nearby small- to mid-sized farming enterprises. Institutional markets prove particularly important for the viability of medium-sized farms that make up the most endangered demographic of agricultural enterprises.<sup>12</sup> Currently, the farm to institution market is small—only about 5 percent of the total revenues earned by farmers selling to institutional markets come from these sales—but it is also fairly new and has the potential

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<sup>12</sup> According to the U.S. Census of Agriculture, from 1997-2002, the number of farms with revenues under \$2,500 and over \$500,000 increased, while the number of farms with sales between \$2,500 and \$499,999, decreased. This phenomenon is called “the disappearing middle.”

to vastly increase if certain logistical barriers can be reduced within college and university structures.<sup>vi</sup>

The biggest supporters of local sustainable food programs amongst higher education institutions tend to be colleges with culinary programs, the University of California campuses, and private four-year colleges. Smaller colleges (serving less than 5,000 meals per day) purchase the highest percentage (18 percent) of their total produce budget from local growers or non-profit allied distributors. Medium-sized campus dining operations (serving between 5,000-10,000 meals per day) spend roughly two percent on local produce, and colleges that serve the most meals (over 10,000 per day) source only one percent of their total produce budget from local farms.<sup>vii</sup> These numbers can be attributed to the fact that bigger-scale dining service operations have logistical troubles sourcing from local, smaller scale farmers. Nevertheless, one percent of a very large budget could notably impact a regional market.

For most food service buyers surveyed, the primary advantages of buying produce from local family farms (as opposed to non-local, conventional sources) are better tasting food and supporting the local economy. Ecological considerations such as reduced carbon emissions are a “distant third” motivation.<sup>viii</sup> According to a USDA resource guide entitled *Building Local Food Programs on College Campus*, “Market research on local food finds that the healthier and gourmet connotations of local food has led to the market perception that ‘local’ is one of the hottest cues of quality right now in the world of food.”<sup>ix</sup> For a long time chefs have known that local, fresher ingredients often taste much better than pre-processed ingredients shipped from far off factories. Fresh, organically grown produce and naturally fed, humanely raised meat have been associated

with quality cuisine since the beginning of fine dining. While the sustainable food movement promotes “local” food for political and health reasons, dining service chefs are more than happy to jump on board because freshly harvested, chemical and pesticide-free food tastes better and provides chefs more freedom in the preparation of raw ingredients.

The post-secondary version of the “farm to school” movement is referred to as the “farm to college” movement. The Community Food Security Coalition (CFSC), the lead organization of the “National Farm to College Program,” defines the role of farm to college programs as “connect[ing] colleges and universities with producers in their area to provide local farm products for meals and special events on campus.”<sup>x</sup> Since 2004, the CFSC has been compiling a comprehensive list of active farm to college programs in the U.S. and Canada, a list that now includes over 300 academic institutions. In 2005, nearly 60 campuses in 27 states had student-run farms, and some 200 campuses had farm to college programs. “There are over 300 farm to college programs out of about 4,000 institutions of higher education and the number is steadily increasing every year.”<sup>xi</sup> While these numbers have undoubtedly increased, very limited data exists pertaining to the exact magnitude of these programs. Due to the lack of academic research on the topic, it is extremely difficult to gauge the extent or impact of farm to college programs in any concrete terms, especially because the farm to college model has been interpreted and implemented in so many diverse ways. Moreover, most of the literature that exists about these programs takes the form of “how-to” instructional guides for institutions looking to implement similar projects. Nevertheless, previous case studies on specific institutions combined with data compiled by the national Community Food Security Coalition’s official “Farm to College” website, illuminate general trends within the farm to college

landscape. It is important to note, however, that the statistics provided by the website represent the results of voluntary survey submissions completed by dining service representatives, student leaders, and school administrators.

According to the “Farm to College” studies, most sustainable dining programs are located in the Northeast, Midwest, and West Coast, presumably due to the prevalence of agricultural traditions and more liberal politics in these regions. A common factor of farm to college programs is their relatively recent inception dates. While a few schools have been purchasing local, sustainable food since the 60s and 70s, most of today’s farm to college programs were established after the turn of the century (with a mean inception date of 2004). The main initiators of the programs have been dining service directors and students, although not all students remain active in the projects. Food services personnel run the vast majority of programs once they are established, and their commitment along with the support of other university administrators may be the biggest factor in the institutionalization of the programs. Nevertheless, the continued success of farm to college programs largely depends on student awareness, since students are the primary customers of campus food providers.

### **The Operational End: Campus Cafeterias**

It is important to understand that the surveys conducted about farm to college programs on the Community Food Security website focus on the operational facets of farm to college programs, as opposed to academic programs. In other words, the “Farm to College” studies inquire about initiatives surrounding campus dining, emphasizing the purchasing practices of dining services and the relationships between colleges and



universities and their surrounding agricultural communities. Most schools surveyed (78 out of 170) define their “local” food products as coming from a 50-200 mile radius. Other institutions have broader definitions such as “state-wide,” or narrower definitions such as “same city/county.”<sup>xii</sup> Local food products have been incorporated into several different areas of campus dining, namely, catering, special events, regular menus, and convenience store items. Most farm to college programs (104 surveyed) rely on distributors to act as intermediaries between individual farmers and the institutions, but a good number of colleges (99 surveyed) work directly with farmers. A smaller number of institutions purchase local good through farmer-managed cooperatives, farmers markets, and their own campus/student farms.

A commonly cited obstacle to sourcing food through alternative pathways that do not support corporate food conglomerates is cost. Certain sustainable dining programs require greater funding than others. On average, locally sourced products cost more money. The increased purchasing of fair trade items usually costs more money as well, since fair trade prices reflect labor and environmental costs typically externalized in conventional markets. Most organic items come with a premium as well. In order to cover these costs, dining services can choose to pass along the prices to consumers, secure external funding such as grants, or try and cut costs elsewhere in their budgets. For obvious reasons, most dining service directors seek methods of reducing operational costs elsewhere. Dining service initiatives that reportedly save money include encouraging students to eat less meat, serving smaller portions, and asking vendors to minimize packaging (or purchasing more items in bulk packages). Colleges and universities can also cut costs by increasing recycling and conservation programs within dining service

operations. Oftentimes, dining service departments are the first areas on college campuses to achieve zero waste streams, such as the dining service operations at Portland State University.<sup>xiii</sup> Since food waste is a major issue within campus cafeterias, many institutions have implemented programs that include pre- and post-consumer composting, the re-use of cooking oil as biodiesel, and the removal of cafeteria trays—which eliminates up to 50 percent of food waste while saving the water and energy that would have been used to wash them. When costs need to be passed on to customers, education becomes even more crucial because students will not support increased food costs unless they agree with the ideology behind price raises.

### **Barriers to Growth**

While campus cultures and the attitudes of top administrators can hinder the success of farm to college programs, the biggest challenges of starting farm to college programs, according to the institutions surveyed, tend to be logistical instead of political. Most logistical barriers relate to the immense size of colleges and universities that serve several thousand meals daily. Local, small- to mid-sized farms cannot always provide the volume and consistency demanded of large food service institutions. Another commonly cited challenge is the disparity between the school year and growing season. Most students are not in school during the summer when local food production is at its peak. Institutions located in regions with short growing seasons (such as the Northeast) or a lack of local agriculture can still partake in farm to college programs, but they might need to expand geographic definitions of “local,” especially during winter and spring months. Even when local farms and processing plants exist within close proximity to colleges and

universities, restrictive food safety laws can inhibit farm to college transactions. Due to the restrictive nature of food safety legislation—that is inherently biased toward corporate, large-scale growing and processing operations—some dining service directors decide against supporting smaller family-owned farms for liability concerns.

Perhaps the most formidable challenge facing sustainable food movement initiatives at colleges and universities pertains to the corporate monopoly of catering companies. There are two basic types of dining service operations: contract-managed and self-operated. Of the farm to college institutions surveyed by the Community Food Security Coalition, roughly 64 percent reported to have contract-managed facilities. Born out of industry mergers during the eighties, several foodservice companies emerged as leaders in the field. Known as the ‘global coordinators’ within the industrial food system, these companies—namely Compass, Sodexo and Aramark, and their subsidiaries, including FLIK, Chartwells, and Bon Appétit—are the some of the largest food retailers in the world.<sup>xiv</sup> In the 1980s, these catering companies capitalized on loose business regulations by purchasing smaller companies at every step of the food production chain. They base their organization on the year round availability of uniform goods and depend on an international supply of raw produce. Like other major food conglomerates, the vertical integration of large-scale catering companies enables the swift and easy transfer of food products from the industrial farm where they are grown, to the final location where they are sold. Since these catering companies involve themselves in every level of the food system—from contracted farmers, packaging facilities, storehouses, distribution sites, and shipping facilities, to dining service operations within businesses, prisons, and

schools—they maintain dominance within the food service industry while capturing massive profits.

Colleges and universities that contract these catering companies effectively relinquish control over food purchasing decisions. In recent years, a couple of these companies (namely Bon Appetite and Chartwells) have begun to market themselves in accordance with the public dialogue about food sustainability trends, creating “green” dining concepts that include an increase in the energy efficiency of their equipment, and more vegetarian/vegan options and locally sourced produce for their customers. These “sustainable” initiatives that may sound progressive and well intentioned, but they are severely limited by the fact that corporations have more immediate obligations to their shareholders than to small-scale farmers or even their student customer base. Not to mention the fact that the highly integrated and hierarchical corporate business model fundamentally opposes concepts of systems resilience. For these reasons, many students have lobbied their school administrators to break contracts with large catering companies. When contracts cannot be broken, student activists turn to the food procurement practices of these companies and solicit their administrators to influence the companies with contractual obligations to support local agriculture and fair trade.

### **Student Involvement**

Collaboration with students has been crucial to the success of these programs, since certain dining initiatives—such as the transition to a more seasonal, vegetarian menu—risk customer resistance. According to the “Farm to College” studies, student involvement includes, among others, the following activities: promotional/educational

outreach, assisting with project planning and menu creation, working in campus/student farm or garden, researching the availability and benefits of local products, and food preparation. These activities not only assist dining service personnel, but more importantly they create educational opportunities for students to engage in place-based, experiential learning.

These opportunities even extend beyond the school year. Since dining service directors execute many operational changes during the summer when a majority of the student population is gone for the interim break, the undergraduate and graduate students that do remain near campus can be utilized to implement food sustainability projects. Indiana University, for example, hired 18 summer interns, ranging from undergraduates to PhD students, to work with faculty and staff mentors in the implementation of various sustainability projects, including a new compost program in one of the food courts, and a permaculture initiative to create multiple student-run vegetable gardens around the residence halls. Funding for these internships came from the provost and vice president for administration, as well as individual departments.<sup>xv</sup>

### **Education and Research**

As students involve themselves in the operational end of dining services, college and university administrators are beginning to realize the popularity of sustainable food issues among students, faculty, and staff. In order to cater to this interest, some institutions have started to revamp curricula, develop co-curricular programs, and fund faculty research related to various aspects of the food system (federal policy, nutrition, environmental impact, economics, etc.). This trend mirrors the increase in overall

sustainability-theme curricula in higher education. A 2009 report published by the Association of Sustainability in Higher Education (AASHE) claims that 66 sustainability-focused academic programs were created in 2008, up from 22 in 2006 and 3 in 2005.<sup>xvi</sup> According to the report, the new programs consist of graduate degrees, undergraduate degrees, and continuing education and technical training programs. Over a dozen sustainability-themed research centers opened in 2008, with triple that number in the planning stages. It goes without saying that new developments in sustainability education and research incorporate pervasive themes of food and agriculture, regardless of the accepted definition of “sustainability.”

Curricula pertaining to food systems issues can be found throughout traditional disciplines and major departments, from social sciences to hard sciences, business programs to health programs. More than 160 colleges and universities offer educational and training programs in sustainable agriculture.<sup>xvii</sup> The popularity of these programs continues to increase as more young people realize the broken nature of the food system, and the importance of becoming more involved in sustainable food production and distribution. Some colleges and universities have even created entirely new undergraduate and graduate programs related to food production and distribution. Agroecology is one such concentration rapidly growing in popularity, especially among schools with agricultural traditions. Learning about the food system also lends itself to experiential learning models since growing, preparing and composting food is best taught through hands-on practice.

One example of said curricula has achieved substantial recognition at Green Mountain College in Vermont. In 2008, a nine-credit course taught by professors from

environmental studies, business & public policy, and cultural anthropology, entitled “Food, Agriculture, and Community Development in the Northeast” received Vermont Governor’s Award for Environmental Excellence and Pollution Prevention. The overarching topic of this course related to the effects of food choices on community resilience. During the course, students visited about a dozen farms in the area and hosted food and agricultural experts as guest speakers. For their culminating project the class created sustainable purchasing guidelines for one of their dining halls, Withey Dining Hall. It is should be noted that Green Mountain College (GMC) already had a mission statement pertaining to its environmental education model that stresses experiential learning. As stated on the GMC website:

Students are encouraged to gain hands-on experience through internships, service-learning opportunities and study abroad programs. Interdisciplinary block courses allow students to spend an entire semester working with professors from multiple disciplines on a single area of focus, often through field research, overnight outings, discussions with experts and a culminating project.<sup>xviii</sup>

Even though most colleges and universities in the U.S. lack this type of formalized curricular structure, they can still implement educational programs related to sustainable food systems. Campus gardens and farm to college programs continue to grow in popularity across the country, providing newfound possibilities for experiential learning techniques and co-curricular student education. If the K-12 schools can implement such programs using fewer resources, then so can college and university institutions that should be leading the way.

## Back to the Land-Grant

Public institutions of higher education known as Land-Grant Universities (LGU) play a unique role within the farm to college movement, due to their close ties with federal and state politics. Ironically, the college and university institutions leading the way in agroecological research and education programs are the same institutions responsible for creating the conventional model of industrial agriculture. There are over 100 colleges and universities throughout the nation that comprise the Land-Grant University System. In addition to their institutional missions of research and teaching, land-grant colleges and universities receive unique federal support to address public needs through non-formal, non-credit extension programs. Administered through county and regional extension offices, these programs “extend” land-grant expertise to local communities. When congress created the LGU system almost a century ago, research and extension programs emphasized rural and agricultural issues.<sup>13</sup> In order to secure federal funding, land-grant institutions were forced to partner with the U.S. Department of Agriculture in developing real-life applications of research knowledge and providing instruction and practical demonstrations of the latest practices in agricultural technology.<sup>xix</sup>

According to University of California Davis professor, Damian Parr, “The invention of the LGUs proposed a national transformation in higher education, making college curricula accessible and relevant to the majority of U.S. citizens, an

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<sup>13</sup> The Morrill Act of 1862 originally created the land-grant universities to educate citizens in practical professions such as agriculture, mechanical arts, and home economics. Then, in 1914, the Smith-Lever Act formalized the extension system by establishing a partnership between the agricultural universities and the U.S. Department of Agriculture. This partnership proved very significant in the development of large-scale, industrial methods (e.g., mechanization, monocropping, synthetic fertilizer and pesticide use, and hybrid seed application) prevalent in agriculture today.



industrializing agrarian class.”<sup>xx</sup> Despite the noble intentions that prompted the creation of the LGU system, these institutions did not live up to their original promise. Instead of catering to the social well being of communities, LGU research became heavily influenced by state demands for improved agricultural efficiency and productivity through scientific progress. In fact, LGU research and extension programs made possible the technology-driven agricultural revolution of the 20<sup>th</sup> century that gave rise to the problematic modern food system.

It is not difficult to see how LGU research and extension programs went awry. Still today, one can read the mission statements of LGU programs and realize how research does not always serve the public interest. For example, the land-grant institution, University of Massachusetts, publicizes their extension program with the following description of their work: “Objective, research-based and credible information you can use every day to improve your life. Brought to you by experts from the nation’s largest and oldest network of universities.” While this “expertise” ranges in topics from childcare and community zoning to information about the financial crisis, most of the resources available through the UMASS Extension focus on agricultural issues. Yet, “expert research” can never be completely objective, since agribusiness companies influence research projects by directly funding them and/or lobbying government policies.<sup>xxi</sup> This results in research focused on the development of technologies like chemical pesticides and GM seeds that harm the environment and prove very costly to farmers. In an essay on the evolution of land grant institutions, Parr points out, “Among the most influential techno-scientific LGU innovations from the mid 20th century have been hybrid seeds, and their concomitants, synthetic fertilizers, pesticides, machinery,

and irrigation.”<sup>xxii</sup> As explained in chapter one, the technological innovations that initially led to a massive increase in certain commodity crops soon after resulted in substantial environmental degradation and systematic health epidemics.

Apart from the effects of LGU research projects on non-agrarian communities, the effects on local farmers have proven detrimental. One critic of the development of LGU programs asserts, “The unspoken logic behind most of the state projects of agricultural modernization was one of consolidating the power of central institutions and diminishing the autonomy of cultivators and their communities vis-à-vis those institutions.”<sup>xxiii</sup>

Whether or not the de-skilling of cultivators and their dependence on more technology was intentional on the part of state government (as this critic claims), farmers lost control of their production methods during the 20<sup>th</sup> century period of agricultural modernization.

Not all extension programs in the past century, however, have focused on increasing farm productivity through large-scale, energy-intensive farming methods. During the Great Depression, extension agents helped farm groups to organize buying and selling cooperatives and taught farm women home economic skills—such as canning surplus food, house gardening, home poultry production, etc.—that allowed farm families to survive years of drought. Later, during World War II, extension agents developed the Victory Garden Program that encouraged millions of Americans to plant vegetable gardens—using seeds, fertilizers, and gardening tools provided by extension services—to feed themselves. The U.S. Department of Agriculture reports that in 1943, over 20 million Victory Gardens produced more than 40 percent of the annual vegetables grown for fresh consumption.<sup>xxiv</sup> LGU institutions may have been major culprits in the

development of industrial agriculture, but their extension programs have also demonstrated a potential to heal the damages caused by the modern food system.

### **Redefining Higher Education through Agroecology**

A fair amount of LGU extension programs have already made it their goal to foster food sovereignty at the community level. As part of my primary research, I interviewed several individuals affiliated with the University of California (altogether an LGU institutions with select agricultural campuses). While representatives from UC Davis and UC Santa Cruz admit to the negative consequences of agricultural development produced by state-funded UC research, these individuals also mentioned the constructive efforts attributed to LGU extension programs, faculty research, and student curricula. For example, many programs currently provide valuable assistance to local farmers, mostly small- to medium-sized, looking to employ biodynamic techniques that will ensure the continual fertility of their land. UC Santa Cruz, in particular, promotes alternative methods of food production and distribution geared toward achieving long-term resilience within the food system.

Although it does not receive as much funding as the other UC campuses designated as agricultural bases (UC Davis and UC Berkeley), UC Santa Cruz assumes a very important, progressive role amongst UC schools in the advancement of alternative food systems that sustain populations of people in the long-term. More specifically, UCSC's Center for Agroecology & Sustainable Food Systems (CASFS, or the Center), serves as a lead model of sustainable food and agriculture research. The Center, established in 1980 as an agroecology program run by Steve Gliessman, is located on the

USCS Farm, a 25-acre organic plot of farmland tended primarily by students since 1974.

The mission of the Center is to “research, develop, and advance sustainable food as agricultural systems that are environmentally sound, economically viable, socially responsible, non-exploitative, and that serve as a foundation for future generations.”<sup>xxv</sup>

The Center has no direct responsibility to engage with large scale systems of agriculture in the state or with the associated agribusiness industries, so its staff can invest resources in more subversive research that focuses on issues such as social justice and identity; food security, hunger and access; and biological research that explores organic systems of pest management and other alternatives to conventional methods; not invested in GM systems but rather organic systems of pest-management and exploring alternatives to predominant, conventional methods. The Center then publishes and disseminates research briefs about sustainable food systems that government officials use to develop local and state policy.

In terms of collaborative efforts, UCSC also works with extension agencies from the other UC campuses on biological research, such as organic pest management. Other land grant institutions such as UC Davis enjoy much higher levels of federal funding and therefore have more extensive farmland, but that state funding comes at a price: UC Davis must adhere to the type of research that the state wants. UC Santa Cruz agricultural research, on the other hand, uses primarily grant money, allowing researchers at UCSC the freedom to explore more progressive projects that incorporate social justice and systems-based thinking pertinent to the surrounding region. Interestingly enough, the UCSC farm, although tiny in comparison to the farmland at UC Davis, has the most organic farmland out of any UC campus. As a result, many researchers from Davis and

Berkeley travel to Santa Cruz to conduct studies on the organic land. Educators from all around California also visit the Farm's "Life Lab," a Garden Classroom used to train teachers in food systems science and education.

The ability of the Center's staff to attract research grants and host a multitude of public outreach events makes it a valuable asset to the UCSC campus. Furthermore, the Center has been recognized congressionally, nationally, and within the state legislature as the leading center for agroecology and sustainable food systems. The Center's research also informs mostly small- to mid-sized farming operations—including artisan farms, restaurant farms, farm to school programs, prison farms, etc.—on the most up-to-date biodynamic agricultural practices. Yet, this information also assists giant agriculture companies such as Driscoll Strawberry Associates, Inc., the lead supplier of organic and non-organic strawberries, raspberries, blueberries and blackberries in the world.<sup>xxvi</sup> Through an exemplary apprenticeship program taught on the UCSC Farm, the Center trains people of all ages and from a variety of countries cutting edge biodynamic farming practices. During the program, apprentices grow food that supplies the surrounding community with 137 CSA shares and a farm cart with fresh produce. The UCSC dining halls also feature a small portion of the Farm's harvest, but the yields are not great enough to feed the entire campus population. The Center's staff has begun to track the activities of apprenticeship graduates, whose accomplishments range from the establishment of farm to school programs to the creation of rehabilitative gardens in prisons and hospitals.

The Center also hosts a series of community outreach programs such as backyard gardener trainings and other events with the Santa Cruz Farm and Garden Network. On

the legislative end of its work, the Center has assisted with the development of the city's Food Policy Council, conducting research that led to one of only bans in California of genetically modified food. Although their research briefs have not been tracked on a state level, locally there have been several policy changes informed by CASFS research. One example is the food safety forum organized by CASFS members concerned about proposed federal legislation surrounding health codes that could potentially doom small farming operations. The forum served to educate local farmers and politicians about the new legislation and its implications, bringing various stakeholders to the same table to facilitate a discussion about possible solutions. For this reason, Steve sees the members of CASFS as "bridge-builders" who do not necessarily mandate solutions, but rather bring key players to the same table in order to find effective solutions through collective steps.

In addition to their on-site, farm research and policy briefs, UCSC boasts one of the most extensive farm to college programs in the country, due to its collaborations with student, faculty, and community organizations. One of the program's notable achievements has been the creation of the Monterey Bay Organic Farmers Consortium that connects local small- to mid-sized farmers with the UCSC dining halls. The sales from alternative, organic farms to the UCSC cafeterias range from 150-200,000 dollars per year—a direct economic investment in local, organic farms. The farm to college program extends into the formal curriculum of UCSC that includes courses related to sustainable food systems and agroecology through the Community Studies and Environmental Studies Departments. As a trademark of UCSC, a lot of student education occurs outside the classroom, and several academic programs promote experiential

learning that teaches students practical skills. An example that extends beyond the UCSC campus is the Education for Sustainable Living Program (ESLP), an interdisciplinary effort to establish a sustainable community throughout the University of California by forming partnerships between student research teams and faculty, administration, guest lecturers, and community members. The goal of this type of collaboration is to implement tangible change while students acquire practical skills to take with them beyond the UC campuses into the greater society.

Of the people I spoke with at UC Santa Cruz, every one of them mentioned the importance of student involvement in the success of their sustainable food initiatives. Tim Galarneau, the Food Systems Education & Research Program Specialist, works with a group of student interns and coordinators that organize campus activities and programs, such as a vegetarian, low-carbon meal for incoming freshmen and their parents. At this meal, freshmen receive a sustainable food guide, and are immediately immersed in the culture of sustainability at UCSC. These interns also coordinate farm to college sales and delivery (including marketing, production management, etc.), and help to educate their peers with programs that bring students out to the Farm to harvest produce for the dining halls. Tim noted the self-empowerment experienced by interns involved with the nuts and bolts of the UCSC farm to college program. Additional student groups that participate in experiential learning and a peer-to-peer education model include the Program in Community and Agriculture (PICA), a living/learning community for students interested in sustainability and agroecology, and Kresage Cooperative, a student-run natural foods store on campus. Students also played an integral role in the transition from a contracted dining operation (run by Sodexo, Inc.) to a self-operated dining service

that finds itself at the forefront of campus sustainability initiatives by reducing its waste in increasing its connections with local, sustainable farms.

### **Yale University**

On the opposite side of the country from UC Santa Cruz exists another groundbreaking farm to college institution with a much different reputation and campus culture. Yale University, located in New Haven, Connecticut, leads Ivy League institutions in terms of food sustainability initiatives. According to their dining services website, 40 percent of all the food (1.8 million meals to 6,000 undergraduates annually) served within their twelve cafeteria venues is considered to be “sustainable”—sourced from regional farms that practice agroecological methods and other farms with organic and fair trade certifications. In 2007, Yale University Dining Services (YUDS) terminated its contract with Aramark, one of the biggest food service management companies, and switched to a self-operated dining operation. Due to the difficulties involved with purchasing food directly from farm growers, YUDS relies on distributors who consolidate and redistribute food products to them. According to the YUDS website, “With few exceptions the growers prefer not to act as distributors. Distributors are specialized, efficient, and expert at what they do.” At the same time, YUDS staff makes sure to “manage the middle” as they call it, ensuring that the growers receive fair prices and that the distributors sell them products from local and organic sources over others.

The sustainable dining program at Yale is one of three major initiatives that make up the Yale Sustainable Food Project, a collaborative effort between students, faculty, and the Yale administration. With a dedicated staff funded by the university, the



Sustainable Food Project also manages an organic campus farm (that yields produce year-round using a non-heated green house) and coordinates diverse academic programs related to food and agriculture. Similar to UC Santa Cruz apprenticeship program, the Yale Farm hosts six summer interns each summer to teach students innovative methods of agroecological food production. The Farm also serves the surrounding New Haven neighborhoods by providing an education tool for local K-12 schools, and a community garden for volunteers to harvest produce and eat produce together on group work days. Yale professors from several different departments (such as Psychology, History, and Biology) incorporate the Farm into their coursework. In 2007, the Sustainable Food Project helped establish a food and agriculture concentration within the Environmental Studies program. Other courses integrate food system issues into their material, and offer students the option of conducting research about the Farm and other sustainable food initiatives on the Yale campus. According to the Sustainable Food Project website, these educational and co-curricular opportunities that allow students to connect with food and agriculture in the context of sustainability “ensures that Yale graduates have the capacity to effect meaningful change as individuals and as leaders in their communities, their homes, and their life’s work.”<sup>xxvii</sup> As the Project grows, it continues to play an integral part in the academic mission of Yale.

In the overall scheme of farm to college programs, Yale has had certain clear advantages in implementing their food sustainability programs. First of all, they have received generous amounts of funding from university administrators and external donors. They were also able to draw on the expertise of famous food pioneer and author Alice Waters, whose daughter attended Yale University at the time of the dining services

transition. Another crucial factor of Yale's progress has been the support of its president, Richard Levin. In the Yale Sustainable Food Project's most recent annual report (2008-2009), Levin wrote an introductory letter emphasizing the importance of the Project. In the letter, Levin praises the efforts of YUDS that bring the University closer to reaching their goal of reducing green house gas emission by 10 percent before 2020; he hailed the Yale Farm as a place for students to engage in rigorous and rewarding academic and extracurricular activities; and he deems the project essential for preparing Yale graduates for lives of socially engaged leadership. Levin concludes the letter with the following expression of gratitude: "I am grateful to the alumni and parents who have already stepped forward to support the Project's ambitions to change the way our nation thinks about food and agriculture."<sup>xxviii</sup> Clearly, Levin believes that institutions of higher education wield substantial influence over greater social systems.

At the same time, public announcements of administrative support for sustainable food issues have not yet caught on at most colleges and universities. To make matters more difficult, massive food service companies like Sodexo and Aramark continue to take over management of many dining service operations. For these reasons, much of the movement generated around sustainable food initiatives such as farm to college programs occur at the student level. If upper level administrators of universities are primarily concerned with cost-effectiveness and bottom-line dollar profits, then they cannot be relied upon to make wise decisions on behalf of the rest of the institution. Within the university system as a whole, students are leading the most progressive campaigns for more ecologically sound and socially just food systems on their campuses and in the surrounding areas.

### **Cross-campus Grassroots Alliances**

A number of organizations exist that connect student activists working on sustainable food initiatives. For example, one of many Slow Food USA programs, called “Slow Food on Campus,” is a network of college and university chapters across the country that engage their communities and the next generation of Slow Food leaders in realizing the Slow Food principles of good, clean, fair food. The leaders of Slow Food on Campus are students representing a cross-section of energetic youth working to address food justice issues related to environmental and social causes. Although the current number of U.S. campus chapters amounts to less than 40 institutions of higher education, these chapters partner with other student organizations—namely the Real Food Challenge, the Student/Farmworker Alliance, and United Students for Fair Trade—that also advocate food system reform.

A much more expansive network of students comprise the Real Food Challenge (RFC), whose tagline reads “Uniting students for just and sustainable food.” Individuals and organizations affiliated with over 333 colleges and universities currently participate in the RFC movement to shift their campus’ resources to support local, ecologically sound food systems. Collectively, college and university dining operations spend almost 5 billion dollars on food annually. The RFC seeks to direct 20 percent of this total spending to more regional, sustainable food by the year 2020. Doing so might economically impact the greater food system by re-directing resources to alternative niches occupied by small- to mid-sized farms. In addition, the RFC serves as a resource network for the students involved with sustainable food initiatives. To this end, the RFC

organizes regional and national summits and training conferences for participating students to assist one another in strengthening their individual campus campaigns. The RFC targets young leaders within institutions of higher education because students and other youth are, by default, the most invested in the long-term viability of food production and distribution systems. They will also go on to be the decision-makers of the future.

Student-led organizations such as Slow Food and the Real Food Challenge are significant for a variety of reasons. For one, these organizations testify to the widespread nature of sustainable food initiatives within college and university campuses. The fact that students are so actively engaged in efforts to build alternative models to the industrial food system shows that food security—related to issues of environmental, community, and personal health—is a major concern of the next generation of leaders and policymakers. The networking capacity of these student-led organizations facilitates the crucial dissemination of resources amongst student populations that otherwise lack access to sustainable food curricula and/or expertise on their campuses. As students from campuses throughout the country form valuable alliances with one another, they also demonstrate the capacity for post-secondary education to collectively leverage social change that extends beyond individual institutions.

### **Making the Grade**

As previously mentioned, the difficulty of measuring and comparing farm to college and sustainable food initiatives across universities lies in the great diversity of programs and projects that does not lend itself to common evaluation measures. There

have been some studies that examine a specific group of schools, but too many institutions have developed sustainable food initiatives to rely on such limited studies. In light of the concepts of system resilience explained in chapter two of this thesis, the functional redundancy and diversity of college and university programs should not be seen as negative. Nonetheless, as some school models achieve more success than others over the long term, national achievement standards and benchmarks may emerge.

One effort to measure and compare general sustainability initiatives within the system of higher education in the U.S. and Canada began in 2005 with the creation of the Sustainable Endowments Institute, a nonprofit organization that promotes sustainable practices in campus operations and endowment practices. In 2009, the Institute conducted research on sustainability initiatives at 332 colleges and universities from all 50 states. Data collection took the form of sending a series of surveys to school administrators and students. The survey questions covered nine equally weighted categories of campus operations and investment (Climate Change & Energy, Transportation, Green Building, Endowment Transparency, Shareholder Engagement, etc.) that were then evaluated using various performance indicators in order to calculate “grades” for these institutions. The Institute published the results in the *College Sustainability Report Card 2010*, the only independent evaluation of operational sustainability activities at North American institutions of higher education.

The purpose of the *Report Card* is to identify the leading examples of sustainability practices at colleges and universities, so that schools may learn from each other’s experiences and establish more effective operational and endowment policies. Representatives of the Institute define sustainability as, “meeting the needs of the present

without compromising the ability of future generations to meet their own needs.” In terms of sustainable food system policies, the *Report Card* includes a Food & Recycling category that evaluates dining services food procurement and waste management practices. The *Report Card* awards points based on the amount of organic, local, and sustainably produced food, while taking into account the agricultural disparities between geographic regions. Waste management and recycling practices include reusable dishware, food composting, and source reduction (reuse) programs. The *Report Card* lists the following key findings: More than 80 percent of schools buy food from local sources; almost two-thirds of institutions have a community garden or farm on campus; nine in ten schools offer fair trade items such as coffee and tea; 55 percent of schools compost food waste; a majority of schools purchase come cage-free eggs; 67 percent of schools have trayless dining programs (proven to reduce food waste); and vegan options are available daily at 83 percent of schools.

Overall, the average grade given to schools in the Food & Recycling category is a “B.” The report names 119 different schools that all earned “A” grades as the model institutions regarding food and recycling policies. The top examples range from large public institutions such as Arizona State University to small private schools like Bowdoin College in Maine. Not surprisingly, the diverse food and recycling practices at dissimilar institutions are not easy to compare. Instead, the report highlights a few examples in its conclusion that capture the sizeable spectrum of commendable campus initiatives. The list of model institutions includes New England institutions—namely Yale University, Tufts University, UMASS Amherst, and Harvard University—as well as several Atlantic

Coast Conference (ACC) institutions (University of Virginia, Duke, and Georgia Institute of Technology). The list also includes Boston College.

While the “A” grade awarded to Boston College Dining Services reflects the positive progress made at BC toward a low-impact campus food system, it reveals severe limitations of the *Report Card*'s grading criteria. The biggest omission of the report's conclusions about models of “sustainability” within colleges and universities relates to the primary purpose of these institutions: their educational vocations. Chapter four of this thesis embodies a more comprehensive evaluation of sustainable food initiatives at Boston College, one that includes operational efforts, administrative management, formal curriculum and research, and student initiatives.

## **Conclusion**

Although there is scant research available that synthesizes the impact of the above initiatives within and beyond campus operations and curricula, there is no doubt that sustainable food programs continue to develop in different forms on college and university campuses across the country. These initiatives, like the efforts seen amongst K-12 institutions, reinforce local alternative food networks by providing small- to mid-sized farmers with sizeable and enduring markets. They also provide an essential educational experience for students of all ages to reconnect with their food systems, an experience that will empower them to be proactive in the establishment of more resilient models of food production and distribution.

In order to contribute to the emerging body of information about the role of the educational sector in leveraging system-wide reform, I have conducted a case study of the

sustainable food initiatives at Boston College. The purpose of the case study is to flesh out the logistical barriers to institutional change, and to provide concrete evidence for the positive potential of post-secondary institutions to positively influence larger social structures. The following chapter summarizes the findings of that case study, written from my perspective as a participant observer.

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<sup>i</sup> National Farm to School Network, *Farm to School: Nourishing Kids and Community*, <http://www.farmtoschool.org/aboutus.php> (Dec. 21, 2009).

<sup>ii</sup> “Do Farm-to-School Programs Make a Difference?” *Journal of Hunger & Environmental Nutrition*, Vol. 3, (Feb. 3, 2008), <http://www.haworthpress.com>.

<sup>iii</sup> Chez Panisse, (<http://www.chezpanissefoundation.org/>), March 4, 2010.

<sup>iv</sup> Nan Jenks-Jay & Anthony Cortese, in “Conference Proceedings Summary,” *Institutions, Climate Change and Civil Society: Acting now to Protect Our Future*, Medford: Tufts University, Tufts Institute of the Environment & Tufts Climate Initiative, April 24, 1999, 10.

<sup>v</sup> Tansey, Geoff, Worsley, Tony “The Food System: a guide,” *Community Alliance with Family Farmers* (London, Earthscan Publications: 1994)

<sup>vi</sup> “Building Local Food Programs on College Campuses Guide,” <http://www.caff.org/> (Nov. 2, 2009).

<sup>vii</sup> <http://www.caff.org/>

<sup>viii</sup> <http://www.caff.org/>

<sup>ix</sup> <http://www.caff.org/>

<sup>x</sup> Community Food Security Coalition: Farm to College, *About Farm to College*, <http://www.farmtocollege.org/about>, (Jan. 5, 2010).

<sup>xi</sup> AASHE Association for the Advancement of Sustainability in Higher Education Report. *Campus Sustainability Perspectives*, <http://www.aashe.org/blog/aashe-interview-series-tim-galarneau-food-systems-education-research-program-specialist-univers>

<sup>xii</sup> <http://www.farmtocollege.org/surveys/graph/9>

<sup>xiii</sup> Portland State University, *PSU Dining Services: Green Efforts*, <http://www.campusdish.com/en-US/CSW/PortlandState/Sustainability/> (Jan. 5, 2010).

<sup>xiv</sup> Tansey, 1995.

<sup>xv</sup> Hewitt, Dawn. Bloomington Herald-Times Article. “IU walking the sustainability walk: It's not easy being a green university.” August 29, 2008 <http://newsinfo.iu.edu/news/page/normal/8734.html>

<sup>xvi</sup> Andrea Webster and Julian Smith, Association for the Advancement of Sustainability in Higher Education, “AASHE Digest, 2008,” (Kentucky, AASHE Online Press: June, 2009).

<sup>xvii</sup> Becky Thompson, USDA: The National Agricultural Library Cataloging Record, “Educational and Training Opportunities in Sustainable Agriculture,” <http://www.nal.usda.gov/afsic/pubs/edtr/EDTR2009.shtml> (March 3, 2010).

<sup>xviii</sup> Green Mountain College, *About GMC*, <http://greenmtn.edu/about.aspx> (March 4, 2010).

<sup>xix</sup> USDA National Institute of Food and Agriculture, *About Us: Extension*, <http://www.csrees.usda.gov/qlinks/extension.html> (Feb. 10, 2010).

<sup>xx</sup> Damian Parr, “Agriculture, Science, and the Land Grant University: A Case for a Criticalist Epistemology,” UC Davis, CA, 2009.

<sup>xxi</sup> Kloppenburg, 213.

<sup>xxii</sup> Parr, 12.

<sup>xxiii</sup> Parr, 13.

<sup>xxiv</sup> <http://www.csrees.usda.gov/qlinks/extension.html>

<sup>xxv</sup> CASFS-Center for Agroecology & Sustainable Food Systems, *About the Center*, <http://casfs.ucsc.edu/about/index.html> (Feb. 1, 2010).

<sup>xxvi</sup> Driscoll's: The Finest Berries in the World, *Our Story*, <http://www.driscolls.com/about/our-story.php> (Jan. 22, 2010).



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<sup>xxvii</sup> Yale Sustainable Food Project, Report 2008-2009, “Growing Awareness,”  
<http://www.yale.edu/sustainablefood/CurrentAnnualReport.html> (Feb. 5, 2010).  
<sup>xxviii</sup> <http://www.yale.edu/sustainablefood/education.html>

## CHAPTER FOUR

### A GARDEN ON THE HEIGHTS: THE BC FOOD SYSTEM

The changes that are upon society are taking place with such rapidity and are of such a magnitude that to assume that universities will be able to survive without considering those changes will doom academia to becoming organizational anachronisms.

-William G. Tierney

#### Overview

Chapter four is a micro-level case study analysis of Boston College. The case study begins with a general overview of how BC ranks amongst other university institutions in terms of its food sustainability efforts. It then moves on to a more specific examination of four areas: dining service operations, academic curriculum and faculty research, administrative resource allocation, and student-led initiatives. The dining service category includes an examination of operational purchasing practices, transparency, labor practices, environmental affects of production methods, the business practices of contracted vendors, community service initiatives, and student outreach programs. The curriculum category evaluates current and future academic courses offered that incorporate themes of food justice and sustainable agriculture, as well as faculty research at graduate and professional levels that pertains to the food system. The resource allocation category ties into the funding for this research, as well as the land use practices of the university and the extent to which the administration promotes ethical and sustainable food practices. Lastly, an evaluation of the student-led initiatives documents food activism on campus and the changes driven by student efforts. In my descriptive analysis of these categories, I ask three fundamental questions:

- 1) What quantitative and qualitative progress has been made at BC?

- 2) Who has been the driving force of change, and what factors have contributed to their success?
- 3) Finally, what are the primary challenges that face Boston College in the creation of a more just food system within and beyond its campus boundaries?

The chapter ends with a summary of specific recommendations for the Boston College community.

### **Methodology**

Since I have already been involved in many of the student-driven sustainable food initiatives on the Boston College campus, my case study research reflects my intimate familiarity with the campus food culture and the primary players involved with food sustainability. When I first began my investigation of the Boston College's involvement with sustainable food initiatives, I had originally intended on conducting a comprehensive numerical study of food purchasing practices. I soon realized, however, that tracking the origins of dining hall food would take much more time and resources than I had available. After examining the practices of other higher learning institutions, I also realized that numerical data would not be easily compared across campuses, due to the diversity of farm to college programs. Understanding that the quantitative measurements of my case study would be severely limited and not easily applied, I switched the focus of my methodology to one-on-one interviews and personal notes as a participant observer (working for Dining Services as well as leading a student food activism organization). The following sections represent a synthesis of my conversations

with over 25 Boston College community members (Dining Services staff, faculty, administrators, and students).

## **I. Dining Service Operations**

### **Notable Progress**

Overall, the Boston College Dining Services (BCDS) has kept up with the majority of university initiatives in terms of recycling and energy conservation, ethical purchasing practices, employee relations, and student outreach. BCDS serves more than 22,000 meals every day to an undergraduate population of almost 9,000 students. The total budget for dining service operations—considered in the university structure as an “auxiliary service”—is \$13.7 million. There are three main dining halls (Corcoran Commons, Stuart Hall and Carney’s) on the Boston College campus, and five smaller venues (Hillside Café, Lyons Hall, the Chocolate Bar, Addie’s Loft, and Eagle’s Nest). Since BCDS is independently operated, their directors have an obligation to stay within the budget while catering to student tastes. Freshman and sophomore students are required to purchase the full \$2,270, since most of their dorms do not offer kitchen space. Other students, faculty, and staff can purchase optional dining credit or pay with cash.

One of the most noteworthy aspects of Boston College Dining Services involves its employee relations. Not many dining hall assessments mention the well-being of workers in the discussion of sustainable food initiatives, despite the critical importance of producer health in the creation of a sustainable food system. BCDS is unique in its commitment to all of its staff members. Employees receive full university benefits, including a living wage, health benefits, and educational opportunities at both Boston

College (where they can take courses free of charge) and at Newbury College (where they receive a tuition remission for cooking courses). BC Dining Services also prides itself on being the most diverse department at the school, with employees ages 16-89 from 36 different countries who speak a total of 14 languages. In order to celebrate and utilize its staff's diversity as a positive attribute, BCDS holds biannual meetings for staff to share one another's culture and brainstorm menu ideas together. English tutoring is also available to those who wish to be tutored for free by BC student volunteers. A true testament to the positive working environment of BC Dining, the hourly employees work there an average of 15 years.

In terms of recycling and energy conservation, BCDS personnel have improved the efficiency of their operations in a number of ways. They have replaced old machinery to decrease their water and energy use. Through recycling and composting efforts, the percentage of waste diverted from traditional disposal is 42.5 percent. Half of the main dining venues have pre and post consumer composting programs, totaling 124 annual tonnage of compost. In order to donate leftover food, Dining Services works with a group of undergraduate students to supply prepared food to the Greater Boston Food Bank's "Second Helping" program. In May of 2009, BCDS donated over 2,700 pounds of food (serving roughly 2,100 meals to those in need), and during the rest of the school year, it donated nearly 3,000 pounds of excess food. Access to the Food Bank's refrigerated vehicles made the transportation of these donations possible.

Although BC Dining offers cafeteria trays for customer use, it discourages consumer waste with an "a la carte" dining style as opposed to a buffet system. Student participation in recycling and composting is necessitated through self-sorting stations for

food scraps, recyclables, trash, and reusable dishware. In recent years, BCDS has been experimenting with different types disposable dishware made of biodegradable and compostable materials. Wechsler helped rid the dining halls of all Styrofoam products, as well as the popular plastic clamshell “to-go” containers from which students used to eat, even when they did not bring food outside of the cafeteria. Plastic packaging and utensils are still used for “Grab N’ Go” items and for food served at venues without dish washing capacity. In all o fits venues, BCDS offers discounts to customers that bring reusable bottles and mugs to purchase beverages.

The director, assistant directors and purchasing manager collectively determine the purchasing practices of BCDS. Due to the size of the institution and the volume of food consumed in the dining halls, BCDS receives bids for its contracts to foster competition between its distributors (15 of which are local). BC Dining claims to not participate in a farm to college program—although they purchase directly from 3 local growers—but a few of their main distributors (i.e. Costa Fruit & Produce and Sid Wainer & Sons) partner with regional producers and processors. Using invoices to track produce and other goods, the Purchasing Manager, Pat Ryan, estimates that dining spends \$4.7 million annually on food grown or raised locally (within 150 miles) and \$2.5 million annually on locally processed goods. Dining also makes ethical decisions about the procurement of animal products. Ten percent of the hamburgers use hormone- and antibiotic-free meat, and 100 percent of the boneless chicken breasts are hormone- and antibiotic-free. All milk products (purchased from the Hood company that sources from local dairies), and half of the cheese sold are hormone- and antibiotic-free. One of the most recent developments is the availability of cage-free eggs for all shell eggs sold.

Additionally, 75 percent of purchased seafood adheres to the Monterey Bay Seafood Watch Best Choices and Good Alternatives categories.

Boston College Dining Services also coordinates a weekly “Farmer’s Market” during the months of September and October that allows students the opportunity to purchase fresh produce from nearby farms. The BC “Farmer’s Market” should remain in quotations, however, because even Dining Service representatives admit that there is one crucial component missing to their market set-up: the farmers. Instead of featuring local growers, the “Farmer’s Market” features the produce and baked goods supplied by Costa Fruit & Produce, one of Dining Services’ primary distributors. The advantages of this type of modified farmers market is that only one truck delivers the produce each week, and students can use their meal plan money to pay for the items. Although the market has a faithful contingent of BC community members, not many students have access to a kitchen to prepare the raw produce. For this reason, certain items at the “Farmer’s Market”(the baked goods, artisanal cheese, and fruit) are more popular than others (namely the root vegetables and leafy greens). Any produce not sold at the weekly market is incorporated into the regular dining hall meals.

Many BCDS representatives note the importance of educating students about the personal, social, and environmental impacts of their food choices. Dining Services has developed a series of programs to inform students about the nutritional and environmental implications of certain types of food. For example, when faced with the choice between local, organic apples (that are usually smaller and less uniform than conventional apples) and their non-local, conventional counterparts (the Red Delicious and Granny Smith varieties), most students choose to purchase the latter option. To

combat this type of consumer behavior, Dining Services staff collaborated with members from the student organization, Real Food BC (described below), to hold a series of apple taste tests using a variety of Massachusetts-grown apples that could potentially be purchased through the local chapters of select BCDS distributors. These taste tests allowed a number of students to recognize (without being told) the superior taste and diverse range of local, organic apples compared to the conventional varieties. It also initiated the dialogue between students about larger food system issues. As a result, many of them suggested an increase of the availability of local apples.

Other student outreach efforts include the “Feed Your Mind” project, a series of cooking demonstrations organized and executed by BCDS in collaboration with the undergraduate dining service committee. These events focus on providing BC students information about preparing food and planning nutritious meals. Dining Service staff thoroughly enjoys this type of educational programming, and would like to expand the series with more demonstrations and cooking courses. The major restraint cited by the organizers of these programs is the lack of community kitchens.

### **Drivers of Change**

The major driving force behind the operational programs and sustainable food practices within the dining halls has come from BCDS staff, specifically the head directors. Before the current Director of Dining Services, Helen Wechsler, arrived at Boston College in 2001, very little progress had been made in these areas. A couple of years after she arrived, Wechsler and her staff began to make “difficult decisions” regarding sustainability initiatives, implementing changes that were occasionally met



with student resistance (e.g. the transformation of Lyons Hall to more nutritious cuisine). The Dining Services Director and Assistant Directors continually try to make ethical decisions that factor in cost constraints, food safety, and student feedback. Their personal backgrounds and prior experience with sustainable food practices enable them to make practical and strategic decisions that focus on the development of ecologically sound and socially responsible methods of food procurement and preparation.

Although there are no strict written guidelines for purchasing practices, the Dining Services website claims: “The College fosters working relationships with local growers, manufacturers and vendors who respect and promote ecologically sensitive agricultural practices, and food distributors who can trace their products to responsible sources.” After multiple interviews with BCDS staff and directors, I have found this statement to be mostly true. I use the term “mostly” because at an institution as big as Boston College, even the most dedicated, well-intentioned dining service personnel would be hard-pressed to trace all of its products to responsible sources. For example, the Dining Service Director and her assistants take it upon themselves to visit the production sites of their distributors in order to see whether or not the company lives up to its proclaimed business practices. Since it would be impossible (at this point in time) to trace every ingredient in the food sold within the BC dining halls, BCDS directors focus instead on the food items that will create the biggest impacts. For example, tomatoes, both raw and canned, are main ingredients across dining hall menus. This past year, dining service directors discovered a tomato producer and canning company based in Pennsylvania, named Furmano’s, that claims to use organic, ecologically sustainable growing and canning methods. BC Dining directors decided to purchase Furmano’s

products without even consulting their customers, since the price was comparable and the quality superior.

One of the greatest advantages of BCDS is its independent status. Contracted dining service operations run by large catering companies can make cosmetic changes within their operations that adhere to general market trends of sustainability, at the end of the day, these companies have greater obligations to their shareholders than to the campuses they serve, so profit matters above all else. The self-operated dining service model of Boston College, on the other hand, allows BCDS to adapt its operations at a faster rate (an indication of resilience); award its employees the full benefits of the university; make decisions based not on economic viability *and* ecological sustainability *and* social justice; and prioritize the preferences of its customers. The independent status of Boston College Dining Services also allows for a closer, more cooperative relationship between Dining staff and the rest of the BC community.

Since customer feedback is highly valued, BCDS staff and administrators make themselves available to students through a number of avenues. The unit managers and head directors routinely meet with students on formal committees (such as the Quality of Student Life Committee, and the Undergraduate Government Dining Committee) as well as student clubs (Real Food BC, Ecopledge) and random student researchers about Dining practices. BCDS staff also receive customer input via online surveys, hand-written comment cards (that they actually read and respond to), private taste tests for menu development (e.g. the vegetarian menu options), and by managers actively engaging with students on the ground level. In order to increase Dining transparency to the student body, the assistant directors and managers offer free tours of the dining hall

kitchens and recycling facilities. The goal of this transparency is to demystify the cafeteria experience and foster the dialogue between Dining Services and their customers, a conversation that is crucial for the advancement of campus-wide progress toward a more sustainable food system.

### **Barriers**

Despite its efforts to achieve transparency, Boston College Dining still struggles to market itself—specifically its progressive initiatives—to the rest of campus. BCDS maintains a fairly up-to-date website full of information for customers, but Dining’s primary concern is feeding thousands of people every day, not necessarily providing these people with extensive information about their food. As a result, many BCDS customers remain misinformed and unsupportive of Dining’s positive practices. For example, most student complain about the price of food within the dining halls, assuming that BCDS makes major profits off of their meal plan money, when in reality, Dining makes very little profit after paying its employees fair salaries.

The sheer size of Boston College and its food service operations accounts for many of the challenges pertaining to sustainable practices. Even the processing of invoices necessitates a lot of time and money at a large institution, so from an operational standpoint, managing invoices from many different small- to mid-sized farmers proves much more difficult than managing invoices from a handful of manufacturers. Another difficulty caused by the scale of Dining’s operations is food safety, which BCDS directors named as one of their primary concerns, due to the fact that contaminated food within the cafeterias could potentially harms hundreds of people at once. Consequently,

food safety protocol for large institutions often leads to logistical barriers to purchasing food through alternative routes. For example, the Assistant Director, Michael Kann pointed out that if local farmers cannot wash produce sufficiently, then BC Dining will choose to source produce from a larger manufacturer. Kann explained, “There have been four salmonella outbreaks with just produce in the last three years...and we aren’t set up to wash as effectively as a manufacturer. So we partner with some companies like Costa Produce that do have a great wash program and they get local farmers.” The irony of food safety regulations lies in the fact that many health concerns that necessitate such strict regulations actually stem from the scale of large production and processing operations.

The fact remains that Boston College, like most institutions of its size, continues to rely on distributors to make connections with small-scale producers (meaning more links in the distribution chain and less money for farmers). Despite the agrarian heritage of New England, local and sustainable farms lack the capacity to meet the volume demand of major food-service institutions such as Boston College. The North East’s short growing season, out of sync with Boston College’s academic calendar, compounds the supply problem. A couple members of Dining staff interviewed predicted that more farmers will start selling to restaurants and institutions as customer demand continues to rise. In the mean time, large institutions such as Boston College will have to make compromises in their purchasing practices.

The shortcomings on the supply end of the spectrum create another barrier in the form of costs. For example, the lack of locally raised, free-range cattle results in high costs for this type of beef. Additionally, small- to mid-sized farms that employ biodynamic production methods do not receive the same government subsidies as large,

conventional farms, so food service companies have a greater price incentive to purchase goods from industrial agribusinesses. Organic items such as yogurt, processed snack foods, and some produce are sold in the dining halls, but many are more expensive. Organic, fair trade items like bananas have not been offered, due to a lack of student willingness to pay more money. In light of the economic crisis, BCDS agreed to not increase the price of any menu items for the 2009-2010 school year. While this reflects Dining's unwillingness to pass along price increases to its customers, it has also hindered the development of more sustainable purchasing practices that require start-up investments.

The BCDS directors emphasized their inability to expand their budget beyond what has been granted them by their Vice President of Auxiliary Services, and the BCDS director knows not to ask for an increase. On the one hand, being a self-operated service makes BC Dining more ethical, progressive, and adaptive in its practices. On the other hand, some BCDS employees believe they are in a precarious position, knowing that the BC administration could choose to contract their jobs to a major food service company at any moment. These fears are not unfounded. Boston College Dining is one of only three independent food services within the Boston system of higher education. Even the Director, Wechsler, voiced her anxiety about the possibility of being replaced. While this type of pressure might foster competition and innovation, it also reflects the vulnerability of BCDS. If Boston College ever felt the need to really cut costs, the self-operated dining service model might be the first to go. As a result, Dining Services (and its sustainable food initiatives) need to be better supported by the rest of the campus community.

Since students greatly influence dining practices at Boston College, the lack of student demand for more locally sourced, humanely produced cuisine acts as another barrier commonly cited by dining service staff. If their customers do not want change, then BCDS representatives are much less willing to implement it. As the executive chef of catering pointed out, markets follow money, and students with meal plans contribute most of the Dining Services budget, so creating a greater market for local, sustainably produced food starts with student demand. The problem is that many students have not been educated about why they need to make this demand. By the time students arrive at Boston College, many of their eating habits and dining expectations have already been formed for 18 years by their home and school environments. Multiple dining staff members commented on the student body's lack of taste for fresh, unprocessed food. Some of the most popular menu items at the dining halls are chicken fingers and steak and cheese sandwiches. Despite the high consumption rates of unhealthy "Late Night" food items, BC students demonstrate a certain degree of nutritional awareness, although ecological awareness has yet to be seen on a major scale. For example, hand picked fruit and salad bar items are also popular, but very few of these products are locally or organically grown (an indication of lower nutritional value).

The BCDS slogan is "Eat, Drink, Talk, Think," but the campus culture at Boston College makes it difficult to foster any type of thinking about food, where it comes from, or how it is produced and by whom. During the school year, students lead hectic lives, and without being taught to slow down and ask questions about their food, they fall prey to the pervasive "Grab N' Go" dining culture that promotes eating on the run. Many premade and packaged items in the dining halls perpetuate this culture by literally

catering to it. One production manager interviewed expressed his desire to provide students with a fast, easy, stress-free dining experience. In their defense, dining service representatives feel an obligation to students (their customers) who might heavily resist such changes. Our dining service representatives at Boston College have named customer satisfaction as their primary concern. If a critical mass of students at Boston College were to demand more locally sourced, ecologically sound, and humanely produced food, then dining services would theoretically take even greater measures to support sustainable food systems. Students will not make this demand on a large enough scale, however, unless they are educated about the social and environmental atrocities propagated by the failing food system—injustices that span from the global level to the very personal individual level. To a certain extent, BCDS should feel obliged to positively influence student food choices, but educating consumers cannot be the sole responsibility of dining staff.

## **II. Research and Curricula**

### **Notable Progress**

Very little research and curricula at Boston College examines issues related to food system sustainability. Only a select group of faculty has conducted (or is currently conducting) research on such topics, and the curricula at Boston College reflects this lack of experience. Apart from a handful of courses in the Biology, Sociology, and Geology Departments, the amount of formal coursework that incorporates units on food production and distribution is very sparse. More faculty members have begun to express

interest in teaching about sustainability and the food system, but concrete initiatives are few and far between.

One promising initiative targets incoming freshmen that wish to learn about sustainability in a more comprehensive manner. Professor Jennie Purnell, acting as the Director of the Center for Student Formation, is currently developing a freshman-year “learning community” that involves a series of common courses for freshman interested in sustainability-related education (that would inevitable include units on the food system). The idea is that students would take two courses in different disciplines (e.g., Geology and English, or Sociology and Biology) in which the professors would collaborate with their content. A one-credit, weekly reflection led by a graduate student would supplement these disciplinary courses. The reflection would the participating students to get to know one another, and contemplate the ways in which their personal lives intersect with the sustainability issues they learn in class. Purnell has secured an adequate budget for the “Sustainability Learning Community,” so that it can fund research and community service projects conducted by the students (either on campus or in the surrounding community) to allow them opportunities for hands-on applications.

Another faculty member working to incorporate sustainability (and food issues) into the campus curriculum is Professor Laura Hake in the Biology Department. With a research background in “translational regulation and signal transduction during meiosis and in early animal development,” Professor Hake has been very active in the sustainability movement at Boston College, and has taken on a leadership role in SustainBC, an ad hoc committee of students, faculty and staff working toward the reduction of BC’s ecological footprint. A self-described “lab rat” for most of her career,



Professor Hake has extended her campus work beyond the molecular level, organizing faculty and staff workshops to assist in the development of sustainability-related curricula across all disciplines at BC. After multiple meetings with her peers, Hake claims that over 75 faculty members have expressed interest in developing sustainability-related course material.

Hake also meets with staff in the facilities department in order to gauge the possibility of having more student research projects that involve practical application on the BC campus. In one of Hakes Biology courses, for example, she asks students to research a potentially harmful chemical in common cleaning products, research alternative products without that chemical, and then write a persuasion piece that includes a cost-benefit analysis and reasons for using one product over the other. Through this type of research, explains Hake, students receive useful, real-world skills, and BC Housekeeping receives free consulting services and an opportunity to interact with students. Professor Hake leads by example in her Intro to Biology course as well, teaching a unit about the food system, and bringing her students on a tour of the BC Community Garden.

Arguably the most progressive coursework under development at Boston College can be accredited to a PhD student in the Sociology Department, Michael Cermak. As a fifth year graduate student completing studies on Race, Culture, and the Environment, Cermak teaches an environmental sociology course entitled “Planet in Peril,” a class that includes units on water resources and the industrial food system. To teach this class, Cermak goes beyond the incorporation of unconventional subject matter related to food systems—he employs experiential education and encourages his students to apply

concepts learned in class to research conducted about the BC community. A firm believer in the theory of critical pedagogy developed by Paulo Friere, Cermak breaks from the typical model of lecture-based education employed by college professors. In lieu of a final exam, Cermak assigns his students a very open-ended capstone project that requires students to research an aspect of the BC community from the perspective of environmental sociology, and convey the results of their research in a provocative and practical form. The design of these projects encourages students to form relationships with other members of the BC community by conducting interviews with peers, faculty, and staff. Troubled by the amount of student research that remains unseen, Cermak gives students the opportunity to film their research projects and upload the videos onto a website, called the “Green Guide,” a resource intended to serve the BC community. In this way, the final projects not only help student develop practical media skills, but the videos become teaching tools that continue to inform the rest of the BC campus.

### **Drivers of Change**

The very limited progress that has been made in the area of food system curriculum can be attributed to a select group of faculty associated with the Sociology Biology Departments. The commonalities of these individuals include their emphasis on interdisciplinary collaborations (“building bridges,” was a term used by three distinct professors), their close relationships to students, and their progressive political views relative to the rest of the university. These individuals also view topics related to food and sustainability as tools for creating an academic community that addresses pertinent social issues and empowers individuals to positively impact the systems that they are a

part of. The ability of faculty members interested in topics of food sustainability to network with one another has been absolutely crucial for the development of curricula. For example, a training workshop for professors looking to integrate sustainability into their course material took place in January of 2010. Unforeseen by the faculty organizers of the workshop was the momentum and enthusiasm generated by the prospect of creating a Sustainability Minor that would take interdisciplinary programs a step further by featuring courses from different colleges on campus.

As more faculty members have entered into the dialogue surrounding sustainability within the curriculum, they have begun to empower one another to revamp course material to better serve a new generation of students concerned about the ecological and social crises facing our earth. Thus, the student body can be seen as a driver of change within areas of curricula and research, since more students are arriving to Boston College with expectations regarding sustainability courses. The rapid growth of the Environmental Studies Minor in the past couple of years—enrollment increased from 17 in 2003 to over 150 as of 2010—provides evidence of this trend. If BC were to increase educational opportunities pertaining to sustainability and the food system, it would no doubt attract more students already interested in these areas. In addition, student research projects, such as the ones conducted in Cermak's course and the independent thesis projects conducted through the various departments, increase the demand for faculty advisers and staff collaboration.

**Barriers**

The biggest barrier cited by the faculty members working on the development of sustainability or food system curricula relates to the structure of the University and to what multiple people referenced as the “silo-effect.” Similar to most colleges and universities, the structure of Boston College is broken up into highly specialized departments that remain largely isolated from one another. Academic departments, administrative departments, and operational departments remain separate and distinct from one another in debilitating ways. Even within each of these departments are a number of compartmentalized silos. Some would argue that this strict separation is necessary for efficiency and specialization. It is also true, however, that rigid structural barriers greatly hinder communication and collaboration between departments and disciplines. As a result, it is very hard to develop intersectional, systems-based curricula within an educational environment that promotes disciplinary specialization and departmental ownership. Payroll, teaching loads, and outdated tenure codes have been cited as bureaucratic impediments of interdisciplinary faculty collaboration. For example, no concrete guidelines exist to give a faculty member credit for working with another faculty member in another department. Consequently, support from the Dean of Faculty is absolutely necessary, since he is the only one who can revise and update these codes.

Another hindrance cited by professors at the forefront of sustainable initiatives is the overall lack of knowledge amongst faculty about incorporating sustainability into curriculum. In an interview with Michael Cermak, he attributed the lack of proficiency on the professorial end to the fact that most faculty members have received no formal training in education. While one, long-term solution could be the hiring of professors

with experience in sustainability education and experiential teaching methods, a more practical, short-term solution could be training workshops for current faculty members. These workshops (a few of which have already been conducted) could provide helpful suggestions and resources for professors interested in teaching about sustainability. According to Cermak, these workshops have the potential to train educators in more effective teaching practices, but only if professors take this skill sharing seriously and consent to peer assessment procedures. Professor Hake offered a different opinion, citing the success of a workshop that she organized in its capacity to serve as a networking tool for professors with similar interests in sustainability curriculum. She advocates for more forums of this type, but points to the lack of time and funding needed to organize them.

Other barriers for faculty include the structure of courses that promote traditional forms of education and dissuade professors from experimenting with alternative methods such as critical pedagogy. Cermak's "Planet in Peril" class circumvents some of these barriers—he technically should have an in-class final exam, to cite one of the restrictive policies that he avoids. The structural barriers that he cannot avoid include class length (Cermak would ideally teach a course with the same group of students for longer than a semester) and infrastructural resources (Cermak would like to incorporate growing and cooking food into his curriculum, but lacks the space and infrastructure to do so). In terms of content, Cermak said that he would like to see more professors structuring their courses around students creating institutional change, a subject not be well received by department deans or administrators.

During Professor Hake's interview, she mentioned the ability of progressive professors to find alternative avenues of pursuing solutions to the structural barriers of

Boston College, but she admitted doubted that substantial institutional changes could ever occur without the sincere support (in the form of funding and structural reform) on the part of the administration. For the administration to finally see the value in the sustainability efforts cropping up around campus, Hake believes that there must be a mass movement from students, faculty, and staff. As a tenure professor at Boston College, she has made a profound personal commitment to advance this movement in any way possible.

### **III. Administration**

#### **(Lack of) Notable Progress**

Boston College is an extremely hierarchical institution with a heavy concentration of power and resources in the hands a very few individuals. The president, provost, and board of trustees all wield major influence over the rest of the school. There are also a large number of administrators (more than a dozen vice presidents, for example) that work below the provost, president, and board of trustees. This makes the bureaucratic structure of Boston College difficult to navigate. It also means that change is slower to happen through formal routes. In fact, most the people I interviewed for this case study mentioned the hierarchical nature of the university and the lack of administrative support as major impediments to the growth of sustainable food initiatives.

Boston College Dining Services is considered an Auxiliary Service, meaning the Director of BCDS reports to the Assistant Vice President of Auxiliary Services, who reports to the VP of Auxiliary Services, who reports to the Provost, who reports to the President of the University. It is very clear that the administrators that make up this

supply chain are concerned with the economic viability of the campus dining operations, and not much else. These administrators do not intentionally impede sustainable food initiatives on the BC campus, nor do they formerly support them. Since their job experience consists of business backgrounds, they provide very realistic information the Dining Service directors about efficient business practices. According to Wechsler, the BCDS Director, this information includes the message, “Don’t come knocking on our door for more money.” The school provides dining with enough money to run its operations with expanding its facilities or resources. If Dining Service representatives wish to increase their spending on sustainable food practices, they must find their own creative ways of doing so.

There is not a whole lot to report on the upper-level administration of Boston College in terms of food sustainability because there is not even the slightest hint that administrators at the top of the BC hierarchy have begun to seriously discuss issues such as food security or long-term viability of food production. Most colleges and universities that have progressive policies surrounding food justice and sustainability have also already made broader commitments to sustainability goals such as energy conservation and green building. Harvard University, for example, has committed to a 30 percent reduction of all GHG emissions by 1016, so Harvard's dining hall operations (HUDS) uses this as a platform for their own initiatives. Boston College lacks a serious, formal commitment to sustainability initiatives by its upper-level administrators. The only attempts to appear concerned with environmental issues have amounted to meaningless marketing campaigns that promote Boston College as “green.” Although the administration is quick to tout the positive efforts of students related to sustainability

initiatives, they have yet to dedicate any substantial resources to empower these students. As long as short-term economic profits make up the main incentive for administrators, Boston College will continue to fall behind the curve of long-term sustainability investments.

Instead of potentially being a leader in society, institutions as bureaucratic as Boston College risk becoming a microcosm of greater social barriers instead of an incubator for larger, systematic change. In many ways, the concentration of power and resources at Boston College reflects the hierarchy of power within our government and economic system. Like our government, Boston College top administrators do not concern themselves with issues regarding food sustainability. In fact, they do not view sustainability initiatives as worth their time, unless they generate money. These voices at the top are not going to drive that transition to a more sustainable food system, but can at least stop hindering it through budget constraints and the ever-looming threat to contract dining services out major food companies.

#### **IV. Student Initiatives**

##### **Notable Progress**

The student body at Boston College represents a generation of youth raised on “fast food” of all types, whether it comes from a drive-through or the freezer section of the grocery store, without exposure to many alternatives. As a collective population of young adults, we are more likely to eat out, order in, or microwave our meals than any generation before us. This might account for the lack of student activism concerning sustainable food initiatives on the Boston College campus until very recent. Multiple



members of the BCDS staff interviewed for this thesis stated that BC Dining is way ahead of the BC student population in terms of food system knowledge. In the past couple of years, however, student awareness has grown around issues related to the industrial food system, and a core contingent of the BC undergraduate and graduate students has bolstered the outreach efforts of BC Dining in crucial ways.

The main student group involved with food sustainability is Real Food BC, the Boston College chapter of the national Real Food Challenge described in the previous chapter. Michael Cermak and I founded Real Food BC after attending the Real Food Summit at Yale University in the fall of 2007, where we toured the Yale Farm and learned about the Sustainable Food Project. Inspired by the Yale model, Mike and I returned to BC and organized a food system awareness week with the help of some of Mike's students from a sociology course for which he was the Teacher's Assistant. During the spring semester, we launched the food awareness week (which consisted of a panel discussion, documentary showing, and potluck dinner) with great success, and used this momentum to work on three major initiatives to establish ourselves on the BC campus: 1) We met with the directors of Dining Services to talk about the creation of a "green" café on campus that served local, sustainable food, 2) We partnered with members of Ecopledge, the only student environmental group at that point, to plan a student-run vegetable garden, and 3) We applied to become an official club. Surprisingly, we were able to accomplish all three goals within four months, thanks to fortunate timing and constructive collaboration with key stakeholders.

The Dining directors were thrilled that we came to them with our idea for a sustainable café, since they needed a new "concept" for a smaller venue in one of the

main dining halls. BCDS staff had also been waiting for a group of students to express interest in local and fair trade food, so Real Food came along at the perfect moment. Working with the Dining directors, we came up with a menu and name for the café, the Loft at Addie's, as well as a mission statement to serve local, seasonal, vegetarian-friendly cuisine. At that time, we were also able to use funds from a defunct club affiliated with Ecopledge to fund our outreach efforts, as well as part of the garden initiative. Members of Ecopledge helped us write grant proposals to secure additional funding, and one of the senior members used her work study with facilities to gain approval for the garden from the right administrators. Deirdre Manning, the former head of facilities who now acts as BC's Director of Sustainability, assisted Real Food in the garden's approval process to a large degree. Unfortunately, the original location of the garden—where we had spent an entire afternoon preparing the beds for our seedlings—had not been approved by all of the proper administrators, and was destroyed during finals week. With the support of faculty and staff, we petitioned administrators to relocate the garden, and they finally agreed, bringing in heavy machinery to prepare another plot of land overnight. Amidst all of this controversy, Real Food was granted official club status by the end of that year.

Since its inception in 2008, Real Food has made substantial strides in raising awareness about the food system at Boston College. The Loft at Addie's has been popular amongst Dining customers from the moment it opened; the garden is about to enter its third harvest season; and over 700 people have joined the Real Food BC listserv to receive email updates about club events and opportunities to get involved with the movement. The past year, Real Food has focused its efforts on increasing campus

awareness through relentless educational programming. Outreach initiatives have included tours of the garden and groups work days, speaker presentations (by fair trade coffee roaster Dean Cycon and farmworker activist Gerardo Reyes), and documentary showings (e.g., *Food Inc.*). Real Food also started a series of cooking workshops in which we teach fellow students how to prepare fresh, local produce in diverse, nutritious ways. For example, in the fall we took a group of graduate and undergraduate students to the garden; harvested basil, potatoes, and green beans with them; and then taught them how to make homemade pesto as well as a potato, green bean, pesto pasta dish. In addition to these workshops, Real Food has begun to host free dinner discussion events a few times per semester. Open to all members of the BC community, these dinners provide attendees (normally around 40 people) the opportunity to cook and eat locally sourced food, while discussing specific topics related to the food system.

Although most of Real Food's recent activity has focused on student outreach, we have continued to work with BCDS to improve sustainability practices within the dining halls. After hosting events with fair trade coffee roasting companies, Dean's Beans and Equal Exchange, Real Food entered into a discussion with the Dining Services director about sourcing coffee from these companies that demonstrate model business practices. Dining has agreed to purchase from both roasters beginning in the fall of 2010. Real Food also furthered its participation in the larger Real Food Challenge (RFC), by hosting a three-day regional training event. During the spring semester, students from several colleges and universities in the New England area converged on the BC campus to share their experiences working toward a more sustainable food system on their campuses. At

the training, members of the national RFC organizations partnered with leaders of Real Food BC to present a series of workshops geared toward organizing effective campaigns.

Another student-based project separate from Real Food began in the fall of 2009 within campus residential halls. The Director of Sustainability at Boston College, Deirdre Manning, used money from her budget to establish an “EcoReps” program in which a select group of student environmentalists earned a \$400 stipend to inform their resident peers about recycling, energy conservation, and composting initiatives within their dorms. During its first year of its inception, the program had mixed results. According to Manning, some students took their job very seriously, educating their peers about the importance of sustainability, and the impacts of individual behavior on the environment and community, while sorting out logistical issues such as reporting leaky faucets and increasing signage for recycling facilities. Other EcoReps proved less ambitious, taking advantage of the program’s lack of oversight. Manning also placed an assigned EcoRep to one of the main dining halls in order to assist students with a new post-meal sorting system. The program will likely expand over the next few years, and may become a part of the Residential Life department.

To mention one more positive effort amongst students, within the Theology Department, a group of graduate students are currently developing a CSA drop off to serve the BC community. These students have also expressed interest in hosting events that utilize the graduate student kitchen, and collaborating with the Center for Student Formation on the “Sustainability Learning Community.”

## Drivers of Change

The main driver of change within the student population is the group of student activists that lead the efforts of Real Food BC. The stories of the Real Food leaders and their motivations provide compelling evidence about the unifying power of the food movement. Most of the leaders were drawn into food justice for different reasons: personal empowerment, a craving for community, and the satisfaction of experiential learning in the garden, are just a few. One of the sophomore leaders, Josh Gild, spoke about the rituals of his childhood—cooking and eating dinner with his family every night and growing their own vegetables—that he missed on the BC meal plan. Gild had a more pressing reason for joining Real Food: the fact that he is allergic to corn, i.e. the industrial food system. All processed foods, animal products, and a long list of other common food items seriously compromise Gild's immune system, making him a walking example of the our nation's dependence on cash crops like corn. Two other Real Food leaders, Julia Gabbert and Mariana Souza, were drawn into food activism because it offered them a clear way to connect their personal ideologies to something tangible, unifying, and nourishing. Both women experienced transformational moments centered on food justice. Gabbert's realization came with a connection to her peers and role models who were food activists, and Souza's transformation occurred while she worked as the head caretaker of the vegetable garden the summer before her senior year.

The personal histories and motivations of these three Real Food leaders (Gild, Gabbert, and Souza) are important to note, since their stories indicate the appeal of the alternative food movement to a generation of youth disillusioned by traditional political activism and looking for ways to make concrete impacts on the flawed social systems

around them. Furthermore, these individuals represent the population of college and university students that will continue to work towards a more sustainable food system upon their graduation. Gabbert, for example, plans to work for Growing Power after she graduates, an organization based in Milwaukee that teaches communities how to grow and distribute their own food, thereby establishing their own food systems. Also a senior, Souza has already agreed to work on Vandana Shiva's research farm in India when she graduates. When asked if he would continue to work for food justice after he graduates, Gild (currently a sophomore) could not answer in terms of his profession, but he knew for certain that he would always grow his own food, cook for himself and encourage those around him to do the same. In sum, the core members of Real Food BC have varying personal reasons for dedicating their time and effort to food activism at Boston College and beyond, yet their passions have led them all to the same conclusions about the importance of food sovereignty and the establishment of community-controlled food systems.

The institutional achievements of Real Food BC—becoming an official club, creating Addie's Loft, and establishing the community garden—have resulted from strategic alliances with supportive faculty, staff, and Dining Services personnel. The explosion of public discourse surrounding the food system has also contributed to the success of Real Food initiatives, since most people informed about the problems of the industrial food system seek ways to support the burgeoning alternative movements. For this reason, the semi-permanent assets institutionalized by Real Food are very important because they provide people concrete forms of participation in grassroots efforts to establish food sovereignty. In other words, eating at Addie's and volunteering in the

vegetable garden are simple and accessible ways for people to connect with issues of the larger food system on a more personal level.

Collaboration with other student groups, especially with the only other environmental group on campus, Ecopledge, has also been crucial to the rapid growth of food activism and awareness on the BC campus. A natural cross-over exists between Ecopledge and Real Food BC, allowing the groups to support one another by bolstering ranks when necessary and co-sponsoring events. Faculty members also support Real Food efforts by encouraging their students to attend Real Food events (sometimes with the promise of extra credit). In terms of longevity, other key relationships have been formed to ensure the continuation of Real Food BC as a student movement. A close partnership with the Dining Services directors, as well as tenure faculty members is one way to secure a long-term presence on the Boston College campus. Involvement with the larger Real Food Challenge (RFC) has helped to establish roots within the BC community as well, since the RFC supplies helpful campaign resources and provides a support network for the upcoming student leaders of Real Food BC when present leaders graduate.

## **Barriers**

Students involved with food activism on the Boston College campus face formidable barriers to enacting institutional change. Although Real Food BC is an official undergraduate club and receives a few thousand dollars worth of funding through the university, the lack of administrative support has proven somewhat debilitating. For example, in the initial establishment of the garden, students had to secure outside funds

via grant proposals in order to establish the campus vegetable garden. Real Food would like to bring more speakers and documentaries onto campus, build a shed for the garden, and offer a stipend for the head gardener over the summer, but our budget is not sufficient. Other educational programming, such as the cooking workshops and dinner discussions, costs less money, but is still difficult to organize due to inadequate communal kitchen space on campus.

Although Real Food BC has institutionalized some of their assets in the form of a “sustainable” dining venue and campus vegetable garden, the fast turnover rate of students represents a major challenge to the long-term viability of the club. Without a strong and dedicated contingent of student food activists, the Loft at Addie’s and the Community Garden cannot fulfill their potential as educational tools and incubator models for future initiatives. Along this vein, the lack of intellectual resources on the BC campus has also proven somewhat of a challenge, since there is very little prior experience for Real Food members to draw upon for initiatives such as running the garden. The lack of intellectual resources pertains to the BC curricula, and the deficiency of food system coursework. Real Food cannot take sole responsibility for educating the BC community about all of the issues related to food production and distribution. The members of Real Food only have so much time and energy to dedicate to food activism on top of their course loads and other obligations. Furthermore, time and energy are precious and limited for most students on campus, so it is very difficult to convince students to slow down and think about their food choices if it is not convenient or cost-effective for them to do so. For this reason, formal curricula that incorporated



experiential learning and practical research opportunities related to food systems would prove very valuable.

Dining Services employees working on student outreach initiatives are not the only ones challenged by the Boston College campus culture. As a food activist at BC, I know first hand how difficult it can be to generate student support for sustainable food initiatives without an existing academic structure that incorporates food system issues into the curriculum. The general BC population of undergraduate students does not know or care about the origins of their food; rather, their primary interest in food comes down to cost, taste, and calorie counts (the only tools that our generation has been given to measure the value of food). While many students express concern for their personal nutrition, very few demonstrate an awareness of the food system that extends beyond their own bodies. Interestingly enough, the BC campus culture places a very strong emphasis on service work (and integral part of the Jesuit tradition), but much of this work takes place abroad through immersion trips. The fundamental flaw in this trend (apart from the fact that it is ecologically unsustainable and oftentimes reinforces prejudiced attitudes) is that service trips abroad detract from community service within the BC campus and surrounding Boston neighborhoods. Immersion experiences have the potential to impact the individuals removed from their comfort zones, but when they return to their home environments, that impact fades. A more concrete connection to place-based volunteer work can combat this, but immersion trips prove more alluring to students looking for immediate gratification as opposed to longer-term self-fulfillment.

## **V. Conclusions**

### **BC at a Crossroads**

Like most institutions, the structural inertia of Boston College resists change. Coincidentally, the university is about to undergo multiple transitions that may bring about change faster than expected. Whether or not this change will be for or against sustainable initiatives is yet to be seen. The first transition is happening within the Environmental Studies (ES) Minor, as the founder of the program, along with two other faculty members integral to its management, will leave Boston College at the end of the 2010 school year. While the departure of these individuals throws the fate of the program into uncertainty, other faculty members (not associated with the ES Minor) have begun to garner support for the creation of a Sustainability Minor. This also presents a major opportunity in the form of hiring progressive professors with experience in sustainability and food systems education and research. Other transitions can be seen on the administrative end of Boston College, as the university moves ahead with major development plans for its recently acquired land. Currently, the “Master Plan” for the university does not include a permanent space for the Community Garden, nor an extension of horticulture efforts. Nevertheless, enough time remains to modify landscaping plans and ensure the construction of more communal kitchen spaces.

### **Growing Tips for Boston College**

On the operational end of the university, Boston College Dining Services has made substantial headway with food sustainability initiatives, and demonstrates great potential to become a leader amongst food catering services. Nevertheless, these efforts

cannot remain isolated with the operational end of the spectrum. The current Director of Sustainability admitted her lack of involvement with Dining Service operations due to the already progressive nature of the Dining Service directors. On the one hand, their rigorous recycling and energy conservation programs should be hailed as models for the rest of the school. On the other hand, BCDS food sourcing practices and ingredient lists need to be more transparent in order to educate the rest of the campus community. Above all, a sustainable food culture at BC cannot be achieved while Dining Services manages its operations (however forward-thinking) behind a curtain. Consumers need to reconnect with the origins of their food—how it is grown and the people involved with its production. They will not pay a premium on more ethically produced, sustainable food unless they are taught the values that their money supports, and the type of future they are investing in. More importantly, students will not feel empowered to continue working toward sustainable food systems after they graduate, unless they receive a meaningful education about the corporate, industrial food chain, and the alternative models gaining recognition.

For example, despite the good intentions behind the Boston College “Farmer’s Market,” the program does not serve as a bridge between students and the people who grow their food, since there are no farmers present. As long as food remains faceless, people are less willing to treat it as anything more than a commodity, or to assign it value beyond economic terms. The educational opportunities provided by farmers markets should not be considered any less important than the local economic structures that they help create. An effort should be made to either bring farmers to (or nearby) the Boston College campus, or to bring BC Dining Service customers to the farms that grow their

food. If this face-to-face contact between farmers and BCDS customers cannot be realized, then consumer education becomes all the more important. Without a democratic flow of knowledge between farmers and consumers, no one can make informed choices about their food purchases. For this reason, BCDS needs to increase the transparency at the dining venues themselves. Food served to the BC community within the dining halls should be labeled according to its origins, and further information should be available on the website about the production methods of all the distributors and retailers.

Although freshman and sophomores at Boston College are required to purchase the campus meal plan (except for the lucky few living in dorms with kitchens), most juniors and seniors are not. Many students without the full meal plan still eat at the dining halls, but students who cook for themselves need better access to alternative food networks. Boston College Residential Life, or another department should encourage students to participate in CSA, or similar programs like Boston Organics by providing them with information and coordinating deliveries. Currently, the Undergraduate Government of Boston College (UGBC) organizes weekly shuttle buses that transport students to Shaw's Market to shop for groceries. There could also be shuttles that take students to Boston-area farmers markets, or Co-op grocery stores, such as Harvest Co-op in Cambridge. In general, more open communication and collaboration needs to occur between the undergraduate dining service committee, Real Food, and other student groups involved with dining service operations.

Boston College Dining Services has accomplished noteworthy progress in recycling, waste reduction, employee relations, and food quality. As long as the BCDS directors can break even with their budget and continue to earn recognition within the

national college dining community, they can continue to expand sustainable practices like increasing local and fair trade food procurement. Sustainable food initiatives, nonetheless, cannot remain isolated to dining service operations, where they face the possibility of being co-opted by corporate catering companies. In other words, Boston College, like other institutions of higher education, cannot rely on its dining facilities to create sustainable food systems. What if a less-supportive director took the place of Helen Wechsler? What if BC decided to cut costs by contracting out its dining facilities to a giant, food catering service? Even if these scenarios never come about, dining service staff cannot be the only groups of individuals dedicated to a more sustainable food system. After all, sustainable food networks require the collaboration of many people across multiple sectors. Students need to be educated, and they need to be involved with dining initiatives in order to truly understand and gain practical experience with sustainable food practices.

The collaboration between students and staff has already resulted major assets for food education: a dining venue (Addie's Loft) with a sustainability mission statement and a community vegetable garden. Further collaboration needs to occur in order to increase the effectiveness of these assets. For example, the garden exists and Real Food club members give educational tours of it, but not many people on campus are aware of its existence. A partnership between Real Food members and the office of Freshman Year Experience could result in tours given during freshman orientation sessions. Real Food BC members should also continue working with Dining Services on student outreach initiatives and staff training for the Loft. In order for Addie's to play a greater educational

role in line with its mission statement, a greater effort needs to be made to enhance the information available within the space itself, including information about the food itself.

Boston College Dining Services should hire students to help improve procurement practices by researching local, sustainable food sources and farms. Purchasing directly from small producers is made extremely difficult by food safety regulations and delivery logistics. In addition, the Director of Dining Services asserts (with good reason) that “local” food is not necessarily better than food produced from far away. Nevertheless, bioregional food assumes that less geographical distance between growers and consumers usually signifies less room (i.e. less links in the food chain) for exploitation. Boston College Dining should therefore create contracts with distributors to purchase more bioregional and fair trade certified food. Once food from these sources becomes available in BC cafeterias, students working with Dining Services could also play crucial marketing roles—advertising (with increased signage, etc.) the values behind that food and educating their peers about why they should consume it. If funding is not available within dining services budget to purchase from ethical, ecologically sound sources, then grants should be secured to subsidize a farm to college initiatives. Student could be involved in writing these grants for course credit or as internship opportunities.

Many research opportunities exist for faculty and students that involve the Boston College food system, since it extends across so many fields of study. Other critical research projects that could be conducted by students for course credit are consumer surveys to more accurately determine pre-existing interest and knowledge in food politics. These surveys could, for example, ask BC Dining customers how much they know about fair trade, organic, and humanely raised certifications; whether or not they

want more food choices with those certifications; and how much more they would be willing to pay for them. Like the current surveys conducted by Dining Services, this type of research would inform BCDS about the preferences of their customers. More importantly, though, stakeholder research within the BC community could expose gaps in people's knowledge about food issues, and the best methods of closing these gaps through cooking workshops, panel discussions, on-site literature, garden tours, formal coursework, etc.

Curricula throughout Boston College academic departments could potentially address issues pertaining to food production and distribution—coursework that would incorporate experiential learning through collaboration with Dining Services. The Connell School of Nursing could integrate sustainable food issues into nutritional courses; the Lynch School of Education could develop classes about experiential learning techniques like the Edible School Yard model; the Carol School of Management could have courses on the financial and marketing aspects of the food system; and the College of Arts and Sciences could offer food-related courses in both hard and natural sciences. One example of this type of curriculum would be a political science course that taught policy surrounding land use and food production, and included a research component about universities and the development of permaculture. Another example would be nutrition courses that incorporated themes of unequal access to healthful food, the links between our broken food system and our broken health care system, and a study of Boston's Food Policy Council health initiatives.

Overall, Boston College needs to build more bridges between people and departments, and institutionalize these bridges so that they do not crumble when

conditions change and individuals come and go. Even though it is her job as the Director of the Center for Student Formation to facilitate collaboration across programs and departments, Professor Purnell admitted to the difficulty of sustaining partnerships that involve people from different backgrounds. To illustrate this difficulty, in April of this year (2010), a professor in the Biology department and facilities staff organized the first campus sustainability forum, a gathering of representatives across departments to share with one another their progressive projects concerning campus sustainability. While the forum could have served as a celebration of the positive progress toward environmental sustainability at Boston College, as well as an opportunity for individuals from different departments to network and begin collaborating with one another, it failed to fulfill its intended purpose. The forum was set up as a series of power point lectures, and very minimal time was allotted at the end of the presentations for conversation and collaboration. The forum also lacked representation from academic departments and the administration. The event represented an important first step towards future partnerships, but also revealed the challenges of bridging gaps between bureaucratically segregated departments.

In the long-term, Boston College needs to reorient its academic and operational structures around increased sustainability. Although food education and procurement are not the only components of a more sustainable institution, they are crucial to achieving it. Boston College development plans for the near and far future should include permaculture (i.e., planting fruit trees around campus), educational gardens, and more kitchens in both common areas and residential halls. Faculty and staff should then use these physical assets to create practical and experiential learning opportunities (research



projects and internships) for students, since education is the central mission of the institution. Finally, in order for collaborative efforts to become institutionalized, the administration needs to officially recognize and fund them.

## CHAPTER FIVE

### CULTIVATING CHANGE ON CAMPUS SOIL

If your planning for a year, sow rice; if you are planning for a decade, plant trees; if you are planning for a lifetime, educate people.

-Chinese proverb

#### Overview

Throughout the course of my thesis research, I have attempted to discern the unique role of colleges and universities in the creation of a more sustainable, socially equitable food system. Institutions with food service operations such as colleges, hospitals and prisons, have the individual capacity to support regional food systems and the collective capacity to influence the greater, national food system. Due to their unique educational missions, colleges and universities demonstrate further potential to incubate alternative food system models that focus on long-term resilience. This potential can only be fully realized within institutions of higher learning if these institutions make authentic commitments to the improvement of social structures and the empowerment of students.

In this final chapter, I will re-assert the reasons why, at the end of my research, I firmly believe that institutions of higher education, including Boston College, are paramount to the development of alternative solutions to the present failures of the food system. While brief, this chapter covers a fair amount a ground—beginning with a brief summary of the macro-analysis presented in chapters one and two, before moving into a more comprehensive consideration of the multiple ways that post-secondary institutions can leverage systematic reform. As part of my speculation about the role of colleges and universities within the alternative food movement, I include a section (“Back to the

Land”) about specific opportunities for institutions of higher learning in Massachusetts to support a bioregional food system. The chapter ends on

### **The Macro-level Summary**

An overwhelming amount of evidence confirms the fundamental flaws of the global, industrial food system that will necessitate the need for a new paradigm. As escalating health epidemics and environmental catastrophes call attention to these flaws and expose more profound vulnerabilities within modern methods of food production and distribution, a growing movement of alternatives gains credence within the public eye. The food conglomerates that currently exercise hegemonic control over federal policy will not benefit from a decentralized, democratized, and ecologically sustainable system of food production and distribution. We cannot wait for oil prices to skyrocket and food-related epidemics to cause even greater devastation before taking necessary measures to rebuild our already broken food system. Since the ballot is still out on whether or not the White House garden will translate to real policy reform, communities have taken it upon themselves to develop the alternatives necessary for sustaining human populations in the present and future.

Alternative models in agriculture and marketing provide an essential blueprint for rebuilding the system, as well as the foundational infrastructure for implementing change on a greater scale. There is no blanket solution to the multi-faceted problems presented by the industrial food system, so many different people everywhere need to assist in the development of potential alternatives suited to their regional demographics. Due to the magnitude of problems associated with the food system, and the corporate stronghold on

federal politics, diverse alternative movements must continue to propagate throughout the country in order to generate enough support for the decentralization of the power and knowledge that determines the role of food within society, and how it is valued. Food sovereignty is paramount to the creation of a socially just, ecologically resilient food system that benefits present and future generations of people, instead of feeding the greed of select food conglomerates. Like other forms of democracy, food sovereignty begins with education.

### **The Nature of Higher Education**

The survival of the human species depends on the ability of social organizations to manage human activities in a way that prevents the depletion of natural resources at a rate that hinders their re-generation. Since the economic paradigm of global capitalism in its current form will never allow the necessary management of planetary resources, proposals to create an economy that better emulates natural processes are neither new nor obscure. Ideas of long-term sustainability that look beyond a linear growth model to a more realistic valuation of natural and human capital have begun to circulate the globe at a more urgent pace. Faced with environmental and health catastrophes, the U.S. population must reevaluate the role of post-secondary education in our society. Regardless of whether or not institutions of higher learning choose to foster the development of a more just and sustainable methods of food production and distribution, they wield substantial influence over food systems, on a local and national scale. Making decisions about how to supply dining service operations within colleges and universities is a political act, along with the allotment of research funding and the development of

curricula.

As relatively permanent establishments within a community, universities are geographically connected to the land base they are built upon. They can make local investments (such as the establishment of farm to cafeteria programs) that help develop regional alternatives to complex global interactions. The diversity of university institutions and their capacity to innovate allow them to adapt quickly to changing social conditions, and also help shape the future of social organization. Since they are seen as lead models of progress, colleges and universities tend to be more open to new ideas than other institutions, theoretically enabling them to evolve faster than other institutions as well. For these reasons, post-secondary educational institutions play a critical role in the creation of more resilient, adaptive model of socio-economic and political systems.

In a report about the recent increase of sustainability initiatives in higher education, authors Anthony Cortese and Amy Hattan observe that curricula, research, operations and community outreach are considered to be separate activities within college and university institutions. The lack of interdisciplinary approaches to education and cross-departmental collaboration inevitably results in an educational experience that falls short in terms of creating a greater impact on society. Since college and university students learn from every type of activity and interaction they have with their campuses, this type of segregation is not an effective way of empowering students to confront issues of sustainability when they graduate. Conversely, in order to develop a sustainability-theme educational experience for students, all aspects and activities associated with colleges and universities must be utilized.

Fortunately, the topic of food has the ability to bridge the structural barriers that inhibit institutions of higher education from becoming models for sustainability. Everyone on a college campus eats, making dining services a primary campus activity. “As institutions have committed to focusing on sustainability as a whole on campus, they are finally waking up to the fact that food is the one thing that connects all the issues surrounding sustainability: environmental, local economy, social issues, and, of course, the health and well-being of the people eating it,” said John Turenne, president of a consulting and technical-services company called Sustainable Food Systems in Wallingford, Connecticut.<sup>1</sup> Issues of sustainability extend beyond food, but no institution can achieve sustainability without examining its food system.

Despite their critique of the disciplinary-focused approaches to learning, Cortese and Hattan maintain, “Higher education has been granted tax-free status, the ability to receive public and private funds, and academic freedom in exchange for educating students and producing the knowledge that will result in a thriving and civil society.”<sup>ii</sup> The key to utilizing their unique positions in society lies in the education of students who, after graduating, will make up a majority of the professionals responsible for managing the development and functioning of other social institutions. Educators that I interviewed in the process of researching this thesis repeated this argument about the power and influence that college and university graduates have within greater social contexts. Moreover, Cortese and Hattan claim that graduates of colleges and universities will help build the foundations of the K-12 education system. They cite the president of Arizona State University, Michael Crow, who said at a recent climate leadership summit, “Higher education has 100 percent of the educational footprint.”<sup>iii</sup> If post-secondary education

shapes the educational institutions that lead up to it, then colleges and universities have an even greater obligation to model new types of curricula that effectively address the ecological and social crises affecting current and future generations.

On the other hand, some would argue that colleges and universities have fallen behind the farm to institution curve led by K-12 school systems. In an interview with the manager of CASFS and co-founder of the Real Food Challenge, Tim Galarneau, he asserted, “When K-12 schools that have ridiculously low food budgets are excelling beyond colleges in this realm, I think it is sad and appalling not to have sophisticated expectations with colleges and universities.” Primary and secondary curricula models like the Edible Schoolyard face criticism concerning the impracticality of educating students about growing, preparing, and composting food. Parents worried about their children’s standardized test scores might not appreciate classroom time spent planting vegetables or conversing with local farmers. Institutions of higher learning should legitimize experiential educational models like the ESY instead of giving credence those who deny its value.

In addition to the ESY models that seeks to bridge the gap between consumers and producers, thereby empowering them to contest the corporate control of their food systems, the educational sector has the ability to perform another crucial function in the creation of resilient, bioregional food systems: preparing people to grow food as a profession. In light of our aging farmer population and the need for many more small-scale biointensive agricultural enterprises, the recruitment of a new generation of professional farmers is absolutely essential. Enabling novice farmers remains very difficult, however, due to high costs of land, water, and farm equipment. Unstable food

markets further deter youth from taking up farming as a primary profession. Yet, as awareness of the profound vulnerabilities of large-scale, industrial monocropping and corporate distribution chains continues to grow, the number of individuals interested in alternative food production methods increases as well. While federal and state policies that protect farmland from other forms of development and make agricultural resources more affordable to beginning farmers can help facilitate the transition to community-controlled, ecologically sustainable food production and distribution, another formidable challenge needs to be overcome: the widespread disappearance of agricultural knowledge.

Since very few people in the U.S. know how to grow food sustainably, agroecological education is essential. In his essay, “50 Million Farmers,” ecological journalist and educator Richard Heinberg asserts, “Universities and community colleges have both the opportunity and responsibility to quickly develop programs in small-scale ecological farming methods—programs that also include training in other skills that farmers will need, such as in marketing and formulating business plans.”<sup>iv</sup> It cannot be denied that the industrial food model currently feeds more people than small-scale farmers in the United States. In order for the transition to regional food systems to occur, more people need to grow food and involve themselves in the development of regional markets and food policies. These people need to be trained, and institutions of higher learning have the resources and structural capacity to supply this type of preparation.



**Model vs. Microcosm**

Beyond their ability to incubate alternative food networks, colleges and universities function as microcosms for larger social institutions that prove very difficult to reform. One of the biggest challenges facing college and university institutions attempting to implement sustainable food initiatives is the inherently bureaucratic hierarchy of institutional structures. Institutions of higher education, like the current structure of the food system, are hierarchical, with power and decision-making capacities concentrated at the top. Additionally, economic concerns within these institutions often trump other campus values. If colleges and universities continue to be run primarily as moneymaking enterprises, then long-term sustainability initiatives that require substantial monetary investment without generating rapid return on investments will not be implemented. Even if school administrators feel a moral imperative to support sustainable food projects within dining operations and classroom curricula, the short-term economic viability of their institutions often governs administrative decisions.

On a more abstract level, education systems in the U.S. mirror the homogenized mass production model of industrial monocropping. In other words, modern standards within higher learning emphasize disciplinary specialization and rigid, lecture-based teaching. The purpose of sorting students into focused, subject-based departments is to prepare them for prescribed professions within our economy that they will assume upon their graduation. This model of post-secondary education may have functioned successfully when people built life-long careers in single occupations, but loyalty to one company or profession makes much less sense in today's world of volatile economic markets. In order to achieve financial stability, present and future generations of workers

must accept the fact that their occupations might change every few years, and adapt their lifestyles accordingly. The present economic recession illustrates this point quite clearly, as competition for jobs reaches new highs, forcing recently graduated students to become more flexible in their job hunts. In order to better prepare these students for the workforce, an assortment of experiential education opportunities should be available to students during their undergraduate and graduate studies. Practical learning opportunities allow students to develop problem-solving skills relevant to the real world, thereby preparing them for an unpredictable future.

Overly segmented models of education may also prove detrimental to the rest of society, since specialized, subject-based training runs counter to holistic, systems-thinking approaches to problem solving. That is not to say that interdisciplinary curricula should deny specialization of subject matter. On the contrary, the diversity of education depends on students engaged with different material. The crucial change needs to occur within teaching methodologies. Every subject can be taught through a wider lens that incorporates themes of sustainability and experiential learning. Agroecology, for example, is an area of study that focuses on farm ecosystems, yet it overlaps with other social systems and lends itself to practical learning opportunities such as growing food. When experiential learning supplements holistic, critical thinking, students receive an education that more adequately prepares them to be leaders in society.

### **Back to the Land**

Due to the agrarian history of Massachusetts, the alternative food networks that have sprouted up throughout the state, and the high concentration of post-secondary

institutions, Massachusetts has the ability to be a national leader in food sovereignty. Some skeptics argue that North Eastern populations will always rely on imported food to feed its population, but with the proper development strategies, Massachusetts, along with the greater New England area, demonstrate vast potential to create a more self-sufficient, bioregional food system. Since 1945, when Massachusetts had more than 2 million acres of working farmland, an average of 40,000 acres of farmland has been lost every year to development (Massachusetts is the third most densely populated state in the country). Today, there are roughly 6,000 farms in Massachusetts that comprise about 570,000 acres of land.

On the positive side, many of these farms (more than 80 percent) are locally owned, and Massachusetts leads New England in direct sales of agricultural products from farm to consumer. To facilitate these sales, Massachusetts boasts approximately 95 farmers markets and about 400 farm stands.<sup>v</sup> Without a large agribusiness presence in New England, small farmers have a greater niche within local markets. The agricultural sector also generates substantial revenue for the Massachusetts economy in the form of farm inputs (which require more than \$200 million worth of investments) and income tax revenue (roughly \$21 million annually according to a report in 1997).<sup>vi</sup> Massachusetts farms also pay four times this amount in the form of wages to year-round and seasonal workers. Overall, farm operations in Massachusetts have much to offer the state, but need to be supported by surrounding communities in order to remain in business.

A number of organizations in the Massachusetts areas have developed programs that offer valuable resources to bolster the efforts of these smaller-scale farmers. One such group, the Northeast Organic Farming Association/Massachusetts is a community of

farmers, gardeners, landscapers and consumers working to educate members and the general public about the benefits of local organic systems that are based on complete cycles, natural materials, and minimal waste for the health of individual beings, communities and the living planet.<sup>vii</sup> The University of Massachusetts (a land-grant institution) has contributed to the support of local agriculture. According to the UMASS website, “During the last several years community members have come to recognize that small, working farms are essential for fresh and healthy food as well as for a healthy local economy, environment, and community. As a result farmers and community groups are working directly together to build local food systems that best serve these shared values and needs.”<sup>viii</sup> Within the Northeast region, more than 30 local food and agriculture groups exist to increase community food sovereignty. UMASS Extension sponsors many statewide programs in areas of nutrition education, natural resource conservation, and small-scale agriculture. In the food production area, UMASS Extension prioritizes its research and outreach capacities to focus on improving environmental quality through integrated crop and animal management; to enhance the economic sustainability of agriculture; and to increase the consumption of locally grown foods by individuals, communities, and institutions. To this end, UMASS Extension collaborates with a variety of stakeholders to expand farm to institution opportunities that are crucial to building local food networks.

New England educational institutions do not have to be land-grant universities or located in rural areas to empower their students and surrounding communities to produce or purchase local food. Among U.S. metropolitan areas, Boston contains the highest concentration of colleges. If each of these schools were to source a more significant

portion of its cafeteria food from within the New England region, there could be a major positive impact on local agricultural cooperatives. Collectively, Boston-area institutions of higher education have the capacity to create a secure, long-term market for small- to mid-sized farmers in the region. Furthermore, since colleges and universities in Boston are known internationally for conducting high-level research, these institutions could dedicate more of their resources to the investigation and trial of alternative food networks, state and federal food policy, and biodynamic, urban farming methods. Finally, Boston-based schools should allow their students the opportunity receive credits for summer internships that involve food production in the surrounding agricultural areas. The system of higher education in Massachusetts has much to offer the burgeoning New England food movements, especially if schools make a collective commitment to contribute their institutional resources and intellectual energy to the development of regional food sovereignty and to the strategic training of future leaders.

### **From the Ground Up**

Due to the artificial disconnect between our economic models and the ecological systems of which humans are an integral part, it is important to re-root ourselves in the land base we depend upon to survive. As Martin Ping, executive director of the Hawthorne Valley Association, states, "An industrial structure for a living system is what we need to correct. We will correct it because we have to, there is no alternative. It's obviously an uphill climb because it's a fairly entrenched system."<sup>ix</sup> This applies to our education system as well. At colleges and universities, research mostly emphasizes abstract concepts or studies of other places. In order to really begin to solve the

formidable problems associated with the food system, people cannot ignore the geographic places they inhabit. For college and university students, food sovereignty begins on our campuses, within our cafeterias and classrooms. Students need to understand the real world implications of their actions, but they cannot gain this knowledge sitting in a lecture hall. They need to experience it for themselves and learn how to put their knowledge to practice.

As previously stated, the multi-faceted failures of the current food system will not be adequately addressed by “greening” the status quo or relying on the ethical imperative of CEOs to change their business model. The problem lies in the corporate construction of the industrial system, therefore the solutions will not be found within that system, and giant food conglomerates will not be the ones to initiate them. The same is true for college and university food programs. A hierarchical bureaucracy preoccupied with “bottom line,” short-term profitability cannot be relied upon to create a campus environment that promotes impactful, cross-disciplinary sustainability programs. According to an economic professor from York University, George Fallis, “If tormenting worry had to be summarized in a single sentence it would be: In the post-industrial society of the 21<sup>st</sup> century, the economic mission of the university will flourish and the democratic mission will wither. We must not allow this to happen.”<sup>x</sup>

Restructuring the food system paradigm will depend on consumers reconnecting with the people and processes responsible for producing their food. The concept of food sovereignty is crucial to this. College students of the present generation have grown up with the industrial food model, meaning many of us do not know any other alternatives, nor are we taught to question the system. That is why education is crucial, and it cannot

come from the green washed corporations that currently make hundreds of billions of dollars by preserving the gap between consumers and producers. Although the same could be said for many corporate industries, food is unique in that it physically affects every single person on this earth in the most intimate, fundamental way. As people begin to realize the primary motives that drive our food system, they feel personally violated, and with good reason.

### **Food Sovereignty to Regain Democracy**

A democratization of the food system cannot occur without increased civic engagement. At the same time, food issues have the potential to motivate people to reclaim their democratic rights and involve themselves more in local, state, and federal politics. Local involvement needs to happen first, since people will feel more empowered and less disillusioned by the political system if they can exercise real influence at the local level. The process of restructuring of the food system presents an exceptional opportunity to restructure economic and political paradigms that hinder social progress. As Raj Patel posits, “Thinking about food brings together the common valuation of land and water, the need for responsive institutions, the rights of individuals and the politics of genuine democracy.”<sup>xi</sup> Colleges and universities cannot separate themselves from the political discourse on the food system. Their educational missions and food service operations make them key players within the food systems, regardless of whether or not they choose to take proactive roles in positive reform efforts.

In his essay about the development of Land Grant Universities, Damian Parr points out higher education’s historic service to democracy. He writes:

Until the emergence of LGUs, post-secondary education in the U.S. was designed to serve the privileged class, focusing primarily on the teaching of classics. The work of the early LGUs, however, was said to aim at serving the applied agricultural needs of students by addressing both the theory and practice of agricultural and mechanical arts and sciences. In short, the invention of the LGUs proposed a national transformation in higher education, making college curricula accessible and relevant to the majority of U.S. citizens, an industrializing agrarian class.<sup>xiii</sup>

Since their beginning, LGUs have certainly deviated from their democratic vocation. In recent years, however, there have been many initiatives amongst LGU institutions to return to their original calling.

Non-LGUs also have a major role to play in maintaining alternative food markets, and perhaps the advantage of not having to compete with research bias. Without charges of increasing agricultural production, private universities such as Boston College can focus on holistic, socially based solutions to food system problems. The main difficulty of creating change at private institutions of higher education like Boston College is the hierarchical structure that concentrates a majority of the decision-making power in the hands of very few individuals. Students and progressive faculty and staff are the ones who realize the importance of developing sustainable food practices and curricula, not the upper-level administrators in charge of Boston College's resources. In an e-mail correspondence with Damian Parr of UC Davis, he told me: "All actions that contest the legitimacy of the dominant discourse and institutions are necessary. Everyone has a part to play in forcing the decentralization of power and privilege... in reclaiming their individual and collective agency." This thesis and the grassroots efforts that it chronicles represent challenges to the modern paradigm of food production and distribution. Post-secondary institutions have the potential to profoundly amplify these contestations. If they choose not to, the struggle for food sovereignty will remain greatly disadvantaged.



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<sup>i</sup> Article <http://review.ucsc.edu/article.asp?pid=2852>

<sup>ii</sup> Cortese, Anthony and Hattan, Amy. "Education for Sustainability as the Mission of Higher Education." Mary Ann Liebert, Inc. Vol. 3 NO. 1. Feb, 2010.

<sup>iii</sup> Crow M. Address at 2007 Climate Leadership Summit of the American College and University Presidents' Climate Commitment. Washington, DC, June 11–12, 2007.

<sup>iv</sup> Heinberg, 2006.

<sup>v</sup> USDA Agricultural Marketing Service, *National Organic Plan*, [www.ams.usda.gov/nop](http://www.ams.usda.gov/nop) (Feb. 16, 2010).

<sup>vi</sup> UMass Amherst Center for Agriculture, *Food Production*,

<http://www.umassextension.org/index.php/public-issues/food-production> (Jan. 15, 2010).

<sup>vii</sup> Nofa/Mass, *About Us*, <http://www.nofamass.org/index.php> (Jan 19, 2010).

<sup>viii</sup> <http://www.umassextension.org/index.php/public-issues/food-production>

<sup>ix</sup> M'Gonigle, 203

<sup>x</sup> M'Gonigle, 205

<sup>xi</sup> Patel, 163.

<sup>xii</sup> Parr, 4.

## AFTERWARD

During our weekly discussions, my thesis adviser, Professor Derber, would often urge me to more clearly elucidate the connection between the macro-level, structural failures of the industrial food system and the micro-level reform initiatives at post-secondary institutions. Frustrated by my inability to qualify the unique and essential role of college and university operations in the creation of a more sustainable food system, I turned to institutional curricula and the value of educating future leaders. Derber contested my argument with his personal observations of BC student behaviors (in and out of the dining halls) that had led him to believe that college students have already formed unbreakable habits that need to be addressed at younger ages. At the time, my reaction was, “What about me? I’ve come to learn about the food system during college and have focused my co-curricular activities on advocating alternative models. I also plan to continue this activist work into the future.” Expressing these thoughts to Derber, he joked about a university full of students like me. *Are you proposing a solution to clone yourself?*

A humorous consideration at the time, this conversation led me to think more about the importance of education, not only *what* is being taught, but *how* it is being taught. During the course of my research, I have come to believe that university institutions have an obligation to educate students in a way that truly empowers them to solve the problems facing our generation. The failing food system is not the only obstacle impeding the implementation of sustainable social systems, but it presents a challenge that absolutely cannot be left to agribusiness companies to address. In order to effectively

reform the current industrial model, institutions of higher education need to incubate alternative food system models within their campus operations, while involving students in the process to cultivate practical skills. There is a growing demand within communities of all levels for knowledgeable leaders to help establish alternative food models, and an increasing number of pragmatic youth looking to supply this demand, but who lack adequate experience. Colleges and universities can assist in the training of a new generation of food system leaders, and they should feel compelled to do so. Perhaps schools like Boston College will fall behind in terms of experiential learning techniques, but other schools will not.

As I explore my future career options, part of my daily search entails reading the new listings from the “Sustainable Food Jobs” blog site. A very recently developed site, I have seen the blog explode with new advertisements since January of 2010. Many of the advertisements seek experienced horticulture or nutritional educators, while others offer training programs to people interested in learning how to farm in both urban and rural environments. Another category of job listings come from organizations that work on local or national policy campaigns about food security. Many of the public policy listings have job openings for a plethora of skill sets: managing, marketing, education, nutrition, childcare, communications, and horticulture, to name a few. The general categories of listings are split up into unpaid internships, camps, farms, organizations, and schools. The following advertisement was something new that I had never seen before. It is an advertisement from the city of Philadelphia:

The City of Philadelphia is issuing a Request for Information to gather indications of interest and experience in operating and managing sub-acre commercial, chemical-free farming plots on a City property called Manatawna Farm, located at 100 Spring Lane, Philadelphia, PA 19131.

This initiative is intended to foster sustainable, urban agricultural businesses in Philadelphia and further the growth of a regional food system. Additionally this effort is meant to support Mayor Nutter's food initiative, *Philadelphia Food Charter*, which calls for the use of City-owned spaces for urban agriculture, and Mayor Nutter's sustainability plan, *Greenworks Philadelphia*, which recommends 12 commercial agriculture projects be established in the City by 2015.<sup>1</sup>

Philadelphia is not the only city dedicating more of its resources to sustainable initiatives such as urban agriculture. Communities of various sizes across the country are reorienting their infrastructure around values such as food sovereignty, sustainability, and community resilience.

While it has been very exciting to see very tangible growth in the area of food sovereignty during the past few months of researching and writing this thesis, I have also noticed a critical bottleneck: there are many aspiring farmers amongst my generation, making apprenticeship programs overly competitive, and at the same time there is a huge demand for experienced farmers from places like the city of Philadelphia. The bottleneck occurs in the training process. There are currently not enough programs that teach people to grow their own food or to begin farming professionally to feed others. That is another reason why I believe it is crucial for agricultural production to become institutionalized within our education system, at every level, starting with pre-schools. The sooner people reconnect with food production and learn how to feed themselves—a very basic human instinct that has been co-opted and corrupted by corporations who want exclusive power to feed the world by their own destructive means—then we will finally be able to break the artificially long food chains that enslave us, and create our own, dynamic, community-controlled food webs.

Another recent post on the Sustainable Food Blog Website, written on behalf Paul Quinn College in Dallas, Texas, demonstrates the bottleneck alluded to above. The post calls for a Farm Manager and Director of Agricultural Programs, explaining how their expertise would benefit the college as well as the surrounding community:

Paul Quinn is a private, HBCU, founded by a small group of African Methodist Episcopal preachers in Austin, Texas, April 4, 1872. Since 1990, the College has resided on 147 acres of beautiful rolling hills and trees just south of downtown Dallas. The mission of the College is to provide a quality, faith-based education that addresses the academic, social, and Christian development of students and prepares them to be servant leaders and agents of change in their communities. Academic excellence lies at the heart of the College's mission, along with the values of integrity, service, leadership, accountability, fiduciary responsibility, and an appreciation of cultural diversity.

Our working organic farm will be a key resource for both the College and community. The success of this venture is critical because the community surrounding the College is a food desert. Even though the school, and its surrounding community, is a mere eight minutes from downtown Dallas, there are no legitimate grocery stores or healthy dining options within a five-mile radius. The College is undertaking the creation of the organic farm to provide quality and nutritious food for both its students and the surrounding neighborhood. The farm includes (1) a production garden that will begin providing food for the campus, local restaurants and families from the community this fall and (2) educational gardens used to demonstrate and teach lessons in agriculture.<sup>ii</sup>

It is important to note that while the first paragraph informs potential blog readers of Paul Quinn College's unique history and educational mission, there is no mention of food or agriculture. Instead, the school's stated mission is to foster the development of "servant leaders" who will act as "agents of change" in their future communities. The second paragraph then mentions the school's vision for an organic farm that will address the needs of its surrounding neighborhood, an area that lacks access to nutritious food. While the organic farm will actually feed the College's campus and the greater community, complimentary educational gardens will teach people about agriculture. From this blog

post along, it is clear that Paul Quinn College sees a natural link between the school's traditional mission statement and its future goals related to sustainable agriculture. The only missing link at this point is logistical—the school needs an experienced Farm Manager and a Director of Agricultural Programs to help establish food sovereignty in its Dallas community.

Communities and institutions of all types have begun to realize the importance of taking back control of their local and regional food systems. As more students like myself seek ways of becoming involved with food sovereignty movements, we await the opportunities to restructure political and economic paradigms for the benefit of present and future generations.

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<sup>i</sup> Sustainable Food Jobs, <http://sustainablefoodjobs.wordpress.com/?s=philadelphia> (May 13, 2010).

<sup>ii</sup> Sustainable Food Jobs, <http://sustainablefoodjobs.wordpress.com/2010/04/06/texas-paul-quinn-college-seeks-farm-manager/#more-1160> (April 6, 2010).

## WORKS CITED

- AASHE Association for the Advancement of Sustainability in Higher Education Report. *Campus Sustainability Perspectives*. <http://www.aashe.org/blog/aashe-interview-series-tim-galarneau-food-systems-education-research-program-specialist-univers>. April 3, 2008.
- Anderson, Molly D. "A Question of Governance: To Protect Agribusiness Profits or the Right to Food?" *Agribusiness Action Initiatives*. Nov. 2009.
- American Diabetes Association. "Economic Costs of Diabetes in the U.S. in 2007." <http://care.diabetesjournals.org/content/31/3/596.full>. Nov. 5, 2009.
- Barber, Dan. FORATV Lecture: Slow Food Nation, San Francisco, Aug. 29, 2008: [http://fora.tv/2008/08/29/Slow\\_Food\\_Nation\\_Re-Localizing\\_Food](http://fora.tv/2008/08/29/Slow_Food_Nation_Re-Localizing_Food). Nov. 13, 2009.
- Britt, Robert. "Americans Toss Out 40 Percent of All Food." *LiveScience* online publication. <http://www.livescience.com/culture/091126-food-waste.html>. Nov, 2009.
- C. Badgley, J.K. Moghtader, E. Quintero, E. Zakem, M.J. Chappell, K.R. Avilés Vázquez, A. Samulon, and I. Perfecto. "Organic Agriculture and the Global Food Supply." *Renewable Agriculture and Food Systems*. Feb. 22, 2007.
- "Cargill: A Threat to Food and Farming." *Food & Water Watch*, May 6, 2008. <http://www.foodandwaterwatch.org/food/report/cargill-a-threat-to-food-and-farming>.
- CASFS-Center for Agroecology & Sustainable Food Systems. *About the Center*. <http://casfs.ucsc.edu/about/index.html>. Feb. 1, 2010.
- Coalition of Immokalee Workers. *CIW Anti-Slavery Campaign*. <http://www.ciwonline.org/slavery.html>. Dec. 20, 2009.
- Community Alliance with Family Farmers. *Building Local Food Programs on College Campuses Guide, 2008*. <http://www.caff.org/> Sept. 8, 2009.
- Community Food Security Coalition: Farm to College. *About Farm to College*. <http://www.farmtocollege.org/about>. Jan. 5, 2010.
- Dizikes, Peter. "Good food nation." *MIT News*. <http://web.mit.edu/newsoffice/2009/foodshed.html>. Sept. 22, 2009.
- "Do Farm-to-School Programs Make a Difference?" *Journal of Hunger & Environmental Nutrition*, Vol. 3. <http://www.haworthpress.com>. Feb. 3, 2008.

- Driscoll's: The Finest Berries in the World. *Our Story*. <http://www.driscolls.com/about/our-story.php>. Jan. 22, 2010.
- Dumanoski, Dianne. *The End of a Long Summer: Why We Must Remake Our Civilization to Survive on a Volatile Earth*, (New York, Crown Publishers: 2009).
- Food and Water Watch. "The Bad Seeds: The Broken Promises of Agricultural Biotechnology" October, 2009. <http://www.foodandwaterwatch.org/food/agricultural-policy/the-bad-seeds-the-broken-promises-of-agricultural-biotechnology>.
- Foster, John Bellamy. *The Vulnerable Planet: a Short Economic History of the Environment*. New York: Monthly Review, 1999.
- George, Jason Porter, Corinne, Alysia, Werger. "Factors Affecting the Nutritional Value of Food." *A Report for Farmers' Markets of Nova Scotia*. April 4, 2006.
- Gimenez, Eric Holt. "Aftershocks: Pseudo-Tsunamis and food insecurity in Hawai'i." Posted March 11<sup>th</sup>, 2010. Food First/Institute for Food and Development Policy. <http://www.foodfirst.org/en/node/2820>. March 12, 2010.
- Gliessman, Stephen R. *Agroecology the Ecology of Sustainable Food Systems*. Boca Raton, Fla. [u.a.: CRC, 2007.
- Global Harvest Initiative. Main Page. <http://www.globalharvestinitiative.org/index.php>. Jan. 3, 2010.
- GRAIN, "Making a Killing from Hunger," *Against the Grain*, Report: April 2008. <http://www.grain.org/articles/?id=39>. Nov. 13, 2009.
- Green Mountain College. *About GMC*. <http://greenmtn.edu/about.aspx>. March 4, 2010.
- Harvie, Alicia and Timothy A. Wise. "Sweetening the Pot: Implicit Subsidies to Corn Sweeteners and the U.S. Obesity Epidemic." *Policy Brief 09-0*, Global Development and Environment Institute, Tufts University, 2009.
- "Half of US food goes to waste" Nov. 25, 2004. Decision News Media SAS <http://www.foodproductiondaily.com/Supply-Chain/Half-of-US-food-goes-to-waste-2000/2010>.
- Heinberg, Richard. "Fifty Million Farmers." *Energy Bull*, Nov. 17, 2006, <http://www.energybulletin.net/node/22584>.



- Hubbard, Kristina. *Out of Hand: Farmers Face the Consequences of a Consolidated Seed Industry*, Farmer to Farmer Campaign on Genetic Engineering, National Family Farm Coalition. Dec. 2009.
- Jenks-Jay, Nan and Anthony Cortese. "Conference Proceedings Summary." *Institutions, Climate Change and Civil Society: Acting now to Protect Our Future*. (Medford: Tufts University, Tufts Institute of the Environment & Tufts Climate Initiative, April 24, 1999, 10).
- Kesmodel, David, Lauren Etter, and Aaron O. Patrick. "Grain Companies' Profits Soar as Global Food Crisis Mounts." *Wall Street Journal*. April 30, 2008.  
<http://www.globalpolicy.org/component/content/article/217/46151.html>.
- Kloppenborg, Jack Ralph. *First the Seed: the Political Economy of Plant Biotechnology, 1492-2000*. Madison, Wis.: University of Wisconsin, 2004.
- Lochhead, Carolyn. "School Chef Pushes Fresh Food." Chronicle Washington Bureau. Oct, 9 2009. <http://www.sfgate.com/cgibin/article.cgi?f=/c/a/2009/10/09/MN681A309R.DTL>.
- Manning, Richard. *Against the Grain: How Agriculture Has Hijacked the World*. New York: North Point Press, 2004.
- McIntyre, Beverly D. International Assessment of Agricultural Knowledge, Science, and Technology for Development, Global Report. *Agriculture at a Crossroads*. (Washington D.C.: Island Press, 2009).
- M'Gonigle, R. Michael., and Justine Starke. *Planet U: Sustaining the World, Reinventing the University*. Gabriola Island, BC: New Society, 2006.
- Millennium Ecosystem Assessment. *Ecosystems and Human Well-being: Biodiversity Synthesis*. <http://www.millenniumassessment.org/en/Synthesis.aspx>. Jan. 12, 2010.
- Mitchell, Dan. "Salmonella Scare Exposes the Dangers of Industrial Food." *WashingtonPost.Newsweek Interactive Co*. <http://www.thebigmoney.com/blogs/daily-bread/2010/03/05/dangers-industrial-food>. Oct. 8, 2009.
- National Farm to School Network. *Farm to School: Nourishing Kids and Community*. <http://www.farmtoschool.org/aboutus.php>. Dec. 21, 2009.
- Nelson, Gerald C. *Climate Change: Impact on Agriculture and Costs of Adaptation*. International Food Policy Research Institute. (Washington D.C., IRFPRI: Oct. 2009).
- O'Driscoll, P. "Part of the Problem: Trade, Transnational Corporation and Hunger."

*CenterFocus* (Issue # 166, March 2005), <http://www.globalpolicy.org/socecon/tncs/2005/03problem.pdf> (September 23, 2009).

Parr, Damian. "Agriculture, Science, and the Land Grant University: A Case for a Criticalist Epistemology." UC Davis, CA, 2009.

Patel, Raj. "Is Meat Off the Menu?" *The Observer*. June 22, 2008  
<http://www.guardian.co.uk/lifeandstyle/2008/jun/22/foodanddrink.food>.

Patel, Raj. *The Value of Nothing: How to Reshape Market Society and Redefine Democracy*. New York: Picador, 2009. Print.

Pawlick, Thomas F. *The End of Food*. Greystone Books, Chicago: 2006.

Pollan, Michael, "Naturally: How Organic Became a Marketing Niche and a Multi Billion-Dollar Industry," *New York Times Magazine*, May 13, 2001, 32.

Portland State University. *PSU Dining Services: Green Efforts*. <http://www.campusdish.com/en-US/CSW/PortlandState/Sustainability/>. Jan. 5, 2010.

Power Partners Resource Guide. "Landfill Methane." April 4, 2010.  
<http://uspowerpartners.org/Topics/SECTION6Topic-LandfillMethane.htm>).

Pretty, J.N., J.I.L. Morison and R.E. Hine. "Reducing Food Poverty by Increasing Agricultural Sustainability in Developing Countries." *Agriculture, Ecosystems & Environment*. 2003.

Roberts, Paul. *The End of Food*. (New York, Houghton Mifflin Company: 2008.

Scherr, Sara J. and Sajal Sthapit. Worldwatch Report 179, 2008, *Mitigating Climate Change Through Food and Land Use*.

Scheffer et al. 2000, Berkes et al. 2002. <http://www.resalliance.org/576.php>.

Shiva, Vandana. *Stolen Harvest: the Hijacking of the Global Food Supply*. Cambridge, MA: South End, 2000.

Slow Food Foundation for Biodiversity. <http://www.slowfoodfoundation.com/>. Feb. 7, 2010.

Small Planet Institute. *Table Tents: Food and Climate Change*. [http://www.smallplanet.org/features/item/table\\_tents\\_on\\_food\\_and\\_climate\\_change](http://www.smallplanet.org/features/item/table_tents_on_food_and_climate_change). Dec. 22, 2009.

Smil, Vaclav. *Enriching the Earth* (Cambridge, MA: MIT Press, 2001).

- Sustainable Food Jobs. <http://sustainablefoodjobs.wordpress.com/?s=philadelphia>. May 13, 2010.
- Sustainable Food Jobs, <http://sustainablefoodjobs.wordpress.com/2010/04/06/texas-paul-quinn-college-seeks-farm-manager/#more-1160>. April 6, 2010.
- “The Farm Bill and Your Health.” *Food & Water Watch*. Online Publication, March 2007.
- Thompson, Becky. USDA: The National Agricultural Library Cataloging Record. “Educational and Training Opportunities in Sustainable Agriculture,” <http://www.nal.usda.gov/afsic/pubs/edtr/EDTR2009.shtml> March 3, 2010.
- UMass Amherst Center for Agriculture. *Food Production*. <http://www.umassextension.org/index.php/public-issues/food-production>. Jan. 15, 2010.
- UMass Extension. “Food Safety Agrosecurity Overview.” [http://www.extension.org/pages/Food\\_Safety\\_Agrosecurity\\_Overview](http://www.extension.org/pages/Food_Safety_Agrosecurity_Overview). February 26, 2010.
- USDA Agricultural Marketing Service. *National Organic Plan*. [www.ams.usda.gov/nop](http://www.ams.usda.gov/nop). Feb. 16, 2010.
- USDA Economic Research Report 83, “Household Food Security in the United States, 2008,” Nov. 2009.
- USDA National Institute of Food and Agriculture. *About Us: Extension*. <http://www.csrees.usda.gov/qlinks/extension.html>. Feb. 10, 2010.
- USDA Rural Business Cooperative Report 157. *Cooperatives in Changing Global Food System*. Oct. 1997.
- Walsh, Bryan. “Getting Real About the High Price of Cheap Food.” *Time Magazine*. Aug. 21, 2009. <http://www.time.com/time/health/article/0,8599,1917458,00.html?iid=sphere-inline-sidebar#ixzz0iCmS9VC2>. Oct. 18, 2009.
- Webster, Andrea and Julian Smith. Association for the Advancement of Sustainability in Higher Education. “AASHE Digest, 2008,” (Kentucky, AASHE Online Press: June, 2009).
- Winne, Mark. 2008. “Leading the Charge, Leading the Change,” from a keynote address given to the Northwest Harvest Food Bank Annual Meeting in Seattle, Washington, May 15, 2008. <http://www.markwinne.com/food-bank-speech-may-15-2008-seattle-wa/> (October 1, 2008).
- Wirzba, Norman. *The Essential Agrarian Reader: The Future of Culture, Community, and the Land*. (Kentucky, University Press: 2003).

Yale Sustainable Food Project. Report 2008-2009: "Growing Awareness."  
<http://www.yale.edu/sustainablefood/CurrentAnnualReport.html>. (Feb. 5, 2010).