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The Planet on Our Plates: The History, Economics, and Ethics of an Unsustainable Globalized Food System

Erin Wattley
Fordham University, ewattley@fordham.edu

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Abstract

In today's age of globalization, the world's food systems are no exception to this dominant economic trend. Although globalization has ushered in an unprecedented economic boom, the globalization of the food system has negative implications for the environment, including the pollution and energy costs of transporting food around the globe, the exploitation of land for farming, particularly in developing countries, and the degradation and depletion of natural resources. This paper seeks to address the environmental problems associated with the globalized food system and provide possible solutions to those problems, using the food system of Bronx residents as a case study throughout the paper. Chapter 1 uses data to illustrate both the environmental and social costs of a globalized food system. Chapter 2 traces the history of food systems and demonstrates how food systems have developed from localized to globalized over time, both in broad terms and in the specific case of the Bronx. Chapter 3 examines the economics of the globalized food system, illustrating that the system is extremely economically profitable for some agents, and less profitable for others like the low-income residents of the Bronx. Chapter 4 evaluates the ethics of the globalized food system and discusses how communities like the Bronx are disproportionately harmed by the system. Drawing together the information from the previous chapters, chapter 5 recommends policies to solve the problems of the globalized food system by making food systems more localized in food desert communities, with initiatives such as incentivizing backyard gardens, implementing local farmer's markets, and reclaiming farmland in urban areas.

Keywords: globalization, food systems, environmental history, environmental economics, environmental ethics, food systems policy, United States food system, New York City food system

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Introduction: My Food Traveled How Many Miles to Get Here?

In the fall of 2016, I took a class called "You Are What You Eat: The Anthropology of Food". As part of the requirements for that class, I had to complete a food quest project, in which I documented everything I ate for a week, including details such as ingredients, packaging, cost, and distance the food traveled from its original source. At first, the requirement to document the distance my food traveled baffled me, as I didn't think my food traveled far enough for its transportation to be a significant factor of its environmental impact. However, at the end of the assignment I was shocked to discover that most of the food I ate traveled 1000 miles or more to get to my plate. This discovery made me realize that in the transportation of food over such long distances,

large amounts of fossil fuels are burned, producing carbon emissions that lead to an exacerbation of climate change.

The realization I came to about “food miles” in my food quest assignment is one manifestation of a larger problem: a globalized food system, one in which food is transported from countries all over the world to comprise the food supply of a given location, and one in which most developed countries participate in and profit from. In this system, not only do the high amount of carbon emissions associated with long transportation distances negatively impact the environment, but there are other environmental impacts associated with the globalization of food as well, such as the extensive degradation of land and water resources from the use of a mechanized factory farming system. Although not every nation in the world participates in a globalized food system, those countries that do create environmental impacts for the entire planet. For example, the food system of the United States is mostly globalized. This globalization of the United States food system has made its food supply not only extremely environmentally impactful both to itself and to other countries, but also economically exploitative and vulnerable to instabilities.

In this paper, I will explore the impacts of a globalized food system and exemplify its negative impacts using a case study of the Bronx, a community which experiences many of the pitfalls of the globalized food system in its status as a food desert. Furthermore, I will use three academic disciplines to examine the globalized food system of the Bronx in greater depth: environmental history, environmental economics, and environmental justice and ethics.

The paper will be divided into five chapters. In each chapter, I will overview the characteristics of the globalized food system in general before examining the case of the Bronx specifically. In chapter 1, I will use data from the UN's Millennium Ecosystem Assessment and from the UN's Food and Agriculture Organization to demonstrate the impacts of the globalized food system. In chapter 2, I will examine the history of food systems, showing the general trend from localized to globalized food systems over time both generally and in terms of the Bronx. Chapter 3 will study the economics of the globalized food system, reviewing the disparities that globalized food creates in human economic systems as well as the damage it does to ecological economic systems. Chapter 4 studies the ethics of the globalized food system, with a focus specifically towards issues of environmental justice in the Bronx and its underlying issues of racial, gender, and socioeconomic prejudice. Finally, chapter 5 provides policy recommendations for the Bronx to remedy the failures of its food system, which can also be implemented at a larger scale to improve the food desert situation in similar communities.

Chapter 1. Taking Stock: Data on the Impacts of Globalized Food Systems

To gain the best understanding of the globalized food system, it is important to review data and statistical evidence to establish the extent of its environmental and economic impacts. The Millennium Ecosystem Assessment (MEA), conducted by the United Nations in the early 2000s, provides a comprehensive and concise review of this data. The report focused on the current trends in relationships between ecosystem well-being, human well-being, and the various types of ecosystem services, along with the factors that affect changes in those relationships, and it synthesized all the data and

knowledge available at that time to illuminate these concepts. The figure[1] below visualizes the conceptual framework of the MEA.

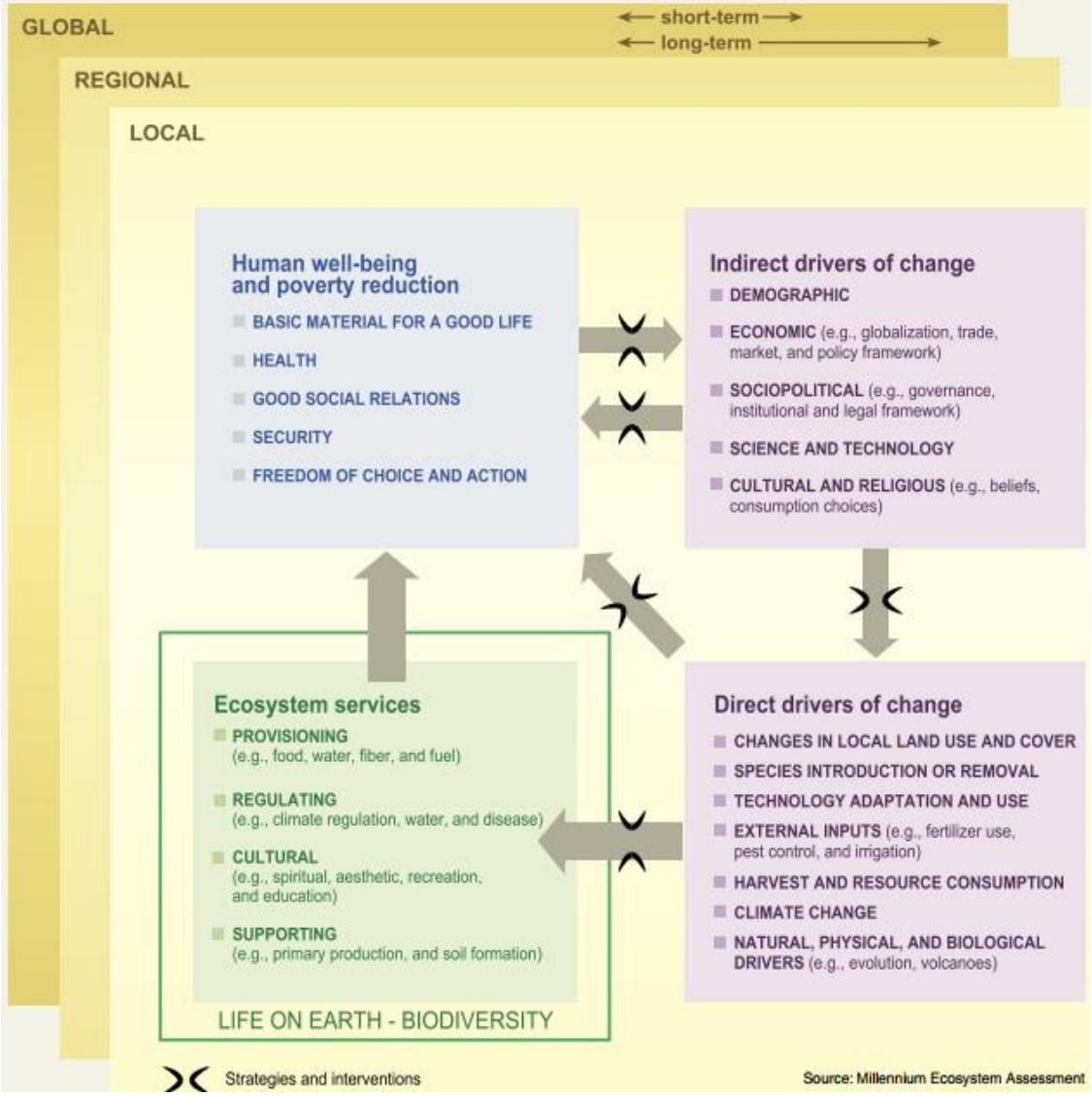

Figure 1: MEA Conceptual Framework: Ecosystem Services, Agents of Change, & Human Well-Being

The figure emphasizes that ecosystem services are key to human well-being, that the availability of ecosystem services is dependent on the well-being of biodiversity, and that there are a multitude of both anthropogenic and nonanthropogenic factors that

[1] "Ecosystems and Human Well-being: Synthesis" in Millennium Ecosystem Assessment (Washington, DC: Island Press, 2005), vii.

influence biodiversity well-being, human well-being, and their relationship to each other. Relevant to the globalized food system, factors such as economic globalization, changes in local land use, fertilizer and irrigation inputs, and resource consumption all cause changes that affect the quality of ecosystem services, the status of biodiversity, and the state of human well-being.

The relationships outlined in the conceptual framework of the MEA are used in the results of the study to identify three main problems associated with the way humans interact with Earth's ecosystems. The first and most relevant of these problems to the discussion of globalized agriculture is that roughly 60% of all ecosystem services that were studied during the MEA "are being degraded or used unsustainably, including fresh water, capture fisheries, air and water purification, and the regulation of regional and local climate, natural hazards, and pests".[2] The reason for this widespread ecosystem degradation is identified in the first of four main findings that the MEA synthesizes as a result of the research it conducted: "Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, largely to meet rapidly growing demands for food, fresh water, timber, and fuel. This has resulted in a substantial and irreversible loss in the diversity on Earth".[3]

In other words, the degradation of natural ecosystems and their services has largely occurred as the result of a human effort to specifically increase the yield of provisioning services, those that provide raw physical goods such as food and water. The main way to increase the yields of provisioning services, then, is through a dramatic

[2] "Ecosystems and Human Well-being: Synthesis" in Millennium Ecosystem Assessment (Washington, DC: Island Press, 2005), 1.
[3] "Ecosystems and Human Well-being: Synthesis", 1.

global expansion in agriculture. The study goes on to indicate that regulating and cultural ecosystem services, such as water purification, climate regulation, and spiritual fulfillment, are being particularly degraded out of all the types of ecosystem services.[4] In addition, out of all the ecosystem services studied, only four have been improved in recent history, and unsurprisingly, three of them—crops, livestock, and aquaculture—have to do with food production. The improvement of these services, however, has come at the cost of the ecosystem services that are being degraded. As the MEA points out, increased agricultural production requires the increased inputs of water, fertilizers, and cultivated land area, and when these inputs are being used for agriculture, it leads to the degradation of water quality, reduction of biodiversity, and loss of critical forest cover.[5] The statistical evidence offered by the MEA underscores these facts. According to the MEA, "More land was converted to cropland in the 30 years after 1950 than in the 150 years between 1700 and 1850. Cultivated systems…now cover one quarter of Earth's terrestrial surface".[6] Furthermore, "most water use (70% worldwide) is for agriculture", and "More than half of all the synthetic nitrogen fertilizer, which was first manufactured in 1913, ever used on the planet has been used since 1985".[7]

The dramatic expansion and globalization of agriculture that has occurred in the last 50 years not only has alarming implications for the quality and availability of regulating and cultural ecosystem services, but it is also extremely detrimental to biodiversity. The MEA highlights this fact in its findings that "More than two thirds of

[4] "Ecosystems and Human Well-being: Synthesis" in Millennium Ecosystem Assessment (Washington, DC: Island Press, 2005), 6.
[5] "Ecosystems and Human Well-being: Synthesis", 6.
[6] "Ecosystems and Human Well-being: Synthesis", 2.
[7] "Ecosystems and Human Well-being: Synthesis", 2.

the area of 2 of the world's 14 major terrestrial biomes had been converted by 1990, primarily to agriculture", and that "Genetic diversity has declined globally, particularly among cultivated species…Between 1960 and 2000, the demand for ecosystem services grew significantly as world populations doubled to 6 billion people and the global economy increased more than sixfold. To meet this demand, food production increased by roughly two-and-a-half times, water use doubled…".[8] The effect that these changes have had on species extinction rates (an indicator for biodiversity status), is illustrated in the figure[9] below.

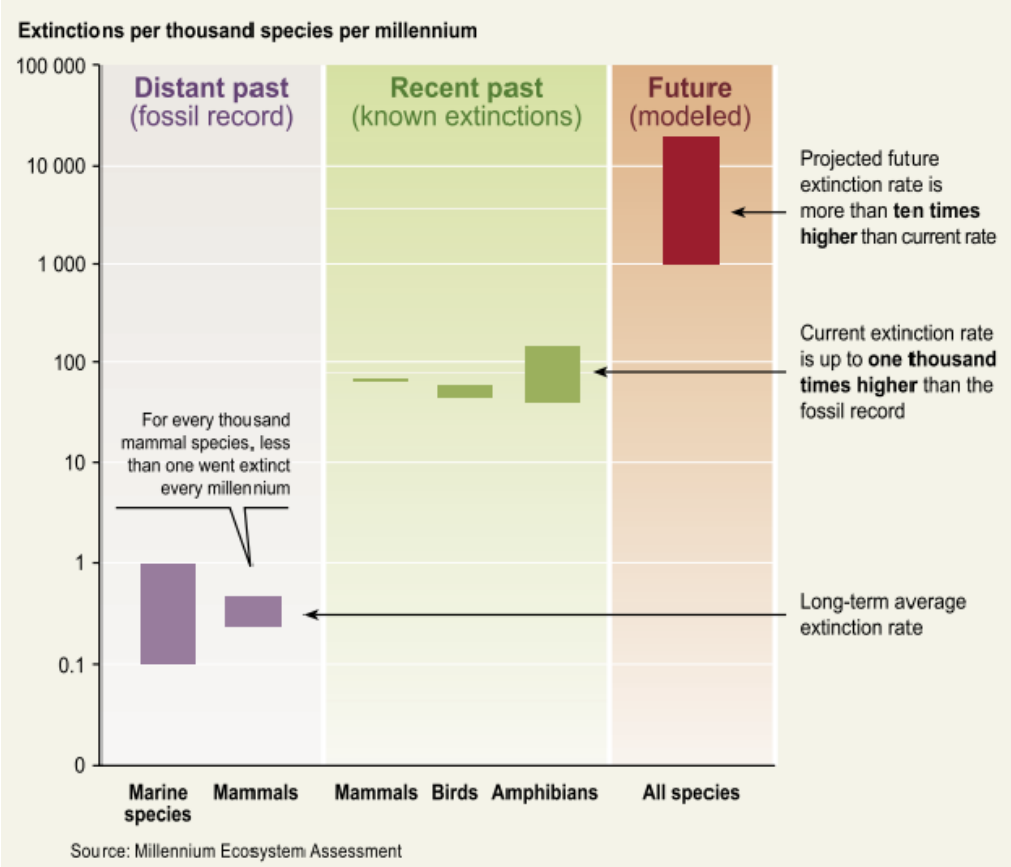

Figure 2: Species Extinction Rates

[8] "Ecosystems and Human Well-being: Synthesis" in Millennium Ecosystem Assessment (Washington, DC: Island Press, 2005), 4-5.
[9] "Ecosystems and Human Well-being: Synthesis", 5.

As the figure illustrates, the current extinction rate is astronomically (one thousand times) higher than the normal extinction rate, which was established by averaging the extinction rate over the long-term fossil record. Even more concerning is the projected future extinction rate, which is estimated to be ten times higher than the current rate. This data projects a grim outlook for the health of biodiversity and is an indicator of the fact that an expansive, globalized agricultural system has detrimental implications for the environment.

Turning away from the broad ecosystems overview addressed in the MEA, the UN's Food and Agriculture Organization (FAO) website has a wealth of data specifically regarding human food systems, agriculture, and environmental impacts. Looking at climate change impacts, the figure below,[10] taken from the FAO website, shows the total CO_2 emissions from agriculture globally from 1990 to 2014.

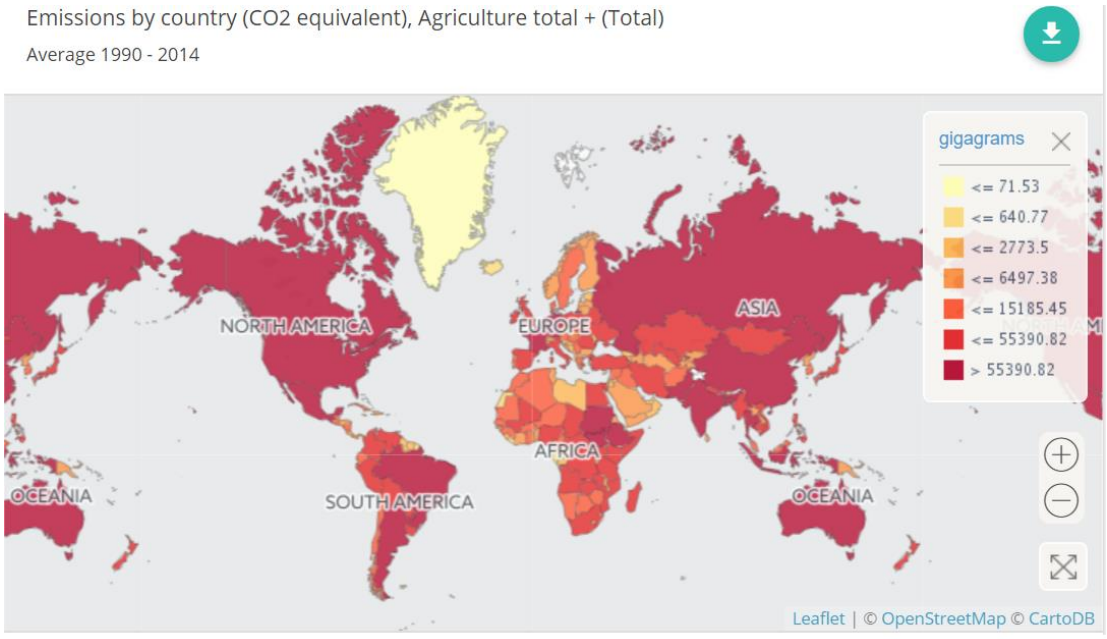

Figure 3: Total CO_2 emissions from agriculture

[10] "Food and Agriculture Data," FAOSTAT, Accessed October 09, 2017, http://www.fao.org/faostat/en/#data/GT/visualize.

The figure shows that agriculture is globally a high producer of carbon dioxide emissions. Notably, the countries that are most developed, such as the United States, Canada, and Australia, or are experiencing the most rapid growth in economic development, such as India, China, and Brazil, are generally the countries that emit the most from their agricultural practices. With already high CO_2 emissions, the emissions from fossil fuels burned to transport food over great distances in a globalized food system only serves to exacerbate this high level of emissions for food production.

In addition to CO_2 emissions, another way to evaluate the magnitude of the environmental impact of agriculture is to measure the sheer amount of land that is being used for agricultural purposes. The figure[11] below from the FAO shows the percentage of land area being used for agriculture by country as an average from 1994 to 2014.

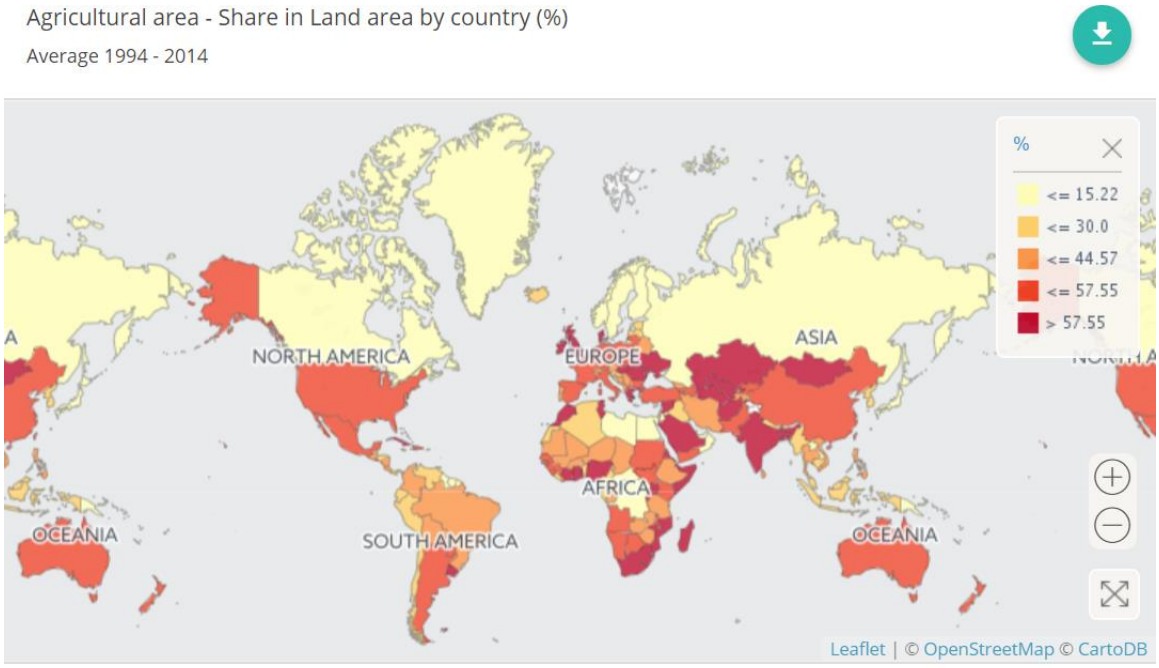

Figure 4: % of land area used for agriculture by country

[11] "Food and Agriculture Data," FAOSTAT, Accessed October 09, 2017, http://www.fao.org/faostat/en/#data/EL/visualize.

The chart shows that a significant amount of land area in most major countries is now being used for farm land, demonstrating the dominance of agriculture and the globalized food system as a primary component of land use. As with carbon dioxide emissions, countries with the most developed or most rapidly developing economies tend to have the greatest percentage of land area being used for agriculture. Also, countries with the highest percentage of agricultural land are located closer to the equator, where climatic conditions are optimal for agricultural productivity. The overall large percentage of land area being used for agriculture means that that land no longer serves as natural habitat for native species, which has negative implications for biodiversity.

With an understanding of some of the global ecological impacts of agriculture, it is now relevant to narrow the scope of analysis to the food system of the United States. Just how much of the United States' food supply is truly "global"? According to David Karp's New York Times article, "Most of America's Fruit Is Now Imported. Is That a Bad Thing?", more than fifty percent of fresh fruit and almost a third of fresh vegetables bought by Americans are imported, largely from Canada and Latin American countries.[12] The trend of expansion in the proportion of imported produce in the US has been precipitated by several factors. First, innovations in transportation technology such as containerized shipping and road improvements have made shipping cheaper and more efficient. Second, developments in horticulture have produced a large variety of plant species that are well adapted to warmer climates, making regions like Latin America a hotspot for agricultural production. Third, American incomes have been steadily

[12] For the following, see David Karp, "Most of America's Fruit Is Now Imported. Is That a Bad Thing?" *New York Times,* March 14, 2018, https://www.nytimes.com/2018/03/13/dining/fruit-vegetables-imports.html.

growing, and with that growth has occurred a simultaneous growth in demand for greater quantities of fresh produce available year-round. Fourth, regulations imposed on American farmers have spurred many to move agricultural production to other, less regulated countries such as Mexico. Finally, in recent years the USDA has begun to relax their standards on the specific crops that can be imported. While these restrictions were based on a desire to prevent the introduction of invasive species, the USDA has issued about 100 new rules that have allowed certain crops to be imported, provided that measures are taken to prevent the introduction of invasive species.

The extent to which imported food has increased in the US is significant. From 1975 to 2016, the proportion of imported fruit in the US rose from 23% to 53.1%, and the proportion of imported vegetables during the same period rose approximately from just 5.8% to 31.1%. With this increase in the proportion of imported produce, Americans have begun to consume more foreign-grown crops like mangoes, avocadoes, and limes while consumption of domestically grown crops like peaches and celery has fallen. While this uptick in produce consumption has positive implications for American public health, there are negative implications for environmental impact, especially from the pollution emissions resulting from large transport distances and from the risk of introducing invasive species. Furthermore, from an economic standpoint, the increase in imported produce has largely tended to benefit large corporations, while more often harming small-scale farmers. For better or worse, the trend of increasing imports is expected to continue. According to the USDA, by 2027 it is projected that about 75% of fruits and nearly 50% of vegetables in the US will be imported.

The dominant food system trends of the US provide a good context for an examination specifically of the food system of the Bronx. It has been well documented that many areas of the Bronx are classified as a food desert, especially the South Bronx, meaning that many residents do not have sufficient access to fresh, nutritious food, whether due to physical unavailability, lack of financial resources, or lack of preferences for these types of foods. However, it's difficult to conceptualize just how serious the problem of food insecurity really is without concrete statistics.

To illustrate the magnitude of food insecurity in the Bronx, The City of New York's annual Food Metrics Report comprehensively compiles data about the food system of NYC and addresses the challenges and flaws of the current food system. According to the report, as of 2015, 229,800, or 16.1% of Bronx residents were classified as being food insecure, the second-highest food insecurity rate of the five boroughs. Furthermore, the "meal gap", or the number of meals short of what is sufficient for good health, was 41.2 million for the Bronx.[13] In most of the Bronx, the average meal gap is at least 18 meals per person, with the meal gap in the majority of the South Bronx being greater than 32 meals per person. Furthermore, 597,111 Bronx residents were recipients of SNAP as of April 2017. While these statistics give simply an overview of the state of food security in the Bronx, the borough's status as a food desert and the challenges it faces in ameliorating this problem will be explored in greater depth in the succeeding chapters of this paper.

[13] For the following, see New York City Food Policy, *Food Metrics Report 2017*, accessed May 14, 2018, http://www1.nyc.gov/assets/foodpolicy/downloads/pdf/2017-Food-Metrics-Report-Corrected.pdf, 9-11.

Chapter 2. From Local to Global: A History of Food Systems

Looking at the data presented in Chapter 1, it is evident that in the past fifty years, through a greatly expanded agriculture and food system, humans have had a profound impact on the global environment, and to a greater extent than at any other period in history. This fact begs the question: how did we get to this point? To understand why humans' food systems have become so largely globalized and why those systems have become so injurious to the environment, we must look back over the course of human history and examine the evolution of human food systems over time.

Although there is significant variation in the food systems of different societies around the globe, and different societies developed their food systems at different rates, it can generally be said that over time, most societies have started out as hunter-gatherers. Most hunter-gatherer societies later transitioned to agriculture and subsequently underwent the development from a localized agricultural food system to a globalized agricultural food system. This historical generalization is especially true of today's industrialized, developed countries, and while it is true that the globalized agricultural food system is the economically dominant trend of today, it is also important to note that there are other modern societies that do not participate in this system. There are some societies today that still exist in hunter-gather or localized agricultural food systems. However, because of the particularly profound environmental impact of globalized agricultural food systems, this chapter will focus mainly on the histories of those societies whose food systems developed into globalized agricultural ones over time.

One of the best historical accounts that addresses the history of food systems, environmental conditions, and their impact on the welfare of societies is Jared Diamond's

book *Guns, Germs, and Steel*. In the book, Diamond seeks to explain why some societies (namely western Eurasian and Northern African societies) developed technologically and economically at a faster pace than others, leading them to dominate other societies (namely in the Americas, southern Africa, and Australia).[14] Diamond proposes that these differential rates of development that led some societies to dominate others is due to differing environmental factors among societies rather than differing biological factors, as was previously believed by many.[15] The main line of reasoning for Diamond's book is that some societies had environmental factors that were more favorable to agricultural development and plentiful food production, which allowed these societies to rapidly develop the "guns, germs, and steel" that could be weaponized to conquer less technologically developed societies.

The part of Diamond's book on which this chapter will focus is his historical analysis of food production, as it is the aspect most relevant to this paper's topic.

The first key development in human food systems that Diamond identifies is the transition from hunting and gathering, the original food system of humans, to localized agriculture. In hunting and gathering food systems, members of a human population would have to search for a few edible species over a large expanse of land that was inhabited mostly by inedible species.[16] Contrastingly, a localized agrarian food system offers edible species in the form of domesticated plants and animals over a small, concentrated area. By concentrating the density of the edible food supply, agriculture created food surpluses and allowed human populations to settle in one area. This human

[14] Diamond, Jared M. 1999. Guns, Germs, and Steel: The Fates of Human Societies. New York: Norton, 28-29.
[15] For the following, see Diamond, *Guns, Germs, and Steel*, 28-29.
[16] For the following, see Diamond, *Guns, Germs, and Steel*, 88-90.

settlement allowed for dramatic increases in population sizes and densities as well as for the storage of food surpluses. While the ability to accumulate stores of surplus food may seem like a relatively innocuous development, it was in fact a key factor in fostering the development of bureaucratic societies. While hunter-gatherer societies were generally egalitarian because people devoted most of their time to procuring food, stores of food surpluses in agricultural societies allowed for people to devote their time to other activities besides food procurement, such as artistical and technological pursuits.[17] In addition, the food stores were also used as a means of power, as those who controlled the food stores had power over those who didn't, giving rise to a class system. Furthermore. while both domesticated plant and domesticated animal species were critical to the development of agriculture, large domesticated animals such as horses and camels were especially important because they served the additional purpose of making transportation of both humans and goods easier and more efficient.

According to Diamond, there are several factors that contributed to the transition of societies from hunting and gathering to agriculture, including a decreasing availability of wild foods, the human development of tools for collecting and storing cereals, and high human populations.[18] The last factor is itself an effect of the implementation of agriculture, but Diamond considers it as a cause of agriculture as well because it creates a positive feedback loop that enables the continued growth of agriculture. The final factor that contributed to the growth of agricultural societies and the decline of hunter-gatherer ones is that as agricultural societies grew in power, they began to infringe on the territory of hunter-gatherer societies, either killing them or displacing them to new areas. As

[17] For the following, see Diamond, *Guns, Germs, and Steel*, 90-91.
[18] For the following, see Diamond, *Guns, Germs, and Steel*, 112-113.

agricultural societies claimed fertile land for their own to increase food production, hunter-gatherer societies were continually pushed to the margins of their territories, which is why today there are only a few true hunter-gatherer societies left, and they generally exist in areas not fertile enough to suit agricultural cultivation.

Although it wouldn't be until the twentieth century that the wave of economic globalization would give rise to contemporary food systems, already in the early history of agriculture there was relatively extensive trading in food amongst the major ancient empires, which acted as small-scale precedents for the food globalization of today. For example, about 2000 years ago ancient Rome's food system was supplied with a variety of crops of foreign origin. According to Diamond,

> "Of Roman crops, only oats and poppies were native to Italy. Roman staples were the Fertile Crescent founder package, supplemented by quince (originating in the Caucasus); millet and cumin (domesticated in Central Asia); cucumber, sesame, and citrus fruit (from India); and chicken, rice, apricots, peaches, and foxtail millet (originally from China)."[19]

In addition, as agricultural techniques and trading routes developed, plant and animal species domesticated in one civilization tended to spread to others across similar latitudinal areas, as civilizations within the same latitudinal area tended to have similar climates, allowing for the newly introduced species to thrive.

Having laid out a general global historical context of food systems, it is now appropriate to explore the agricultural history of the case study of this paper, the Bronx. The agricultural history of the Bronx is centered around the Bronx River, a fertile area that comprises a significant source of freshwater for New York City. In the centuries prior to European contact, before the Bronx came to be known as "Bronx", the area

[19] For the following, see Diamond, *Guns, Germs, and Steel*, 185-186.

around the Bronx River was inhabited by Native Americans, who utilized the land for their food production and whose relationship with the land can be described as one of ecological balance, in which Native Americans used the resources they needed for subsistence from the land without depleting or degrading them.[20] The river was also named "Aquehung" by the Native Americans, a name that means a "fast stream flowing along a high bluff".[21] The relationship of balance between the river and its human inhabitants remained the status quo until the seventeenth century, when Europeans began to move and settle into the area. In the early days of European settlement, from the seventeenth to eighteenth centuries, settlers farmed the land and produced enough food for themselves as well as a surplus that they used for trading purposes.[22] These early days of trading, while not yet environmentally detrimental to the ecology of the river, did set the stage for further economic growth that would later translate into significant environmental damages.

The river's name was changed from Aquehung to Bronck's River (and later Bronx River) after Jonas Bronck, one of the earliest successful settlers to the area. The change of the river's name is also telling of a philosophical change that occurred in the attitudes of the area's settlers towards their environment. As author Maarten De Kadt describes in his book *The Bronx River: An Environmental & Social History*:

> "The native peoples used a descriptive term, while the Europeans named the river after a person. This change of name is emblematic of a change in the attitude toward land and water use and ownership brought by the Europeans. Now property could be treated as a commodity".[23]

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[20] Maarten De Kadt, *The Bronx River: An Environmental & Social History* (Charleston: The History Press, 2011), 14-15.
[21] De Kadt, *The Bronx River*, 14-15.
[22] For the following, see De Kadt, *The Bronx River*, 19-21.
[23] De Kadt, *The Bronx River*, 23.

This change in attitude of the area's inhabitants from a biocentric to an anthropocentric world view clearly set the stage for the environmental harms that would come to the river down the road. What would characterize the next two centuries, from the nineteenth century to present day, would be a period of environmental degradation and pollution of the river, a phenomenon that can generally be explained by two factors: industrialization and increasing human population.[24]

By the dawn of the nineteenth century, the agricultural period of the river began to wane as industrialism developed. What was used for agricultural production now became the site for a plethora of dams, mills, and factories, and a coal gasification plant. As one might expect, these industrial processes led to a century of profuse pollution and degradation of the river and its surrounding area. To make matters worse, environmental damage continued to worsen from the late nineteenth and into the twentieth century, when the population of the Bronx expanded dramatically.[25] The marked increase in population brought with it numerous associated effects, including a greater demand for transportation infrastructure as well as increases in water usage and waste output, all of which had detrimental consequences for the ecological health of the Bronx River.

In the wake of all the environmental damage being wrought during this period, numerous different strategies were implemented to attempt to mitigate this damage, including constructing sewers to properly dispose of wastewater and reclaiming the river for recreational purposes, which led to the construction of four NYC parks along the river. Another project that was built to ameliorate ecological damage in the Bronx was the Bronx River Parkway, which was supposed to act as a buffer zone to mitigate

[24] For the following, see De Kadt, *The Bronx River*, 29-42.
[25] For the following, see De Kadt, *The Bronx River*, 44-47.

environmental damages. However, the parkway ended up simply causing more damage from the influx of environmental problems, such as air pollution and littering of junked parts, associated with cars.

After a series of attempts at local ecological improvement that were at best meagerly successful, the formation of the Bronx River Working Group (BRWG) and the Bronx River Alliance (BRA) ushered in a new era in which significant improvements would be made to the water quality of the Bronx River and the land surrounding it.[26] These two community groups were formed to spearhead a cleanup effort of the river. While they have been largely successful in their efforts and have made good progress in cleaning up the river, the river's water quality is nowhere near suitable for drinking, nor is the surrounding land suitable for agriculture. In short, what its environmental history means for the future of the Bronx is that two centuries of intense industrialization and population growth have degraded the majority of the borough's agricultural lands, and cleaning and reclamation efforts will not be enough to revitalize these areas for agriculture in the near future. Therefore, the food supply for Bronx residents must be mainly supplied from outside the borough.

While the development of agriculture was a fundamental change in the human way of life and gave rise to the technological, political, and artistic advancement of human societies, it wasn't until very recently in human history (the past hundred years or so), with the Green Revolution, economic globalization, and the development of more efficient modes of transportation, that the globalized agricultural system began to develop. Like the relationship of agricultural societies to hunter-gatherer societies, those

[26] De Kadt, *The Bronx River*, 54-55, 62-63.

societies that participate in a globalized agricultural system have developed a major economic power differential over those countries who have a localized agricultural or hunter-gatherer food system, and those economic power differentials are explored further in the succeeding chapter.

Chapter 3. Following the Money: The Economics of a Globalized Food System

Having outlined the environmental history that contextualizes the rise of the globalized food system, the best way to understand the ins and outs of the system as it is today is through an environmental economics analysis. This analysis will include a discussion of human economic systems, placing the globalized food system within the larger overall trend of globalization and noting the resultant global economic power differentials created by this trend, as well as a discussion of ecological economic systems, underlining their critical importance to the well-being of humans and their economic systems and noting the damage done to them by this globalized system.

Before getting into the details of the economic analysis, it is important first to outline and understand some terms and concepts that are key to the discussion of environmental economics. In their textbook *Living in the Environment*, G. Tyler Miller and Scott E. Spoolman include a chapter on environmental economics that clearly and concisely discusses these foundational concepts. First, it is important to distinguish between three types of capital: natural capital refers to the raw materials and ecosystem services produced naturally by the earth, human capital refers to humans' physical and

mental capabilities, and manufactured capital refers to the materials made from a combination of natural and human resources, such as factories and machinery.[27]

Generally speaking, most nations around the globe have sought to improve themselves through economic development, which is the use of economic growth as the means of elevating human living standards.[28] As a result of using this mechanism of improvement, most developed industrialized nations today have high-throughput economies, meaning that economic growth is achieved by increasing the amount of resources harvested from the environment to produce more goods and services, resulting in a high output of pollution, waste, and low-quality energy in the form of heat, along with the degradation of natural capital. One of the fundamental flaws in this type of economy is that environmental costs and benefits are completely external to the system. The cost of environmental damage wrought by the production process and the economic use and nonuse values of environmental goods and services are completely absent from this system, meaning that market prices do not reflect the full cost of goods and services.[29] This failure of the economic system to incorporate the value of ecological economic goods and services only serves to perpetuate the trend of human economic systems to degrade and deplete natural capital.

In contrast to the high-throughput economies of developed industrialized nations, which follow a linear path from raw material to waste, the economic system of nature is cyclical and produces zero waste: the output from one ecological process is used as the raw material to fuel another ecological process, rather than being simply discarded as

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[27] G. Tyler Miller and Scott E. Spoolman, *Living in the Environment* (Boston: Cengage Learning, 2012), 614.
[28] For the following, see Miller and Spoolman, *Living*, 616-617.
[29] Miller and Spoolman, *Living*, 616, 619, 621.

waste.[30] While human economies strive for infinite growth, ecological economies are balanced and have checks to correct growth that is too high (e.g. a disease epidemic that strikes a population that is exceeding its carrying capacity).

There is a fundamental division among economists over the optimal economic theory for human economic systems. Neoclassical economists believe in continued growth as the ultimate economic rule and believe in the unlimited potential for economic growth, that natural resources are dispensable because substitutes for any given resource will always be available, and that natural capital is a subset of human economic systems.[31] On the other hand, ecological economists believe that infinite economic growth is impossible and unsustainable because it degrades natural capital, that there are many natural resources that are indispensable because no substitutes for them exist (such as air, water, and ecosystem services), and that human economic systems are a subset of nature. From these descriptions, it is clear to see that neoclassical economic theory has driven the rise of high-throughput economies, while ecological economic theory is more favorable to the cyclical economies of nature.

Although there are a multitude of other important economic principles noted by Miller and Spoolman, the final point that will be drawn from their discussion of environmental economics is that there is currently a globally widening gap between the rich and the poor. According to Miller and Spoolman in 2012 (when the book was published), 1.4 billion people live on less than $1.25 a day.[32] Additionally, although neoclassical economic theory advocates that economic growth is the way to reduce

[30] For the following, see Miller and Spoolman, *Living*, 630.
[31] For the following, see Miller and Spoolman, *Living*, 616-617.
[32] For the following, see Miller and Spoolman, *Living*, 627-628.

poverty through the trickle-down effect, since 1960, most of the benefits of economic growth globally have been benefiting the rich rather than trickling down to the poor. Furthermore, since 1980, the global wealth gap has grown, with the United Nations calculating in 2005 that the 500 richest people in the world earned more than the world's 416 million poorest people.

Having established a conceptual framework of environmental economics, it is now appropriate to discuss the case of the globalized food system within the context of this framework. George W. Norton's, Jeffrey Alwang's and William A. Masters' book *Economics of Agricultural Development: World Food Systems and Resource Use* provides a comprehensive discussion of the economics of agriculture food systems.

In their book, Norton et al. trace the economic changes that the agriculture industry of a country undergoes as the country's overall economy undergoes development (i.e. industrialization). When countries are poor and unindustrialized, agriculture accounts for most of the income and most of the employment there, with countries with less than $1000 of per capita income per year having a workforce comprised approximately of 40-70% agricultural workers.[33] In these types of low-income countries, individual farmers own small amounts of land and livestock, labor productivity is low, and a high proportion of income must be spent on food.[34] Norton et al. then identify four factors that contribute to a transformation in the economic role of agriculture: increasing agricultural productivity which leads to higher incomes and a lower proportion of income spent on food, an inelastic price elasticity of demand for food

[33] George W. Norton, Jeffrey Alwang, and William A. Masters, *Economics of Agricultural Development: World Food Systems and Resource Use*, (New York: Routledge, 2015), 88.
[34] For the following, see Norton et al., *Agricultural Development*, 88-90.

that incentivizes more productive farmers to divert their resources to non-farming activities, specialization of industries, and a fixed supply of land in comparison to other types of capital that have capabilities of expanding. As these factors go into effect and the nation's economy develops, the agricultural industry transforms and resultingly, the sector consists of very few farmers as a percentage of the nation's total population who own very large, very productive farms. Therefore, although the size of the agricultural industry shrinks in terms of workforce employment and income percentage, the output and productivity of the sector remains large, if not even higher than it was before.

Turning to economic dimensions of the problems with the globalized food system, the corporatization of the food industry in the West has initiated or exacerbated many of the problems within the food industry globally. Today, the vast majority of economic power within the food system is in the hands of just a few mega-corporations, creating an inordinate power dynamic in which just a few people control the food system of the vast majority of people. In his book *Sick Planet: Corporate Food and Medicine,* author Stan Cox analyzes the way in which corporate domination of the American food systems has created a host of problems with sustainability.[35] For one, the corporate strategy of marketing certain foods as essential or key to a healthy diet has created an unsustainable demand for certain types of foods. For example, the Atkins diet created a huge increase in demand for meat and animal products, which are extremely inefficient and resource intensive to produce. Furthermore, food marketing has also created an increased demand for highly processed "diet foods" like weight loss smoothies and protein bars, which in fact are completely unnecessary for a healthy diet. In addition to creating unsustainable

[35] For the following, see Stan Cox, *Sick Planet: Corporate Food and Medicine*, (London: Pluto Press, 2008), 60-68.

consumer demand for processed foods, the corporate food system also creates global economic inequities, in which the vast consumption of wealthy Western nations results in resource deficits in impoverished nations. Cox uses the example of synthetic nitrogen fertilizer, which is used in excess for agricultural practices in the United States and has thereby created a deficit of usable nitrogen in poorer countries, to illustrate the inequities that the massive consumption of the corporate industrial complex produces.

Perhaps the best way to illustrate the economic exploitation wrought by corporate food conglomerates is through the plight of low-level workers within this system. Low-level factory workers and contract farmers are notoriously mistreated by the corporations they serve, and the treatment of meat processing factory workers in particular has been recognized as especially cruel. Cox uses the example of worker of poultry processing workers to highlight the mistreatment of corporate food laborers. He notes how workers in a typical chicken processing plant often work on an assembly line, where they perform the same task on repeat, for hours a day, every day, for years while they are employed there. The repetitive motion of working in these plants for extended periods of time results in injuries, with many plant workers having to be treated for carpal tunnel syndrome, back pain, and other musculoskeletal problems at some point in their lives. At one Tyson factory in Danville, Arkansas, workers who performed the overnight shift and sanitized the factory, sustained severe chemical burns on their hands and faces from the use of bleach and lack of sufficient protective gear. To make matters worse, many of the workers employed at these processing plants are illegal immigrants, which means that many of them are afraid to speak up about their mistreatment for fear of deportation. Cox profiles a couple, Maria and Manuel Chavez, who worked at a Tyson plant in the early

2000s. Maria had to have wrist replacement surgery, and Manuel experienced severe back pain because of the repetitive duties they had to perform at the plant. At one point, Tyson management forced Manuel to return to strenuous labor while on the job despite doctors' orders not to be made to do strenuous tasks. This caused Manuel to suffer further injuries, and eventually resulted in him filing a lawsuit against the company for damages he has sustained while working there.

Chapter 4. Is Globalized Food Moral?

The disciplines of history and economics addressed in the preceding chapters serve to establish a contextual framework for and identify the types of problems that occur within the globalized food system. This chapter addresses the ethical dimensions of this system. First, the issue will be addressed generally by considering arguments both for and against the morality of the globalized food system, as well as ethical dilemmas regarding its alternatives. Then, the chapter will explore the morality of globalized food further by examining the ethics of food systems in the Bronx. In this case, attention will be paid to the issues of environmental and social justice, as they are particularly pertinent problems with the food system in that area.

In considering the ethics of the globalized food system in a broad and holistic sense, Ronald Sandler's book *Food Ethics: The Basics* provides a comprehensive discussion of the issue. The book surveys a variety of ethical topics related to food, such as the morality of eating meat and of bioengineering, among others, and it devotes its first chapter to an ethical evaluation of the globalized food system, as well as evaluations of proposed alternatives to that system.

There are two main arguments offered in favor of the morality of globalized food. The first is that the globalized food system is necessary in order to feed the world population.[36] With a global population of well over seven billion people that could, based on UN fertility rate projections, range from remaining relatively stable to climbing to over ten billion people by the year 2100, it's clear that there is a need for an abundant and efficiently produced food supply.[37] To make matters worse, meeting the global population's need for food has become increasingly challenging with our finite amount of natural resources: most of the land on earth suitable for agriculture is already being utilized for this purpose (in many cases, at the expense of plant and animal species not being used for agriculture), and the vast majority of global ocean fisheries (87%), are either fully exploited or overexploited. Consequently, proponents of the global food system argue that it is the best system to feed the planet because its practices of agricultural industrialization and land use intensification produce the most efficient and highest crop yields with which to meet this need.

Although the argument of using globalized food to feed the world may seem convincing and the cause of feeding the world is a noble one, there are several major critiques to this argument that call into question its validity. First, various research has called into doubt the idea that industrial agriculture produces significantly higher yields than does organic agriculture. Second, some research has indicated that industrial agriculture doesn't produce higher yields at all, especially when external costs such as water usage and fertilizer runoff are factored into yield calculations. Finally, many argue that yield isn't the only or even the most important issue in feeding the world: equitable

[36] Ronald L. Sandler, *Food Ethics: The Basics* (New York: Routledge, 2015), 7.
[37] For the following, see Sandler, *Food Ethics*, 7-11.

distribution and access and efficient usage are the actual key problems. This point is supported by the fact that although we already produce enough food to sufficiently feed everyone on the planet, there are still 842 million people around the world who are undernourished.[38]

Along with the "feed the world" argument, the other main supporting argument for globalized food is that this system offers the only way of fully and efficiently satisfying consumer preferences. As countries develop, consumers tend to develop more expensive and more consumptive food preferences, such as preferences for greater quantities of meat and for fresh produce of all types available at any time of year, and the global food system can meet those preferences. However, as with the feed-the-world argument, the preference-satisfying argument has been critiqued on several points. First, many consumer preferences are made with incomplete or false information about a product's production process and are therefore ethically wrong and should not preferred by consumers. Second, the global food system overwhelmingly and predominantly satisfies the preferences of the wealthy rather than (and often at the cost of) the poor, and therefore the system is not actually designed well to serve the preferences of everyone. Finally, preferences are not inherently good in and of themselves, and the valuation of satisfying all preferences indiscriminately is not a moral ideal.

Having fully considered the arguments in favor of the morality of the global food system, it is now appropriate to weigh the arguments asserting that the system is immoral. These arguments point out negative aspects of the system as evidence of its immorality, and are as follows:

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[38] For the following, see Sandler, *Food Ethics*, 11-19.

a) Control of the food supply is largely in the hands of corporations, rather than governments or people, decreasing the food autonomy and sovereignty of peoples and nations.[39]
b) Communal and cultural practices are undermined, creating a disconnect from traditional food systems that are a crucial aspect of culture.
c) The rights and well-being of food workers are exploited.
d) Domesticated animal species are abused and exploited in the production process.
e) There are severe ecological impacts, such as biodiversity loss, air and water quality degradation, and resource depletion.
f) The use of toxic chemicals and food contamination has negative effects on consumer health.
g) The actual aesthetic qualities of food (taste, appearance, texture, etc.) has decreased.
h) Food injustices are rampant: food deserts, world hunger, and environmental hazards disproportionately impact minorities and the poor. This point will be explored in greater depth later in this chapter's discussion of the Bronx.
i) The nature of the globalized food system is such that the physical disconnect between the consumer and their food makes the production process completely hidden from the consumer. These hidden processes not only allow for malpractice on the part of producers, but also allow

[39] For the following, see Sandler, *Food Ethics*, 19-27.

> consumers to avoid confronting those malpractices, creating a culture of ethical negligence.[40]

In response to the ethical problems raised with the global food system, several alternate food systems have been proposed to replace it. In *Food Ethics*, Sandler groups these proposed systems under the umbrella term of the "Alternative Food Movement". Sandler evaluates four of the proposed alternative food systems, considering ethical arguments both for and against each type of system. The first and most relevant system discussed is the local food movement. This movement emphasizes primarily that food systems be restructured so that consumers' food supply is produced in close geographic proximity to them, minimizing food miles and maximizing our social engagement with our food supply, thereby eliminating the "hidden processes" that allow distantly located industrial food producers to produce their food unethically.

Another type of alternative food system is that of organic food, in which food is produced without synthetic fertilizers, pesticides, or genetically modified organisms, and complies with given regulatory procedural standards, such as that of the USDA. While this system offers a solution to many of the ecological impacts of the global system, critics of organic food contend that it produces too low of a yield, is too expensive, and is not actually any healthier than industrial agricultural products.

The third food movement addressed by Sandler is that of the Slow Food movement, which diametrically opposes fast food: slow food proponents offer a cultural critique of consumerist society (of which fast food is a product), and advocate for a return to traditional, more time-intensive methods of procuring, preparing, and enjoying foods

[40] For the following, see Sandler, *Food Ethics*, 29-37.

as a means of curbing society's voracious consumerism. Critics of slow food, however, argue that slow food is elitist and embodies the very culture that it claims to reject: rather than satisfying a preference for cheap, convenient food, slow food merely substitutes that preference with one for expensive, luxury food products that are still ecologically impactful to produce.[41]

The final food movement addressed by Sandler is the food justice movement, which aims to create a food system in which food is distributed more equitably and used more efficiently.[42] Food justice is one of the most important ethical considerations when evaluating the food system of the Bronx.

Having laid out the general moral framework of the globalized food system, it is important to examine the concept of food justice in greater depth, as it is particularly relevant for the case study of the Bronx food system. In her book *Just Food: Philosophy, Justice and Food*, editor J.M. Dieterle compiles a collection of essays that philosophically examine different aspects of justice as it relates to food. The term 'food justice', as Dieterle explains in her introduction to the book, is a broad term that encompasses all the different ways in which food is connected to justice, including such issues as the sustainability of food production methods, social inequities in food distribution, the corporatization and power balance of the food system, and the treatment of agricultural and food production workers, among others.[43]

As noted by Sandler in his book, we are already producing enough food to sufficiently feed every person on the planet, but world hunger remains a persistent

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[41] Sandler, *Food Ethics*, 38-39.
[42] Sandler, *Food Ethics*, 33-34.
[43] J.M. Dieterle, "Introduction," in *Just Food: Philosophy, Justice and Food*, ed. J.M. Dieterle (London: Rowman & Littlefield, 2015), xii.

problem because food is not equally distributed around the world. Dieterle emphasizes this point as well, noting that while many suffer from malnourishment and starvation in developing countries, others in developed countries consume and waste food in excess.[44] In fact, on an annual basis, the United States throws away approximately 30% of its consumable food, the UK throws away 7 million tons of food, and the European Union collectively throws away over 100 million tons of food. To add to the magnitude of the problem of food distribution, the exacerbation of climate change, the growing demand for biofuel, and the growing human population, which is expected to expand by over 2.5 billion and reach 9.6 billion by 2050, all make the problems of assuring future global food security and equitable food distribution increasingly difficult to solve. Another significant obstacle to food security, as noted in chapter 3 of this paper, is that as countries develop economically, consumer demand for meat and other types of animal products tends to increase, which is far more resource intensive to produce than plant-based foods. The fact of this trend combined with the growing human population means that agricultural output would have to increase by 60% over 2005-2007 levels to meet the projected food demand for 2050, according to the UN Food and Agricultural Organization (FAO).

While equitability of food distribution has certainly been established as a global problem, it is particularly relevant to the case of the Bronx, where there are glaring environmental and distributive food injustices. This is most evident specifically in the borough's status as a food desert. In her chapter "Food Deserts and Lockean Property", Dieterle analyzes the characteristics of food deserts and argues that they are a key

[44] For the following, see J.M. Dieterle, "Introduction," in *Just Food: Philosophy, Justice and Food*, ed. J.M. Dieterle (London: Rowman & Littlefield, 2015), xii.-xiv.

element of an unjust food system. According to the USDA, urban areas are officially classified as food deserts if "at least 20 percent of the population lives below the poverty level and there is no mainstream grocery store selling fresh and nutritious food within one mile".[45] In terms of equitability in distribution, the poor are disproportionately harmed by food deserts, with over half of the 23.5 million people classified as residents of a food desert in the U.S. being of low income. In food desert areas, median family incomes are significantly lower than they are in nonfood desert areas, and unemployment rates and poverty levels are also higher. Furthermore, in the US, most food deserts are in areas that are comprised mainly of nonwhite populations. According to the USDA, "the proportion of minorities in urban food deserts is 53 percent higher than in urban nonfood deserts." To make matters worse, predominantly African-American areas are shown to have the least access to fresh and healthy food regardless of their income level. Therefore, neighborhoods that have a high rate of poverty and a predominantly African-American population face the least accessibility to nutritious food.

In addition to racial and socioeconomic demographics, another important characteristic of food deserts is that the lack of fresh and healthy food in these areas is usually replaced by an abundance of unhealthy food, made available at fast food restaurants and what are known as "fringe" food establishments, which are businesses such as convenience stores, liquor stores, and gas stations that carry a limited variety of processed foods that are usually unhealthy and high in salt, fat, and sugar. According to the World Health Organization, food security is dependent on three factors: the physical availability of healthy food, the resources to access said food, and the knowledge of

[45] For the following, see J.M. Dieterle "Food Deserts and Lockean Property," in *Just Food: Philosophy, Justice and Food,* ed. J.M. Dieterle (London: Rowman & Littlefield, 2015), 39-49.

nutrition required to properly feed and nourish oneself. Given that food desert areas have a limited physical availability of nutritious food and that the residents of food desert areas usually do not have the economic resources to access healthy food, food deserts are therefore key examples of food insecure areas.

As one might expect, the health effects for those living in food deserts are deleterious. People who live in food deserts are shown to have higher rates of diseases such as heart disease, diabetes, obesity, and cancer than those that do not live in food deserts. Similarly, children who are food insecure are more likely to have poor health, have higher hospitalization rates, and are more often sick or anxious than children who are food secure. In view of the common characteristics of food deserts, it is critical to note that fixing them means more than just making healthy food more physically available. In line with the WHO's three elements of food security, food must also be financially accessible, and people must have a preference to purchase healthy food to achieve complete food security.

In chapter 4 of *Just Food*, author Jennifer Szende expands on the discussion of food deserts in her argument that food deserts are a problem caused by both inequitable distribution and oppression that results from the dominating power of corporate entities.[46] Szende points out that although food deserts were initially caused by the globalization of food systems and the industrialization of food production, their current associated effects of poor diets, lower quality health, declining educational performance, and higher rates of unemployment have created a self-perpetuating system in which food deserts promote continued oppression and corporate domination.

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[46] For the following, see Jennifer Szende, "Food Deserts, Justice and the Distributive Paradigm" in *Just Food*, ed. J.M. Dieterle, (London: Rowman & Littlefield, 2015), 57-63.

Along with the phenomenon of food deserts, another aspect of food justice explored in *Just Food* is the concept of food sovereignty, an idea examined by authors Ian Werkheiser, Shakara Tyler, and Paul B. Thompson in their chapter "Food Sovereignty: Two Conceptions of Food Justice" from *Just Food*. According to Werkheiser et al, food sovereignty recognizes the importance of food production and consumption practices as an important part of identity, and furthermore, stresses the tendency of capitalism's globalization to exploit the important cultural institutions of food.[47] In the face of these opposing interests of cultural food practices and economic enterprises that seek to exploit these practices, food sovereignty refers to the agency of individuals to produce their own food or to have control over the food practices within their own lives. Furthermore, the jeopardization of food sovereignty tends to be particularly associated with those who are marginalized due to their race, class, or gender.

The authors in "Food Sovereignty" emphasize that individuals' lack of ability to make decisions about their community's food systems is one of the principal factors of food injustice, and subsequently identify two distinct forms of food sovereignty. The first of these forms is participatory food sovereignty, which is identified as the individual's autonomy over their food production systems as well as their ability to participate in decision making within the given food-producing institutions. The authors note that communities of color consistently have their participatory food sovereignty jeopardized as government policies have routinely removed their ability to produce their own food. On the other hand, radical food sovereignty entails having complete autonomy over one's

[47] For the following, see Ian Werkheiser, Shakara Tyler, and Paul B. Thompson, "Food Sovereignty: Two Conceptions of Food Justice" in *Just Food*, ed. J.M. Dieterle (London: Rowman & Littlefield, 2015), 71-90.

food choices, meaning that one can not only procure food from the existing institutions, but can create alternative food producing institutions if desired. The importance of food sovereignty is driven home in Mark Navin's chapter "Food Sovereignty and Gender Justice", in which the author notes that the globalization of food systems has particularly harmed the food sovereignty of women who hold important roles in traditional food systems, and that the roles of small-time subsistence farmers are being threatened in the face of globalized corporate agribusiness.

Having laid out some of the specific conceptions of food justice, the final two chapters from *Just Food* that will be treated in this paper address the question of what it is to make morally good food choices. Nancy E. Snow's chapter "Food Virtue: Can We Make Virtuous Food Choices?" explores virtue ethics in the context of making food choices, arguing that there are two key factors of virtuous food choices: sustenance and sustainability.[48] The virtue of sustenance refers to choices of food that are fresh, healthy, culturally appropriate, and appealing, while 'sustainability' refers to food that is produced without harm to the environment, which includes other humans, animals, plants, and abiotic elements of the earth. However, Snow emphasizes how difficult it is to carry out these virtues to a sufficient extent in practice, and she uses Michael Pollan's example of four types of meals from his book *The Omnivore's Dilemma* to illustrate her point. Of the four types of meals, fast food, mainstream agribusiness ingredients, alternative organic ingredients, and a hunter-gatherer meal, the first two types of meals are outright produced unsustainably. The third type of meal is often produced unsustainably because many ingredients marketed as "organic" are done so under false or misleading pretenses, and

[48] For the following, see Nancy E. Snow, "Food Virtue: Can We Make Virtuous Food Choices?", in *Just Food*, ed. J.M. Dieterle (London: Rowman & Littlefield, 2015), 181-190.

the final meal is theoretically sustainable but extremely difficult for contemporary individuals to practically carry out themselves.

Through her use of Pollan's example, Snow concludes that making truly virtuous food choices is nearly impossible because of two factors: the "tragic dilemma" and distributive inequality. In the "tragic dilemma" situation, a truly virtuous choice cannot be made because all choices cause harm to someone. In the case of food choices, if we choose to eat food within the conventional corporate agribusiness system, we cause harm to ourselves and to the environment. However, if we choose to eat using alternative methods that fall outside the conventional globalized food system, we cause harm to the lower-level laborers and workers within the agribusiness system who depend on those jobs for their livelihood. On the other hand, distributive inequity prohibits virtuous food choices because many do not have the economic privilege that would enable them to make food choices outside the conventional agribusiness system. Those people would include the poor who disproportionately live in food deserts and those who do not have enough disposable income to buy organic or alternative foods. Furthermore, there are systemic conditions that limit the availability of virtuous food choices, such as government subsidies for agribusiness, environmentally harmful production practices, and the culture of secrecy within the agribusiness industry, which even becomes a legal issue in those major agricultural states that have "ag-gag" laws.

In the face of a complex, highly industrialized food system that makes virtuous eating next to impossible, various dietary philosophies have been proposed as potential ways of making more virtuous food choices. In her chapter "Limits on Locavorism", author Liz Goodnick offers a critique of one such philosophy, the locavorism movement.

Locavorism is offered as one of the main methods of counteracting the globalization of food systems. Goodnick offers a thorough and concise summary of the goals of locavorism:

> "The movement—hence its name—focuses on acquiring food…from a local source, and thus limiting "food miles." It has many benefits according to food justice advocates: it puts individuals in control of their food supply, it alleviates the obvious costs of transporting food, it reduces use of and dependence on fossil fuels, and it decreases dependence on an industrialized food chain."[49]

The main point of Goodnick's chapter, however, is that eating locally in itself isn't morally good enough to constitute a sufficient ethic of food choice, as the methods of food production are still relevant and necessary to making the morally correct choice. Moreover, Goodnick draws attention to the faction of locavores who argue that meat eating is a necessary practice in some areas by arguing that not only is meat eating never ethically necessary, it is in fact morally wrong.

In the final portion of this chapter, I will be examining the ethical dimensions of one proposed solution to the social inequalities caused by food deserts: urban agriculture. In their book *Beyond the Kale: Urban Agriculture and Social Justice Activism in New York City*, authors Kristin Reynolds and Nevin Cohen provide a comprehensive study of urban agriculture in New York City in the context of its relation to social justice activism. In recent years, the practice of urban agriculture has grown significantly in much of the Global North, including the United States.[50] The practice has also become trendy in the media, particularly in its depiction of new technologies such as aquaponics and rooftop

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[49] For the following, see Liz Goodnick, "Limits on Locavorism," in *Just Food*, ed. J.M. Dieterle (London: Rowman & Littlefield, 2015), 195-196.

[50] Kristin Reynolds and Nevin Cohen, *Beyond the Kale: Urban Agriculture and Social Justice Activism in New York City* (Georgia: University of Georgia Press, 2016), 3.

farming and of the ways in which urban agriculture has been used to practice phytoremediation and educate children about ecology.[51] The practice has seen growth in the wake of the locavore movement, inspiring entrepreneurs to meet the demand for local food by self-proclaimed locavores and "postcollege "hipsters"" who enjoy the culture of DIY being used to grow their own food. Urban agriculture has expanded enough that institutions such as farmers' markets and community-supported agriculture (CSA) have proliferated in association with it. However, the authors note that media coverage has largely focused on coverage of young white people who are upper-middle-class, describing them as "pioneers" and the "new class of growers", thereby marginalizing the work of people of color who have been practicing urban agriculture for years before the practice became trendy.

Recognizing the marginalization of the urban agricultural work of people of color, the authors in *Beyond the Kale* seek to highlight these people's work in urban agriculture, particularly in how they use their work to advance the causes of environmental and social justice. As the authors note, a long history of government disinvestment and residential redlining have created economically disparate regions where poverty is concentrated into specific areas and a state of environmental injustice has resulted. In these areas, communities of color and low-income communities disproportionately suffer from poor environmental quality and lack of access to fresh and healthy food when compared to high-income and white communities. Reynolds and Nevin point out that critical race theory, which describes the different types of implicit racial biases that perpetuate racial inequalities in society, is one of the contributing factors to the perpetuation of

[51] For the following, see Reynolds and Cohen, *Beyond the Kale*, 3-12.

environmental injustice for racial minority communities. Moreover, the lack of access to sufficient fresh and healthy food is indicative of a society that is oppressive on multiple levels. This phenomenon of environmental injustice is evident in the case of the Bronx, a low-income, primarily ethnic minority-composed borough that has poor environmental quality and a lack of access to healthy food in comparison to their wealthy, predominantly white neighbor to the north, Westchester County.

For some residents of environmentally unjust communities, urban agriculture has been one way to combat the persistent state of environmental inequality. The authors distinguish two types of social justice activism within the realm of urban agriculture: explicit and implicit activism. Individuals who practice explicit activism seek to directly modify public policy. Additionally, from an ecological standpoint, through urban farming individuals can help to repair environmental damages by mitigating heat island effects, remediating toxic substances, potentially reducing combined sewer overflow, and serving as sites of green infrastructure in a predominantly "gray" landscape.[52] Because the South Bronx suffers from environmental injustice, these environmental benefits are particularly important as the community suffers from a dearth of public open space, pollution from truck traffic, and a high amount of industrial facilities and vacant lots.

Other urban farmers practice implicit activism in the sense that their food production methods act outside of existing mainstream methods of food procurement, and in some cases, help individuals to reclaim their cultural roots. In this sense one's way of life serves de facto as a personal resistance to the oppressive aspects of the mainstream industrial food system such as the monopolistic corporate control over agricultural

[52] For the following, see Nevins and Cohen, *Beyond the Kale*, 41-56.

production, the environmental damages of industrial farming practices, and the social inequities of the treatment of agricultural laborers. Furthermore, for individuals who are low-income or who are persons of color, urban farming presents an avenue by which these marginalized individuals can exercise political agency in their own communities in the face of systemic oppression. It can also serve as a way of reclaiming cultural identity, especially for immigrants and indigenous peoples who have been displaced from their ancestral homelands. Urban farming is also implicitly socially activist in a practical sense in that the implementation of farmers' markets, CSA programs, and small businesses can help ameliorate the problem of food deserts can provide economic livelihood to some people.

Although urban agriculture in NYC has been portrayed as a recent phenomenon, city residents have in fact been practicing it for generations. Since the city's founding, backyard farming and gardening has always provided a source of sustenance for low-income residents of the city.[53] Up until around the mid-nineteenth century, most urban farming was kept to personal livestock and home gardens until the transition to commercial food production began, when wealthier residents began to start procuring their food from outside the city. Around this time arose battles along class lines over the legality of animal husbandry in the city, as the keeping of hogs began to raise public health concerns: those of lower socioeconomic status fought to keep the hogs as they were an important part of their sustenance, while members of higher socioeconomic status fought against the pigs for public health reasons. Moving forward to the twentieth century, during the Great Depression and World War II, urban farming remained a

[53] For the following, see Nevins and Cohen, *Beyond the Kale*, 22-32.

popular method of food procurement as the economic downturn and wartime demand for food overseas necessitated individuals to produce food for themselves. In the post war era (circa 1950s), urban agriculture waned with the rise of centralized, industrialized, globalized food systems and supermarkets proliferated.

In the sixties and seventies, urban agriculture began to reemerge, this time in the form of a grassroots effort. At the same time, the city began to decline: after the "white flight" to the suburbs, businesses left the city and property owners abandoned their properties. Consequently, the city lost its tax base and made cuts to governmental services, almost going bankrupt during this period. In the eighties, a streak of economic growth spurred some gentrification and attempts at urban renewal within the city, attempts that proved detrimental to the city's low-income residents and residents of color. This period sparked an ongoing legal battle between the city's residents and the government over the use of abandoned or vacant lots within the city. Many city residents wanted to reclaim those properties for agricultural and community uses, while the government often wanted to reserve the spaces for potential future development. From the nineties through today, the city has continued to regrow economically and has undergone more extensive gentrification, and the conflict over food production versus development use of spaces persists.

Stemming from the long history of urban agriculture in NYC, today there are a host of urban farmers that are seeking to affect change through agriculture. In *Beyond the Kale*, the authors profile various urban farms that are run by people of color in food desert areas around the city. Of significance are three farms located in the South Bronx. The first of these farms is Taqwa Community Farm, located in the Highbridge

neighborhood near Yankee Stadium.[54] Abu Talib runs the farm, which is about a half-acre in size and boasts a garden of cherry trees, various vegetables, and a chicken flock, as well as an open area reserved for local children to play in. In the wake of years of failed urban renewal policies, government disinvestment, and economic decline in the city, Talib and his fellow community members cleaned up the abandoned lot that would become Taqwa Community Farm in 1992. To improve the problems of violence and drug trafficking in his community, Talib got permission from the NYC Department of Parks and Recreation to farm on the site. Today, Taqwa is still an active farming site that is managed by Talib and other community members, and the site also serves as the location of a farmers' market, workshops, and a neighborhood gathering place.

Another farm profiled was La Finca del Sur in the South Bronx, which seeks to provide a safe space for black and Latina women as well as their allies to farm and perform other agricultural activities that are usually otherwise male-dominated.[55] Along with normal agricultural activities, the farm also holds special events such as workshops and social gatherings exclusively for women. The third profiled farm from the South Bronx is Friends of Brook Park (FBP), a farm that offers mentoring, work opportunities, and a safe space for youth who have been caught up in the criminal justice system.

Taqwa Community Farm, La Finca del Sur, Friends of Brook Park, and other urban farms in low-income neighborhoods face a host of challenges to their agricultural practices. One such challenge for these urban farms is the procurement of clean soil, as many communities of color and predominantly low-income neighborhoods tend to have contaminated soil from having mixed industrial and residential use land, a manifestation

[54] For the following, see Reynolds and Cohen, *Beyond the Kale*, 21.
[55] For the following, see Reynolds and Cohen, *Beyond the Kale*, 53-55.

of environmental injustice. Another persistent problem for urban farmers of color is that they are still vastly underrepresented in the leadership of the movement, with the movement's leading faces being mainly white.[56] Furthermore, urban farmers who are members of marginalized groups face challenges in terms of procuring funding, services, and government resources towards their agricultural operations, as projects operated by white people tend to get more funding. Low-income communities also don't have as many financial resources or volunteer time to commit to farm work. Additionally, many farmers from outside the city will racially stereotype and refuse to sell their goods in low-income areas.

Given the proliferation of urban agriculture in NYC in recent years, it is important to ensure that urban farming is not only practiced with sustainable methods, but also that it is used to help advance the cause of food justice. One important organization that is working to advance these goals in NYC is the group Just Food, a nonprofit organization that specifically works to promote food justice and sustainable agriculture. The group runs a variety of programs throughout the city, such as a CSA network, a farmers' market network, community food education, political advocacy for specific issues (e.g. socially-disadvantaged farmers, food waste, etc.), and training of residents in urban agriculture practices, all of which serve to advance these aims.[57]

Chapter 5. Bringing our Food Back Home Again

[56] For the following, see Reynolds and Cohen, *Beyond the Kale*, 63-64, 95-97.
[57] "About Us", Just Food, accessed March 29, 2018, http://www.justfood.org/about-us.

In view of the enormous and widespread ecological damages, economic inequalities, and social injustices being wrought by the pervading globalized industrial food system, it can feel overwhelming and futile to imagine any feasible and meaningful solutions to these problems. However, in the United States there are already efforts underway to affect change within food systems at the local level, a hopeful indicator that the future of a more efficient, sustainable, and equitable food system is possible.

As one example of an emerging effort to overhaul food systems on a regional scale, a recent article published in The Star-Ledger entitled "Young Americans leaving desk jobs behind to farm" documents a faction of millennials who comprise "a growing movement of highly educated, ex-urban, first-time farmers who are capitalizing on booming consumer demand for local and sustainable foods and, experts say, could have a broad impact on the food system."[58] The article profiles 32-year-old Liz Whitehurst, who left her desk job at a nonprofit and moved from Washington D.C. to Upper Marlboro, Maryland to start an organic farm and grow peppers, cabbages, tomatoes, and salad greens. Whitehurst isn't a lone wolf in her career choice, either: "[t]he number of farmers age 25 to 34 grew 2.2 percent between 2007 and 2012, according to the 2014 USDA census." This subset of young, new farmers also tends to use more sustainable farming practices such as diversified crop and animal species, limited fertilizer and pesticide use, involvement in community

[58] For the following, see Dewey, Caitlin, "Young Americans leaving desk jobs behind to farm," *The Star-Ledger,* November 24, 2017, 12.

supported agriculture (CSA), and organic growing to a far greater extent than the overall farming population does.

As these young farmers become established and more experienced, many will be able to increase their impact as they increase their scale and start to play larger roles in the commercial food system. Some national grocery chains, such as Walmart, have caught on to this emerging trend and have begun to invest in local-food-buying programs. Additionally, young farmers have been collaborating to create "their own "food hubs," allowing them to store, process and market food collectively, and supply grocery and restaurant chains at a price competitive with national suppliers", which helps to strengthen the viability of local and organic food.

These food hubs, a key component in the large-scale implementation of local and organic farming, are being pioneered by entrepreneurs like Ben Giardullo, who was interviewed in Dirt magazine's article "Catalyzing Kingston."[59] Giardullo is working to build a food hub in a vacant building in Kingston, New York that formerly served as a Woolworth department store. Giardullo explains in the article that a market for fresh foods is necessary in "center city areas for truly walkable communities." He goes on to describe the food hub as not only a crucial market for fresh foods, but also as a hall for prepared foods and a place where the local community can gather in a social setting, saying that "really what we're trying to do is be the center of regional agriculture." In addition, Giardullo intends for the food hub to be a tool for social activism within the local community, with the potential for the implementation of a

[59] For the following, see Tucker, Becca, "Catalyzing Kingston," *Dirt*, November-December 2017, 24-25.

"zero waste inventory system", which would be able to donate unused food to charitable organizations such as soup kitchens and food pantries.

Along with these examples of young millennial farmers and the creation of regional food hubs, another significant example of a food system reconstruction effort occurring in the Bronx is Swale, an old industrial barge that has been repurposed to grow food across the entirety of its surface.[60] The barge was repurposed not only as a way to bring fresh produce to underserved food desert areas, but also as a way to oppose New York City's law that food is not allowed to be grown or foraged for in any of the city's public spaces. The barge circumvents this law because it is not on land and is therefore beyond the jurisdiction of the ordinance. The barge was parked at Concrete Plant Park in the South Bronx in the late summer months of 2017 and was open for locals to come and pick as much food as they wanted for free. The existence of the barge also points out the irony of the fact that although the major Hunts Point food distribution center, is located in the Bronx right near where the barge was docked, the area is still a food desert because most of the food at Hunts Point gets shipped out to more expensive restaurants and markets, highlighting yet another example of environmental injustice. The lack of accessibility to affordable healthy food has taken a toll on Bronx residents: out of 62 counties in New York, the Bronx ranks the lowest in terms of the health of its population. Swale has also proven to be a valuable educational opportunity for local youth, providing a rare firsthand access to agricultural operations.

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[60] For the following, see Anisha Nandi, ""Floating food forest" docked in New York at one of the largest "food deserts"," *CBS News*, September 15, 2017, https://www.cbsnews.com/news/swale-floating-food-forest-docked-in-new-york-at-one-of-the-largest-food-deserts/.

In envisioning possible solutions to the problems associated with a global food system, as with any problem, it is important to consider a wide variety of potential strategies before settling on a specific course of action. In his book *Rebuilding the Foodshed: How to Create Local, Sustainable, and Secure Food Systems,* author Philip Ackerman-Leist proposes a variety of potential strategies for bringing our food systems back to the local scale, and in so doing, creating a more secure and ecologically balanced system. Some of the strategies that Ackerman-Leist proposes are worth highlighting for serious consideration. First, Ackerman-Leist emphasizes the importance of using the kitchen as the central institution of food practices.[61] The kitchen is where time is taken to prepare meals as well as to enjoy them, and making use of the kitchen implies procuring fresh, unprocessed ingredients to prepare for consumption, most conveniently from a local source.

A second strategy that Ackerman-Leist proposes is the use of special techniques and hardy plant varieties to continue growing produce throughout the winter months in cold regions. Third, Ackerman-Leist draws attention to a consumptive but less recognized as impactful practice: the consumption of beverages, which through the combination of production processes, container usage, and refrigerated transportation, exact a significant ecological toll. Ackerman-Leist proposes bringing more of beverage making into the home, suggesting that individuals prepare their own fruit juices, alcohol, and other beverages using locally available ingredients. Another suggestion of Ackerman-Leist's is that individuals practice common sense ways of supporting local food systems, doing things such as patronizing local farms, canning

[61] For the following, see Philip Ackerman-Leist, *Rebuilding the Foodshed: How to Create Local, Sustainable, and Secure Food Systems* (Vermont: Chelsea Green Publishing, 2013), 95-107.

at home, and shopping consciously. Finally, Ackerman-Leist proposes the implementation of food policy councils, which he describes as coalitions of various types of food system stakeholders such as health professionals, conservationists, farmers, and others that would work together to create a sustainable food system for whatever level of society the council represents, whether it be local, state, or regional.

While these examples provide optimistic anecdotes regarding the potential for positive change within our food system, the analysis laid out in the preceding chapters warrants a detailed set of policy recommendations that specifically addresses the information that has been presented. In general, my comprehensive set of policy recommendations for repairing the globalized food system addresses the following problems:

1. Ecological damage wrought by industrial agriculture processes, including intensive synthetic fertilizer and pesticide use, monocropping, and deforestation for crop land conversion.
2. The vast physical distances between where food is grown and where it is consumed, creating a cultural disconnect between humans and their food and requiring intensive resource use for food transportation.
3. The unequitable economic power differentials both between the mega-corporations that control most of the food supply and the people who consume it, as well as between the wealthy developed nations that profit from the globalized food system and the poor developing nations that are exploited by it.

4. The proliferation of food deserts, which tend to exist in low-income, minority communities such as the Bronx.

My recommendations are presented in three subcategories that are tailored to each of the academic disciplines that have been addressed in this paper.

Environmental History

The history-based policy that I propose is more of a general guideline that should underlie all decisions regarding food policy. Our food systems must be designed in a way that combines the best of what modern technological advancement has afforded us with historical food systems of the past, especially those of small-scale, localized farms that characterized agriculture prior to the Industrial Revolution.

Environmental Economics

My economic policy recommendations are two-fold. First, I recommend that the power within agricultural industry be dispersed so that the industry is no longer an oligopoly where a few corporations control most of the production and distribution. Instead, my model for the agricultural industry resembles the examples presented at the beginning of this chapter: a large network of local farmers will produce food on a small- to mid- size scale, and regional food hubs will pool the resources of these farmers together for the most efficient processing and distribution of fresh food. Furthermore, food hubs must be strategically located so that they are accessible to urban residents, especially residents of low-income food desert areas such as the Bronx.

The second economic policy that I propose is that government tax incentives and subsidies be implemented in urban areas that are specifically targeted to incentivize

backyard gardening and urban farmland reclamation where possible. For communities like the Bronx, in which residents are continually battling the government over local land use rights for community versus development purposes, it is particularly important that the people have the proper ability and resources to practice local farming. Although backyard gardens and a relatively marginal amount of urban farmland reclamation won't produce enough fresh food to completely ameliorate food desert conditions in urban areas, it is important that they are maintained for the cultural, community-building, and environmental justice-serving benefits that they bring with them.

Environmental Ethics

I have two main policy recommendations that are grounded in an ethical basis. First, I propose that regulations within the agricultural industry be updated to mitigate and alter some of the damaging impacts of industrialization. For example, maximum water usage standards, prohibition of synthetic pesticides and fertilizers, and stricter standards for the welfare and treatment of agricultural animals must be adopted by the industry to mitigate environmental damages and to be more in line with an ecocentric worldview rather than the anthropocentric one that led humanity to the precipice of complete ecological devastation.

Second, initiatives for food justice must be implemented. Food desert communities must not only have an ability to grow their own food, but also have the availability of fresh food at their local grocery stores for reasonable prices. Additionally, the labor force of the agriculture industry, including farm workers,

processing plant workers, and food transportation workers, must receive fair wages and benefits for their work and be treated more equitably.

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