



12-2010

Landscape, Kitchen, Table: Compressing the Food Axis to Serve a Food Desert

Shannon Brooke Elliott
University of Tennessee - Knoxville, shannon.b.elliott@gmail.com

Follow this and additional works at: https://trace.tennessee.edu/utk_gradthes



Part of the [Architecture Commons](#)

Recommended Citation

Elliott, Shannon Brooke, "Landscape, Kitchen, Table: Compressing the Food Axis to Serve a Food Desert. " Master's Thesis, University of Tennessee, 2010.
https://trace.tennessee.edu/utk_gradthes/793

This Thesis is brought to you for free and open access by the Graduate School at TRACE: Tennessee Research and Creative Exchange. It has been accepted for inclusion in Masters Theses by an authorized administrator of TRACE: Tennessee Research and Creative Exchange. For more information, please contact trace@utk.edu.

To the Graduate Council:

I am submitting herewith a thesis written by Shannon Brooke Elliott entitled "Landscape, Kitchen, Table: Compressing the Food Axis to Serve a Food Desert." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Architecture, with a major in Architecture.

Mark Schimmenti, Major Professor

We have read this thesis and recommend its acceptance:

Mark DeKay, Bruce Tonn

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

Trace: Tennessee Research and Creative Exchange

Masters Theses

University of Tennessee

2010

Landscape, Kitchen, Table: Compressing
the Food Axis to Serve a Food Desert

Shannon Brooke Elliott

University of Tennessee - Knoxville, shannon.b.elliott@gmail.com

To the Graduate Council:

I am submitting herewith a thesis written by Shannon Brooke Elliott entitled "Landscape, Kitchen, Table: Compressing the Food Axis to Serve a Food Desert." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Architecture, with a major in Architecture.

Mark Schimmenti
Major Professor

We have read this thesis and
recommend its acceptance:

Mark Dekay
Committee Member

Bruce Tonn
Committee Member

Accepted for the Council:

Carolyn R. Hodges
Vice Provost and Dean of the Graduate School

(Official signatures are on file with official student records.)

***Landscape, Kitchen, Table:
Compressing the Food Axis to Serve a Food Desert***

A Thesis Presented for the
Master of Architecture Degree
at the University of Tennessee, Knoxville

Shannon Brooke Elliott
December 2010

Copyright © 2010 by Shannon Brooke Elliott
All rights reserved.

To **Niki**,
for the late night omelets,
listening to me talk incessantly about this project,
and a love I never thought possible.

Acknowledgements

I am very grateful for the support from my faculty committee as I worked through this process. Mark Dekay, thank you for teaching an integrative approach to design and for fostering a more energetic, convivial learning environment. Jennifer, your verbal and diagrammatic articulation always clarified where I was headed. Thank you for taking great notes and for helping me organize my thoughts. The College of Architecture is lucky to have a faculty member who is ahead of her time by applying architectural knowledge to food issues. Avigail, the 2010 thesis class could not have made it through without you. On the days we were about to give up you would appear with a kind word, a great research suggestion, and an impromptu desk crit, which would energize us again. Thank you for your dedication to the learning process. You breathed new life into a class of cynical graduate students who thought they had been forgotten. Dr. Tonn, there are few professors who leave a lasting impression on their students. Your teaching approach is engaging and inspiring. Thank you for the encouragement to dream big. Mark Schimmenti, thank you for ten years of friendship, insight, and inspiration. I am lucky to have had you as a studio professor twice; your breadth of knowledge never ceases to amaze me. Thank you for always believing in me. I appreciate the many recommendations you wrote for me over the years during my architectural hiatus, especially the one for Arcosanti because my experience there is what drove me to return to architecture. And to Paolo Soleri, for demonstrating you can live without abandoning a dream if you cling tenaciously to its integrity and for reminding me architecture and ecology are the same discipline.

Abstract

In the past, cities and their food system were spatially interwoven. However, rapid urbanization and the creation of industrialized agriculture have physically isolated and psychologically disconnected urban residents from the landscape that sustains them. Cities can no longer feed themselves and must rely on a global hinterland. Vital growing, preserving, and cooking knowledge has been lost, while negative health, economic, and environmental effects continue to develop from this separation. Low-income neighborhoods have significantly been affected where a lack of income and mobility pose barriers to adequate food access. Architects have addressed food issues individually, but have yet to take an integrative approach that meaningfully engages urban citizens with all processes of the food system. Urban planners have recently taken a holistic design approach to food issues through the development of the community food system concept. By applying this idea to an architectural program I have designed a Community Food Center for the Five Points Neighborhood in East Knoxville, TN. Spatially compressing and layering food activity spaces preserves the majority of the landscape on site for food production. The kitchen, dining room, market, and garden increase access to healthy food while serving as community gathering spaces, and the business incubator kitchens provide economic opportunities. The whole facility acts to educate and engage people in the growing, harvesting, preserving, cooking, sharing, and composting of food. Cities cannot sustain themselves by only providing spaces for consumption. Architects must challenge the accepted relationships between food system spaces and strive to reincorporate productive landscapes and spaces dedicated to transforming raw ingredients into a variety of architectural programs. Although the Five Points Community Food Center is site specific, the concept of integrating multiple food activities into a single architectural entity can be used as a tool for place making by expressing a local identity through food culture while improving the social and economic fabric.

Preface

On a recent episode of *Jamie Oliver's Food Revolution* he visited an elementary school classroom where first graders could not identify basic fruits and vegetables. The children guessed "potatoes" for tomatoes and "celery" and "onion" for a beet. When Jamie held up an eggplant giving them a hint by telling them the first half the word, one child shouted, "egg salad!" Unfortunately all the kids quickly recognized chicken nuggets, hamburgers, pizza, and french fries. They were, however, unaware the fries came from potatoes, which they were also unable to identify.

This is not an isolated incident, but indicative of the type of food culture in which the majority of American youth are experiencing. I witnessed this disturbing fact in Knoxville, Tennessee while serving in four elementary schools as an AmeriCorps volunteer. The children I worked with thought the origin of their lunch milk went as far back as the grocery store and didn't even associate it with a cow. Others had no idea fruits and vegetables came from plants that grew in the ground. One day a child went around the lunch room collecting the seeds from everyone's apple cores after he learned each seed would turn into a whole new tree. Our food culture is raising an entire generation whose only interactions with food involve ordering from a drive-through window and plucking uniform, wax-covered produce and brightly colored packages from the grocery store shelves.

This thesis examines how spatial transformations in the American city have obliterated basic food knowledge from our culture. The physical transformation parallels shifting social attitudes toward the natural environment. The origins of American culture grew out of a strong pastoral tradition that dramatically changed during industrialization (Marx, 4). Contemporary society promotes the fantasy of the pastoral ideal, but we no longer have any connection to this tradition. For example, products that were planted, harvested, and processed by machines on a massive scale are sold to us in packages depicting a rural farmer next to a red barn with a background of waving grain.

Our language and behavior also reflect the paradigm shift from a pastoral to an industrial mindset. The word "dirt" with its negative connotations is commonly used in

place of the word "soil" demonstrating a lack of respect for the earth. The perpetuation of the culture of fear has (among other things) created an obsession with germs, which as an undercurrent discourages children from engaging with nature or anything viewed as "dirty." This has conveniently served agribusiness corporations as a reason to apply toxic chemicals, bombard with irradiation, and genetically modify our food in the name of health and sanitation. As agrarian traditions disappear the homogenous landscapes that produce standardized, banal food are becoming the cultural norm for today's youth. The idea that an entire generation does not know what a tomato really tastes like leaves me quietly unsettled.

Table of Contents

Transformation of the Urban Food Axis

Introduction	02
Hearth, Plow, Mill	08
Domestic Socialism, Garden Cities	11
Dust Bowl to Green Revolution	21
Food Network, Food Desert	28

Five Points Community Food Center

Concept: Engage, Empower, Educate	38
Place: Five Points, East Knoxville, TN	40
Program: Grow, Preserve, Cook, Share	53
Design: Landscape, Kitchen, Table	57
Resolution: Serving a Food Desert	59

<u>References</u>	60
-------------------	----

<u>Appendix</u>	64
-----------------	----

<u>Vita</u>	73
-------------	----

List of Figures

Figure 1. Shifting Producer Consumer Relationships in the City	05
Figure 2. New England Kitchen, Pleasant Street, Boston, 1890	13
Figure 3. M.P. Wolff's Plan for a Public Kitchen, 1884	13
Figure 4. The Mahoning Community Dining Club, 1903	15
Figure 5. Homesgarth, Plan by A. Clapham Lander, 1909	18
Figure 6. Plan of a Garden-City Housing Scheme	18
Figure 7. First Floor Plan, Amana Kitchen House	20
Figure 8. Kitchen Women Preparing Vegetables	20
Figure 9. Amana Kitchen Flock	20
Figure 10. Permaculture System vs. Industrialized Agriculture System	26
Figure 11. Plan of Growing Power Site	35
Figure 12. Bird's Eye View of Growing Power Site	35
Figure 13. Easley's Grocery Store, 1112 East Vine Avenue	41
Figure 14. Sylvester McBee's Fruit Stand, 701 East Vine Avenue	41
Figure 15. Businesses in the Bowery District, 1950s	42
Figure 16. 1913 Map of Knoxville, Tennessee	44
Figure 17. East Knoxville's Food Desert	45
Figure 18. Knoxville Area Transit routes in East Knoxville	46
Figure 19. Magnolia Avenue Corridor in East Knoxville	48
Figure 20. Bird's Eye View of site with old Metro Village Market building	51
Figure 21. Parking lot of Harvest Plaza looking south to Walter P. Taylor Homes	51
Figure 22. Five Points Neighborhood Site Map	52
Figure 23. Food Systems Comparison	65
Figure 24. Project Diagrams	66
Figure 25. Five Points Community Food Center Site Plan	67
Figure 26. Five Points Community Food Center Street Level Plan	68
Figure 27. Five Points Community Food Center Ground Level Plan	69
Figure 28. Five Points Community Food Center Sections and Elevations 1	70
Figure 29. Five Points Community Food Center Sections and Elevations 2	71
Figure 30. Five Points Community Food Center MLK Jr. Avenue Elevation	72

Transformation of the Urban Food Axis

Introduction

"To think, we must eat." Teilhard de Chardin

Food is essential to life. However the hubris of humanity has led urban-dwelling citizens to forget they remain reliant upon soil to sustain them. The prolific anthropocentric belief that humanity is immune from natural laws has led to an incessant stream of technology viewed as the next great solution to every problem we create. Yet no amount of innovation will change the fact that we cannot biologically produce food for ourselves. Like every other animal, we require the photosynthesizing power of plants to convert solar energy into a usable form as food for our bodies and fuel for our machines. We must nurture and replenish our land rather than continuing to exploit it through industrialized agricultural practices and endless urban growth. "No sane creature befouls its own nest. What we conceive to be our nest, and where we think it is, are therefore questions of the greatest importance" (Berry, 51).

Under the rubric of feeding the world's hunger, the United States has been practicing industrialized agriculture for nearly a century and continues to export this destructive system to other nations. The industrial agricultural system intensively uses fossil fuels, irrigation, and synthetic fertilizers and pesticides to produce large quantities of high-profit crops as quickly and cheaply as possible. The focus on standardization and efficiency in food production has created a myriad of negative social, economic, and environmental side effects (Kimbrell, 49).

The United States applies around fifty-three different carcinogenic pesticides to major food crops every year. This has led to an increase of many types of cancer, especially among children. Factory farming has also created major health risks through its use of antibiotics and hormones on confined animals. Remnants of these chemicals remain in the meat and manure produced on these farms, which end up in human bodies and in the waste stream. Factory farming annually produces 1.3 tons of manure that pollutes drinking water and fruits and vegetables from contaminated runoff (such as E. coli contaminated spinach in 2006). On average food travels 1,300 miles from its source of production to its place of consumption, which requires a massive input of

fossil fuels escalating air and water pollution. Corporations continue to purchase and consolidate small-scale farms transforming them into vast, homogeneous landscapes of monoculture crops and genetically modified organisms. This process has created a loss of biodiversity of species and of culture. As subsistence farmers lose their land they migrate to cities where they become the urban poor. Industrialized agriculture makes meat and highly processed foods cheap for consumers, which has increased the occurrence of diet related diseases such as obesity, heart disease, and Type II diabetes (Kimbrell 50-55).

A growing realization that our food system (the growing, harvesting, processing, packaging, transporting, consuming, and disposal of food) is unhealthy and unsustainable has spread in mainstream American culture over the last couple decades. Several books and films expose the conflicts faced by Americans at every meal such as Eric Schlosser's *Fast Food Nation* (2001), Morgan Spurlock's *Super Size Me* (2004), and Michael Pollan's *The Omnivore's Dilemma* (2006). Chef Alice Waters founded the Edible Schoolyard in Berkley, California in 1995 to combat obesity and promote healthy eating among children. She also leads the trend of using organic produce from small, local farms in restaurant dining. Farmer's markets, community supported agriculture, community gardens, and farm-to-school, farm-to-college, and farm-to-restaurant programs continue to emerge as the demand for nutritious, local, organic food increases each year. Even Wal-Mart now offers a variety of organic products to their customers.

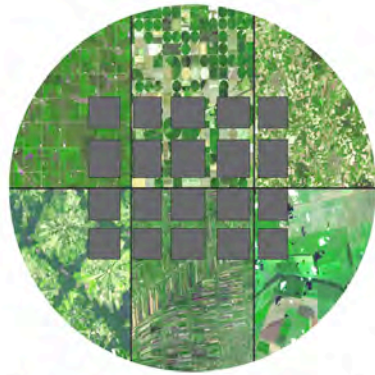
Despite an increased awareness of food issues in many professional fields, architects and planners have been slow to join the conversation. "Green" movements in architecture emphasize energy issues seeking to reduce waste, use sustainable materials, and use resources efficiently. Planners largely focus on transportation, housing, and economic development. Projects that have addressed feeding city inhabitants include vertical farms, continuous productive urban landscapes, and building integrated food production. Like the industrial agricultural system, many of these projects require high-technological solutions (like solar panels and hydroponic systems) to produce food. Although these types of projects have the potential to

increase the amount of produce available, they lack sufficient integration of each food system component within the immediate urban environment.

Early cities had an intimate connection to their hinterlands, and all food system activities were spatially intertwined. People were both producers and consumers in pre-industrial societies. Industrialization transformed this relationship allowing each activity to occur in spatially segregated areas. Some production and processing became specialized, such as bakeries, butcher shops, grain mills, and dairies, which removed some of the production burden from the consumers. In the 20th century, the development of industrialized agriculture, which standardized production methods, completed the transition away from an intimate producer-consumer relationship. Citizens of contemporary cities now engage in the food system primarily as consumers with the production, processing, and waste disposal occurring thousands of miles away (Figure 1).

The American Planning Association is taking steps to return to an integrated system. They began looking at food issues in 2005 and by 2007 had developed a "Policy Guide on Community and Regional Food Planning." This cohesive guide describes the benefits of a community food system and lists multiple ways for planners to support collaboration between diverse groups involved with food issues. Establishing public dialogue between policy makers, farmers, food retailers, health care providers, and emergency food shelters is valuable for decreasing the social distances between food activities along the production-consumption continuum. Planners can also influence how food spaces are physically related in urban areas by zoning to preserve agricultural land, supporting economic development schemes that incorporate food production, retail, and waste management activities, and encouraging mixed-use neighborhood redevelopment projects that include small grocery stores, community gardens, and seasonal farmers markets (APA, 11).

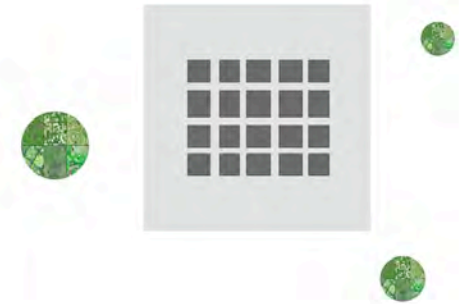
Landscape architects can help bring more food into the city by pushing for edible landscapes rather than solely ornamental plantings. Architects have already begun to incorporate some food production in buildings to achieve sustainable goals. For example, water has been collected for garden irrigation, green roofs and walls are used to reduce the energy required for heating and cooling, and food producing



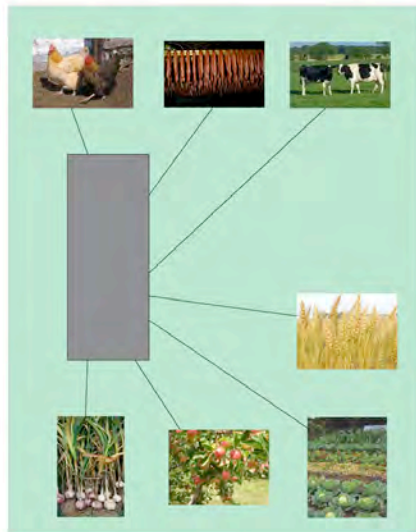
PRE-INDUSTRIAL CITY CONNECTED TO AGRICULTURAL LAND



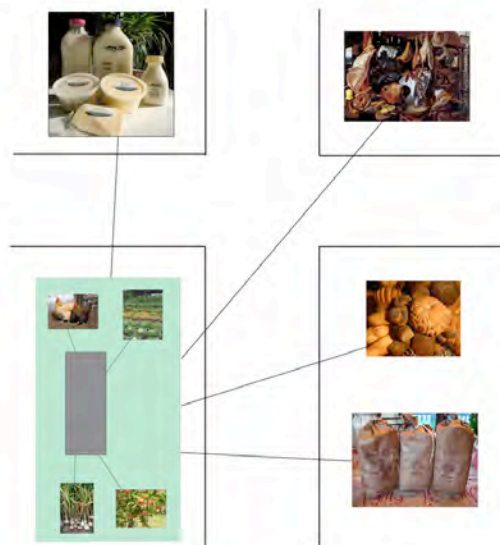
INDUSTRIALIZATION



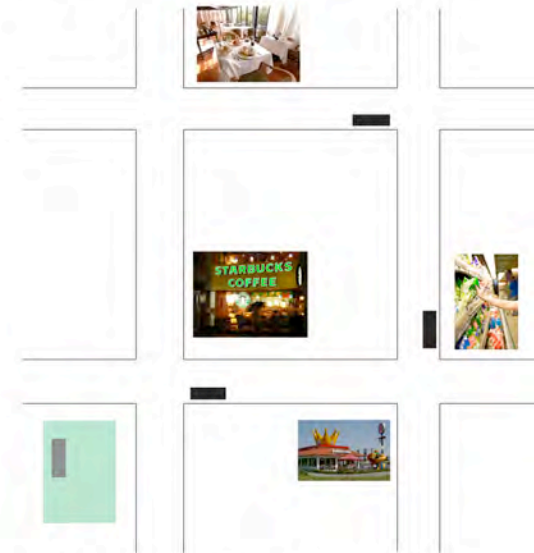
POST-INDUSTRIAL CITY DISCONNECTED FROM AGRICULTURAL LAND



PRODUCERS IS CONSUMER



TRANSITION IN PRODUCER/CONSUMER RELATIONSHIP



CONSUMER SPACES DOMINATE URBAN FABRIC

Figure 1. Shifting Producer | Consumer Relationships in the City (Author).

greenhouses have been used as buffer zones to modify temperature differences between interior and exterior spaces. These ideas are steps in the right direction, however food spaces still function as separate isolated programs: grocery store, cafe, restaurant, meat processor, bakery, flour mill, market, dairy, cannery, greenhouse, etc.

Further explorations for designing integrated food spaces can be carried out by redefining what is appropriate in certain building programs. For example cooking is typically done in the home, cafeteria, or restaurant, but hospitals, schools, and office buildings would benefit by not only including areas to grow food, but fully equipped kitchen and storage spaces so that employees and students could prepare and eat fresh meals. Buffer zones, medians, and sections of parks could be used to plant grain crops, and architects could incorporate threshing, drying, and storage facilities into adjacent park pavilions and community centers. The program of a public library would easily be compatible with a seed-bank where seeds saved from food and flower crops grown on site could be stored for preservation and sharing with the community. Small artisanal bakeries could be attached to senior centers, providing mixed-use program for neighborhoods while reducing heating costs for a non-profit during the winter. Architects can reintegrate a variety of food activities (beyond spaces solely dedicated to consumption) by challenging the accepted spatial relationships between the landscapes where food is grown, the buildings and surfaces where it is prepared, stored, and eaten, and areas used for waste disposal.

Architectural historian Elizabeth Cromley conceptually defines these spatial relationships as a "food axis" (Cromley, 8). Her research of American architecture emphasizes that the transformation from segregated domestic service zones to open, social centers was not due to aesthetic intentions of modern architects, but reflects changes in household economy and women's roles. She further explains how traditional architectural analyses of this transformation primarily focus on the shift in location of the kitchen and dining room in the household floor plan. Cromley points out the rooms labeled "kitchen" and "dining" do not solely represent all food related activities. By shifting the perspective from defined rooms to "activity arenas" along the food axis, the analysis becomes three-dimensional (Cromley, 9).

Her pre World War II examples shows how the kitchen is only one space where food was prepared, but before the use of modern appliances it was supported by a series of other spaces that can be found in the building section, site plan, and surrounding neighborhood. Attics were used for drying goods, basements for food preservation, and icehouses, smokehouses, baking ovens, and cellars were located in exterior buildings. The cooking space shifted by climate and region as well, meaning this activity did not always occur in the "kitchen." Hallway fireplaces were used in New England homes, patios in the mild climates of California, and in the south cooking shifted from an exterior building in summer to the basement in winter (Cromley, 9). As services proliferated outside the private home, such as the development of bakeries and grocery stores, the domestic space required for feeding a family shrank, while the distance between processes of the food axis expanded outside the home. The food axis is a valuable tool for not only describing the transformation of acceptable spatial relationships between food activities at the domestic scale, but at the urban scale as well.

Hearth, Plow, Mill

"The tilling of the earth is the bottom condition of civilization." L. H. Bailey

Agriculture and architecture have been inherently linked since the Neolithic period. Permanent settlements were created as hunter-gatherer groups turned to farming. When these villages began producing, storing, and managing agricultural surplus it allowed a portion of the population to specialize in other tasks. Farmers fed the traders, soldiers, rulers, and builders who transformed small villages into urban centers.

Yet before the invention of the hoe and plow, fire, the most basic element used to transform food, bound people together. The gathering around fire has been implicated as the origin of language, culture, and even architecture. Vitruvius describes the origin of dwelling born from the first interactions around a random lightening induced fire (Pollio, 38). He describes the cooperation needed to keep the fire going sparked language and communication leading to the realization of human intellect, which urged people to begin building shelters.

The Vitruvian myth is flawed when describing the origins of architecture, as if the impulse to work together and build shelter sparked as quickly as the strike of lightening itself. Early peoples gathered around fire for warmth, light, and protection from predators, but they also used it to manipulate raw food into communal meals. Vitruvius ignores the activity of cooking in the primordial hearth as the first object of place making.

The activity of eating itself did not organize society. Early peoples could consume plant-based foods as they walked between temporary settlements. Animals from a hunt could be dismembered and distributed throughout a group to be eaten apart from one another (Fernandez-Armesto, 11). Setting up a fireplace spatially rooted people to a fixed location. The delegation of tasks to produce a cooked meal helped foster unique cultural elements like language and customs. It was not simply the gathering around fire that sparked the creation of building as Vitruvius suggests, but the communal and convivial act of cooking, which forever forged the fireplace as the center

of domestic space. The hearth became the component that all other building elements were focused around, which both Semper and Heidegger have noted in architectural discourse (Neumeyer in Hodgson, 54).

As cities became more complex they maintained an intimate relationship to the land that nourished them. Citizens were not merely consumers of food, but had vast knowledge of how to grow, harvest, preserve by salting, smoking, fermenting, and pickling, and cook food. Farmers returned waste products to the soil to ensure its fertility and saved seed for the next season's planting. Temples were the urban centers of early civilizations. They not only were the site for performing rituals and feasts, but also acted as agricultural warehouses where harvested grain was stored, offered to the gods, and distributed to the city's population (Mumford, 36).

An agrarian consciousness persisted in urban areas for thousands of years. Even prominent Roman citizens owned villas in the countryside with orchards and vineyards from which they sold some of the surplus, but they also maintained extensive kitchen gardens to supply the estate with food (Steel, 19). In the city, Roman courtyard houses captured rainwater through roof openings, which was collected underneath and channeled into pools within the peristyle courtyard where they kept fish for eating (Percival, 13). They kept many edible plants within the courtyard as well.

Although villa and courtyard house owners, kings, and clergy had slaves and servants to perform the bulk of the labor required to feed the population, they were still connected to their food system in space and time. Certain foods were only available at specific times of the year and each season was celebrated. Spices and foreign foods that became available through trade were cherished commodities. In these societies there was a constant interaction between landscape, kitchen, and table. If the daily bread wasn't baked by the diners themselves they were at least aware it came from the corner bakehouse with grain from the immediate countryside. There was not a way to preserve meat over long distances so animals were walked in alive from pasture to city market, butchered on site or nearby, and bought by consumers. As Carolyn Steel points out in pre-industrial London, "if you were having Sunday lunch the chances are it was moving and bleeding outside your window three days earlier" (TedTalks, 2009).

The close-knit relationship between city and countryside remained unchanged until the Industrial Revolution. The distance between the land where food was produced and the table where it was consumed began to expand through the invention of the railroad. Other technologies used for agricultural tasks quickly replaced hand labor. Threshing machines, grain mills, and mechanical seeders and plows in combination with the railroad for transportation meant agricultural production no longer had to take place in close proximity to the city.

Britain led the Industrial Revolution and was the first to challenge Thomas Malthus' thesis that there was an ecological limit to population and economic growth (Standage, 129). Britain moved from an agricultural to an industrial economy by colonizing other lands. The country imported sugar from the West Indies and wheat and beef from Ireland. Growing and importing its food from distant land decreased the need for local farmers and farmland. The countryside surrounding cities were mined for coal and used for building factories. Rural communities abandoned their traditional social structure and self-sustaining methods for factory work in the urban core. Often all members of a household would have to work in order to make enough money to feed themselves. The migration into the city of rural people happened faster than cities could create room for them. Overcrowded conditions mixed with the pollution and waste from the new factories resulted in a deterioration of health, culture, and the physical and psychological connection to life-sustaining soil.

Domestic Socialism, Garden Cities

Industrialization had profound effects on domestic life. During the preindustrial era most women worked with their families on subsistence farms contributing to the families' food, shelter, and clothing needs. Women spun flax and wool to make clothing, grinded grain for baking bread, made soap and candles, raised animals, tended the gardens, and did the cooking (Hayden, 12). The household often produced a little surplus that could be bartered with other members of the community. Industrialization created a series of new spaces such as slaughterhouses, creameries, and bakeries that processed foods into manufactured goods. Women became consumers of candles, soap, butter, bread, canned food, meat, and milk in a new cash-based economy. The production of these goods took a portion of domestic labor out of the house, but it still left the housewife in charge of cooking, cleaning, and childcare. Middle and upper class women also began losing their domestic servants to factory jobs. This left the urban housewife socially isolated—her husband worked away from home, and her children attended school all day (Hayden, 13). To combat the spatially isolated condition of housework women began socializing domestic labor.

Social work and home economics were two professional fields dominated by newly educated American women during the Progressive Era (Hayden, 151). During this period (1880-1920) women led reform projects creating cooperative and communal systems for housework including daycare centers, laundry co-ops, community dining clubs, and public kitchens.

Ellen Swallow Richards and Mary Hinman Abel created the first public kitchen in the United States in 1893. Richards was the first female to study at MIT receiving her degree in chemistry. She applied her scientific background to domestic work becoming the founder of home economics as a course of study. She developed efficient methods for cooking and cleaning with the goal of reducing women's housework, and through cost analysis and nutrition research she developed a way to feed the most people with the highest nutritional value for the least cost. Mary Hinman Abel spent five years in Germany studying nutrition and gathering information on how their community kitchens worked. These kitchens prepared food in bulk (such as bread

and soup) that could be purchased for a low cost by working class families.

Richardson and Abel combined their backgrounds to create the New England Kitchen in Boston with the goal to "combat malnutrition, the uneconomical use of fuel, and the exhaustion of women workers" (Hayden, 155) (Figure 2). Other large cities soon developed public kitchens. Hullhouse in Chicago started one in 1894, and in 1915 Mrs. William K. Vanderbilt Jr. as part of the New York Association for Improving the Condition of the Poor set up the "People's Kitchen" in the longshoremen's district of New York City.

What all public kitchens had in common was catering to a working-class, immigrant population. Immigrant families usually had two working parents, which challenged the traditional domestic role of women. Women worked long hours in the factory, but still had to wake up early to cook breakfast and make dinner after work in the evening. Public kitchens consistently changed their menus to prepare foods familiar to immigrants of different backgrounds. Hullhouse educated people about nutrition through cooking lessons for domestic servants, schoolchildren, and housewives. They also prepared lunches for children in public schools and delivered lunch to undernourished women factory workers (Hayden, 161). The public kitchen was a new type of food space created to work in urban landscapes adjacent to tenement houses and apartment buildings (Figure 3).

While big cities tried to feed the influx of immigrant families, small towns were developing their own cooperative movements. Two popular books by Charlotte Perkins Gilman: *Women and Economics* (1898) and *What Diantha Did* (1909) influenced the development of new food spaces and programs. In *Women and Economics* Gilman describes a feminist apartment hotel that would provide private living spaces without kitchens and have childcare, cooking, and dining facilities available to the residents. These services, run by separate workers and trained professionals, would allow women to pursue a career and still be a mother. The communal eating areas she described would functionally serve as the dining room for the residents, but would also act as social centers for the neighborhood (Hayden, 189). In *What Diantha Did* the main character, Diantha Bell, is an entrepreneur who manages a restaurant, a cooked food delivery service, and runs an apartment hotel with kitchenless rooms (Hayden, 196).

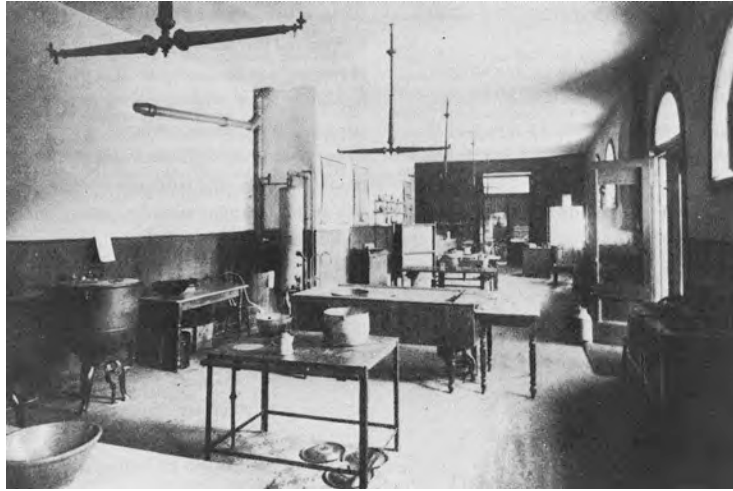


Figure 2. New England Kitchen, Pleasant Street Boston, 1890 (Hayden, 160).

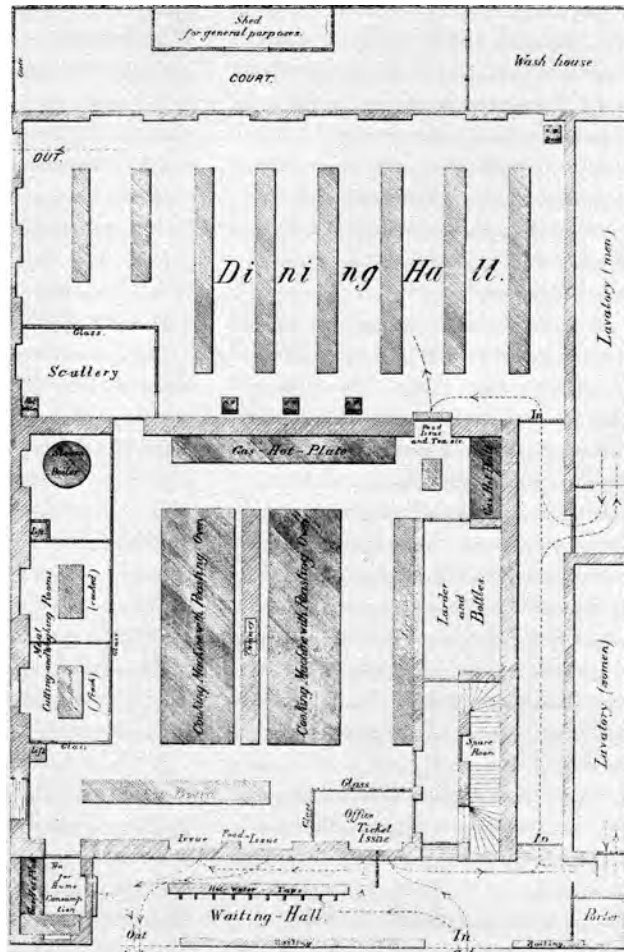


Figure 3. M. P. Wolff's Plan for a Public Kitchen, 1884 (Hayden, 163).

described revolutionary ways she thought women could free themselves from the domestic sphere. the early 1900s people all around the country were putting Gilman's ideas into practice.

As women began participating in activities outside the home and losing domestic servants to urban factories, the domestic center of the home changed. Women were scrambling to maintain a public life and still feed themselves and their families three times a day. They were campaigning for equality and the vote, but still had to rush home to make dinner and keep up with the laundry. Out of this social change cooked food delivery systems, community kitchens, and dining clubs emerged. Between 1885 and 1925 thirty-three experiments in cooperative cooking occurred in the United States (Hayden, 209). Some services lasted no more than six months, while others lasted around thirty years. Cooked food delivery services were more common in larger cities and their suburbs; dining clubs were popular in small towns where the patrons not only enjoyed a relief from the demands of domestic work, but saw the dining club as the center of neighborhood socialization.

The Mahoning Club in Warren, Ohio was a community dining club established in 1903 that remained functioning for two decades (Hayden, 210). The club served a variety of patrons including upper class families whose women did not want to be in charge of servants, unmarried men who longed for home-cooking, and professional women who did not have time to cook for themselves. This particular club functioned more as a cooperative where the members took turns overseeing the budget and menu for a week at a time. The club rented a portion of an elderly couple's home, which included a kitchen, dining room, and storage space (Figure 4). One large room served as the dining room where families ate communally at 4-6 person tables. Food was purchased in bulk to provide three meals each day making it incredibly affordable for families and single people.

In Carthage, Missouri a community dining club was born from the work the local women were doing in the suffrage movement. In between meetings for an upcoming suffrage convention women ran home to cook. "An impatient husband challenged the ingenuity of the local women's group, by complaining about his wife: "She is always cooking, or is just going to cook, or is too tired from cooking. If there is a

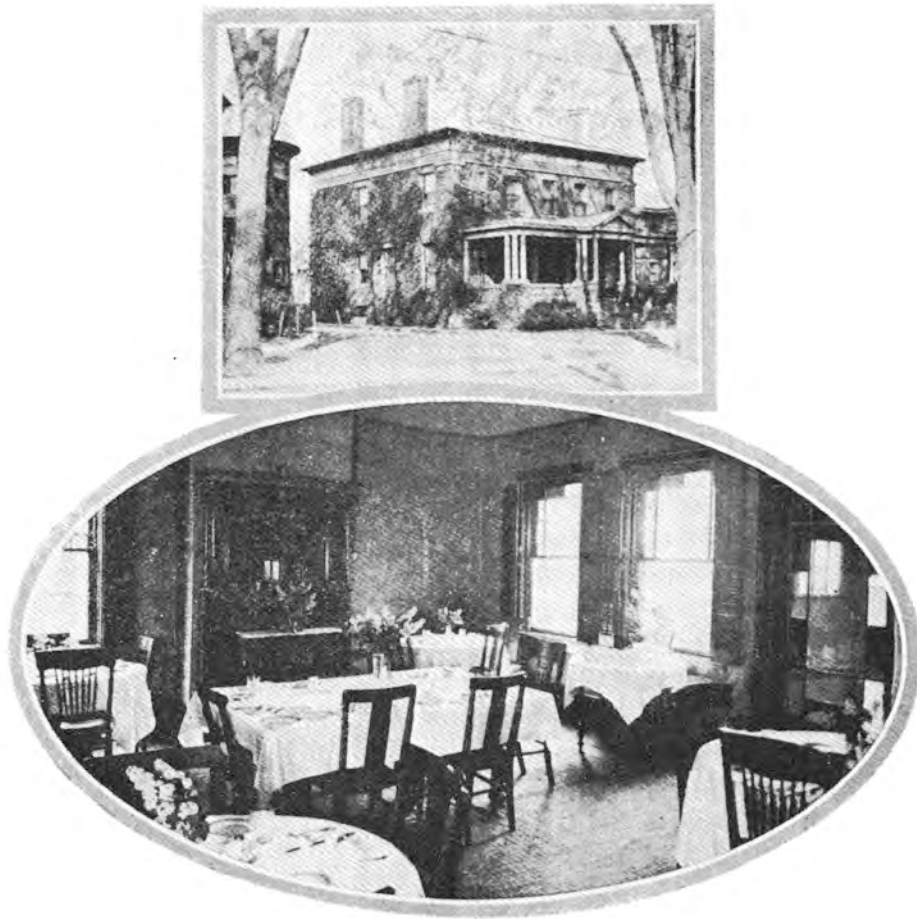


Figure 4. The Mahoning Community Dining Club, 1903 (Hayden, 211).

way out of this, with something to eat still in sight, for Heaven's sake, tell us" (Hayden, 206). The solution became an organization of around sixty neighbors who rented a house, and hired two cooks, two servers, a manager, and a dishwasher to run a Cooperative Kitchen. The result was a four-year run of inexpensive meals served three times a day in one communal dining room. Women continued to pursue their out-of-home activities, while the men were satiated and happy to spend time with their family (Hayden, 208).

As women created new spaces to perform domestic chores communally, architects and planners were designing alternatives to crowded, dirty, industrial urban centers. Ebenezer Howard and Le Corbusier designed ways to reintroduce nature into the built environment and reestablish connections between people and landscape.

Ebenezer Howard is widely known for his idealized Garden City. Historians and critics have extensively discussed how his ideas for decentralizing the urban center, zoning areas for specific use, and integrating nature into residential communities were revolutionary when he recorded them in 1898. They also have noted the Garden City movement was the precursor to many suburban developments in England and the United States. What has been ignored when discussing Howard is that he was a leading advocate for cooperative housing, moved his wife into a kitchenless apartment he designed, and meticulously outlined how Garden Cities would agriculturally self-sustain themselves.

Howard sought, above all else, to "restore people to the land" (Howard, 13). He identified there was a sharp divide between agriculture and industry and wanted to spatially reconnect the land where each activity took place. He concentrated the city activities into a dense central core on his idealized plan and devoted five-sixths of the rest of the area to food production (Viljoen, 99). Residential plots were about a sixteenth of an acre and were envisioned sufficient to feed a family of at least five people. Some of the homes would have cooperative kitchens and common gardens (Howard, 24). He stipulated the farms that surrounded the city would return the town's refuse to the land for agricultural production, and farmers could sell their food directly to the proposed 30,000 residents.

In reality the projects that were created from the Garden City plan, such as Welwyn and Letchworth (both in England), never developed into food-producing communities and lacked the variety of cooperative housing types Howard had imagined. Financiers who supported the first Garden City in 1902 at Letchworth built many detached single-family homes and row houses with private kitchens. Eventually in 1909 Howard was able to create "Homesgarth," a thirty-two unit cooperative apartment building (Figure 5). The residents had kitchenless private quarters and community kitchen and dining facilities were provided on the main floor. Howard succeeded in liberating some women from domestic labor, but he was not able to sufficiently "restore people to the land," nor was he able to bridge the divide between agricultural space and industrial space.

The Garden City plans influenced many architects all over the world. Le Corbusier made thorough notes in his copies of Howard's work, and according to historian Robert Fishman influenced his *Immeubles Villas* design of 1922 (Hayden, 237). Le Corbusier sought a higher density than Howard in his utopian city schemes. In both the *Immeubles Villas* and *Garden-City Housing* he integrated garden space within apartment style buildings and included substantial open space surrounding them.

The Garden-City Housing scheme created communal open park space for recreation and made individual kitchen garden plots contiguous (Figure 6). A farmer would be employed for the intensive cultivation of the combined plots taking the individual watering and weeding out of the families' hands. The apartment dweller would harvest the produce as a form of recreation. Le Corbusier noted agricultural laborers were disappearing and explained how inhabitants in his garden cities would be transformed into agricultural producers (Le Corbusier, 206). It is difficult to imagine the inhabitants of garden cities functioning as agricultural producers if the most important part of the labor required to produce the food is left to a single farmer who uses mechanized methods to accomplish the labor.

Neither Howard's nor Le Corbusier's garden city ideas challenged the segregation of food axis spaces. Special zones were still set aside for growing, processing, and eating foods. Trying to create self-sufficient entities by bringing the food producing landscape closer to the city as it had been in traditional societies was a

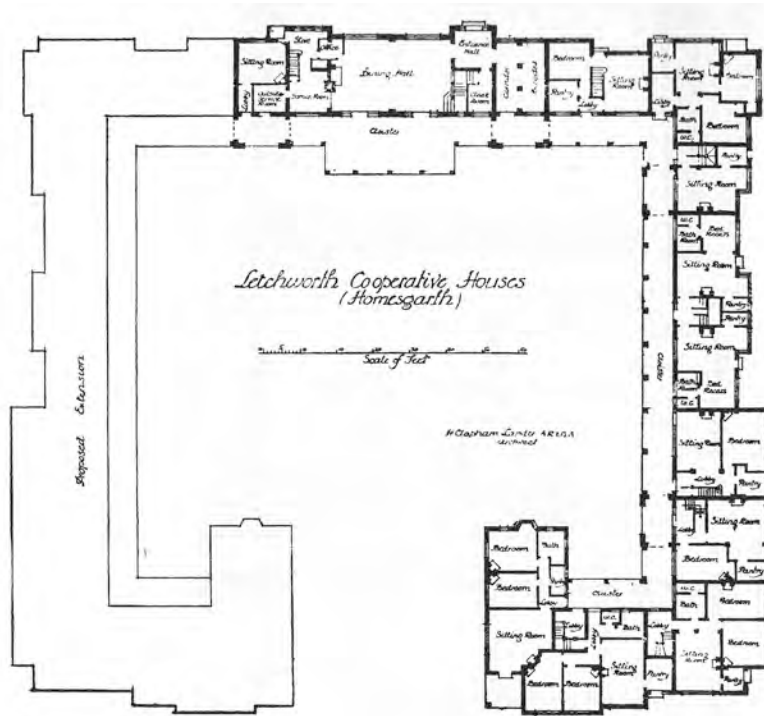


Figure 5. Homesgarth, plan by A. Clapham Lander, 1909 (Hayden, 234).

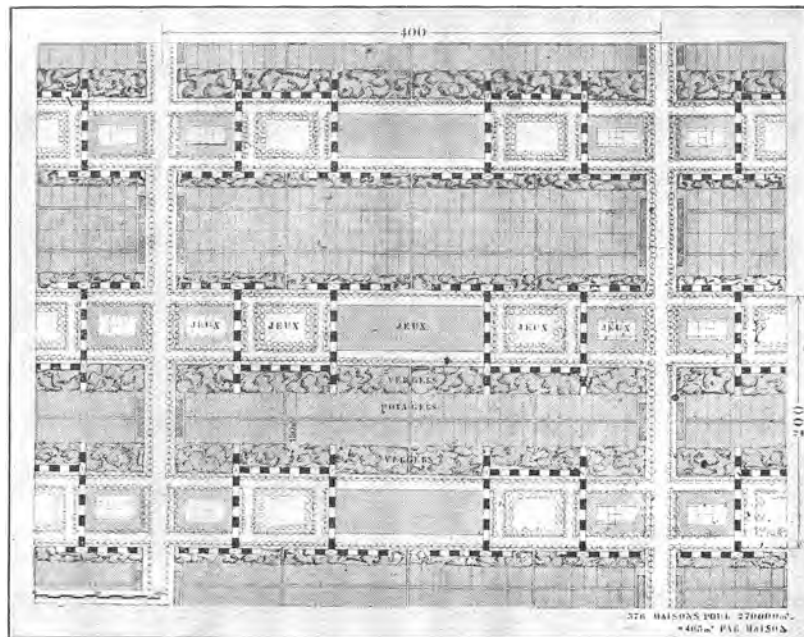


Figure 6. Plan of a Garden-City Housing Scheme (Le Corbusier, 204).

step in the right direction. However these features were lost as future builders translated their ideas into sprawling residential developments furthering the separation between people and food spaces. At least city dwellers could easily reach restaurants and markets; suburban dwellers had to drive to the grocery store.

While architects were imagining ways to create self-sufficient cities, there were still a few communities that had been preserving traditional agrarian lifestyles despite increased modernization. Many of these communities were based around a religious tradition, such as the Quakers, Amish, and Shakers. A group of Inspirationists from Germany created the Amana Colony in the 19th century. From 1855 to 1932 around two thousand residents lived in this colony in the countryside of Iowa. They prospered from their land keeping a range of farm animals, cultivating large gardens, and converting their harvest into a variety of products.

Communal kitchens were the heart of the community. These were highly organized to provide meals as efficiently as possible (Hoppe, 15). At the height of Amana population there were fifty-five communal kitchens each serving 30 to 45 residents in seven adjacent villages. The kitchen was part of a simple two-story building with the cooking and communal dining facilities located on the first floor and living quarters for the kitchen boss and her family located above (Figure 7). A hierarchy of women ran the kitchen system. Besides the kitchen boss, there was an assistant boss, two to three young cooks, and older women (retired from other cooking duties) who prepped vegetables for a couple hours each day (Figure 8).

Two to three acre gardens sat adjacent to the kitchen space. One woman managed each garden, with at least three women tending it. In addition to substantial produce, each kitchen raised a flock of around 300 to 400 chickens (Figure 9). Menus were standardized for efficient production and reflected seasonal availability. The kitchen manager kept track of what was needed for each meal, obtaining necessities from the village flourmill, butcher shop, bakery, orchard, dairy barn, and icehouse (Hoppe, 24). Items that were not delivered from within the community such as coffee, tea, molasses, cocoa, spices, and vinegar, were sourced from the general store.

The Amana Colony was successful in its self-sufficiency because of its small scale. It is a useful precedent for designing similar serves at the neighborhood scale.



Figure 7. First Floor Plan
Amana Kitchen House
(Hayden, 42).



Figure 8. Kitchen Women Preparing Vegetables (Hoppe, 18).

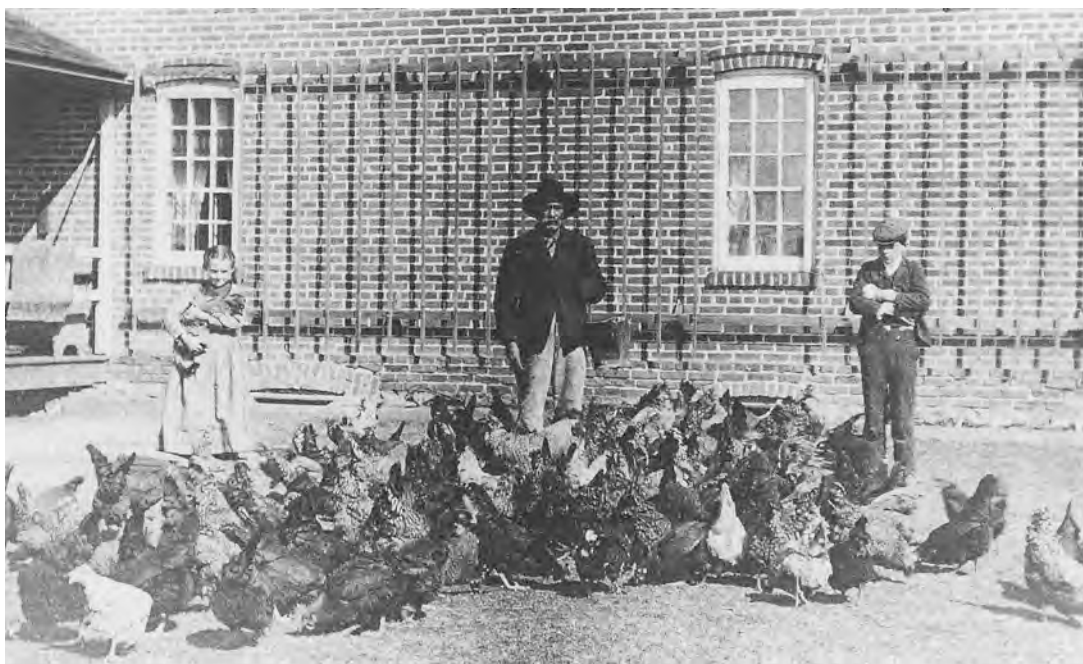


Figure 9. Amana Kitchen Flock (Hoppe, 18).

Dust Bowl to Green Revolution

The introduction of synthetic fertilizer in the early 20th century dramatically changed agricultural production like mechanization had done more than a hundred years before. The finite supply of nitrogen had challenged humanity since the invention of farming. Microbes found on the roots of legumes convert atmospheric nitrogen into a usable form required for plant growth. Food production had been restricted by the availability of nitrogen fixing microbes, which automatically kept population growth in check.

During the first decade of the 20th century chemists were able to synthesize ammonia from nitrogen and hydrogen. This tangible product was used for the creation of chemical weapons and fertilizers (Standage, 210). With humanity suddenly in control of the nitrogen cycle agricultural production reached unprecedented levels leading to the jump in world population from 1.6 billion to 6 billion in a single century (Standage, 200).

The method for producing ammonia was patented in Germany and used extensively during World War I, however they ended up creating more munitions than food causing widespread food shortages. Shortages occurred elsewhere across Europe opening up their markets to American grain producers. The secrets to the ammonia producing process were confiscated after the war and quickly adapted in France, Britain, and the United States (Standage, 212).

Chemical agriculture transformed once again the spatial relationships between the landscape and our dinner tables. Pre-chemical farmers applied manure, planted diverse crops to balance nutrients, practiced crop rotation, and let some land go fallow to retain soil fertility. Even with the use of mechanized farm equipment these methods kept farmland at manageable small to medium scales. The constant availability of chemical fertilizer meant farmers could plant just one type of crop on a massive scale. Fields upon fields in the United States were quickly converted to grain production. Marginal land was put into production and plots were no longer left fallow.

Food had been imported to cities ever since the introduction of rail transportation. However, beyond foods that required specific climates and regions

(such as bananas, sugar, tea, and coffee) cities were still supplying themselves with most animals and vegetables from a regional hinterland. There were cattle ranches in many regions throughout the United States. Many vegetables were still grown within one to two hundred miles of major cities. The application of synthetic fertilizer polarized food production pushing it farther and farther from cities. For example, Florida and California became leading producers of produce, especially citrus. The fertile Midwest became synonymous with grain. Cattle ranches decreased in number, but increased in size and became concentrated in the North and Midwest and Texas.

Intensive farming combined with eight years of drought during the 1930s led to the most devastating agricultural event in the United States. Massive monocropped plots had no other vegetation to hold down topsoil as it blew away during the Dust Bowl. This prompted Franklin D. Roosevelt to implement federal programs that encouraged farmers to practice natural methods of farming. Millions of trees were planted in the Great Plains; farmers returned to practicing crop rotation and soil conservation. By the end of the decade the rains returned, but the majority of farmers had already migrated from the area.

World War II was an era of scarcity that reintroduced people back to the land. The United States and British governments started similar campaigns encouraging civilians to grow their own food. The "Victory Gardens" of the U.S. and "Dig for Victory" campaign in Britain ran from 1939 to 1944 (Viljoen, 101). Gardens were planted throughout suburban and urban areas—in vacant lots, on apartment rooftops, and in backyards. Portions of New York City's Riverside and San Francisco's Golden Gate Park were transformed into edible landscapes. Ten percent of Britain's national food needs were met during this campaign as well as half the fruit and vegetable requirements (Viljoen, 101).

After World War II the federal government converted its war machines into food machines. Pesticides and fertilizers were manufactured and applied at an unprecedented rate. The introduction of hybrid seeds, new irrigation systems, and cheap oil drove down food prices. Fast food chains, supermarkets, small kitchen appliances, and TV dinners reflected a new type of food culture in America, one that revolved around convenience and the love affair with the automobile. The suburbs

proliferated across the landscape displacing farmland that had been within regional proximity of cities. Industrialized agriculture was in full force cutting the final ties city consumers had with their food producing landscapes. The hinterland required to feed a city expanded to a global scale.

The new industrial model quickly produced higher yielding grain, however the heavier seed heads collapsed under their own weight. Beginning in Mexico in the 1960s new grain was bred to respond better to the greater inputs of nitrogen and pesticides and the consistent water supply. The result launched the Green Revolution—a transfer of industrialized agricultural technologies from the United States to India, Asia, and Latin America. The industrial model of food production was viewed as a mechanism to end world hunger. The methods ignored differences in regional climate, soil, and topography applying a standardized approach that required rural farmers to purchase agrichemicals and expensive machinery. Once the ecological balance was lost in the transition from traditional farming to the industrial method farmers had to apply even more fertilizers and pesticides to achieve the same yields. The land became dependent on the chemicals, and the traditional culture of these societies eroded as they had in the United States several decades before.

Negative impacts associated with industrialized agriculture had been discussed during the 1930s and 40s, but it wasn't until Rachel Carson's *Silent Spring* (1962) brought to light the horrible effects of pesticide use that industrial agriculture received widespread attention. In 1971 Frances Moore Lappe's *Diet For a Small Planet* described the inefficiency of the industrialized model. By this time industrial agriculture had been so successful that there was an overabundance of grain, so livestock producers began using the cheap grain to fatten their animals. Lappe notes how wasteful it is to use sixteen pounds of plant-based protein to make one pound of animal protein (9). (Beyond this inefficiency other researchers have noted how unhealthy for both animals and humans it is to feed grain to ruminates.) She urges a shift from a meat-based diet to a vegetarian diet because it is healthier for people and the planet.

Both Carson and Lappe reflect the overall environmental awareness during this era. For example, air and water pollution led to the creation of the Environmental Protection Agency. The OPEC energy crisis of 1973 led policy makers to research

renewable energy sources. Also the increase in food prices due to the energy crisis led some to question the industrial model for food production. Farmers began practicing organic methods and people were becoming vegetarians. Urban community gardens, permaculture, and the Back-to-the-Land movement are some trends that demonstrate the shifting relationships in the food axis during the 1960s and 70s.

The social unrest of the sixties and seventies drove some people to seek a simpler life. People who went "Back-to-the-Land" left a comfortable, affluent urban life for a rural life outside the city. Back-to-the-Landers were typically married couples and young professionals who could afford to purchase farmland to try homesteading and be closer to nature. They sought autonomy through building their own homes, producing energy on site, being self-employed, and organically growing their own food. They were aware of the negative effects industrialization had on the food chain and wanted to become their own producers. There was a revival in canning, cellaring, and gardening skills. Except for their raised awareness of food issues Back-to-the-Landers were no different than their suburban counterparts who had been fleeing the city since the 1950s.

The cities that middle and upper class residents were leaving behind slowly lost businesses to the suburban fringe. This left many inner city residents with a lack of services, especially food stores. Establishing community gardens became a popular way for neighborhoods to combat a gamut of social issues such as crime, isolation, and urban decay while providing food for the residents. A community garden started in 1973 in the Lower East Side of New York city is cited as the first of the community garden movement. A local resident, Liz Christy, led her neighbors in turning a vacant lot into a vibrant garden.

Permaculture, developed in the 1970s by Bill Mollison and David Holmgren, is another alternative to the industrial food model. It is a method used to create sustainable settlements through the integration of design and ecology. The term "permaculture" is a combination of the words permanent and agriculture. A permanent productive food system involves common ownership and care for land. The opposing industrial food system is not permanent because it requires the annual planting of crops for commercial purposes. Land in this system is regarded as a commodity, and it is

continually exploited and destroyed. An agriculture system based on permaculture principles acquires the energy to sustain itself from its own system. An industrialized agricultural system relies on continuous inputs of external energy supplies (Figure 10). In a permaculture system no plant, animal, or resource is wasted; the industrial agriculture system creates waste at each step of the food process.

Permaculture acknowledges that humans are part of an ecosystem and can survive only if natural systems survive. It focuses on the interrelationships and interdependence of living things and their environment, which is the antithesis of the modern scientific approach to problem solving that isolates and separates parts of a system into individual components ignoring the relationship between each part. Permaculture seeks to synthesize traditional knowledge with modern science. It uses natural systems as a model to design sustainable environments that provide basic human needs as well as the economic and social infrastructure that supports them (Morrow, 9).

Unlike the standardized approach to food production that became common worldwide through the Green Revolution, permaculture is a site-specific strategy that not only relates to regional characteristics, but also requires an intimate knowledge of the immediate context. People who design permaculture systems observe the landscape thoroughly before implementation. They gather climate data, watch how rain moves across the topography, record what plant and animal species currently live within the site, and identify any on-site resources that can be utilized in the system. Because the overall philosophy of permaculture includes care for the earth, its people, and a general reduction in consumption, permaculture designs strive to establish self-sufficient edible landscapes on the least amount of land possible. Arable land is intensively cultivated at a small-scale so marginal land can be preserved as a natural ecosystem. The naturally inherent traits of the landscape, its people, plants, animals, and resources are utilized so energy is not wasted. Permaculture creates sustainable settlements through the integration of diverse species and systems so if one part fails it does not affect the whole.

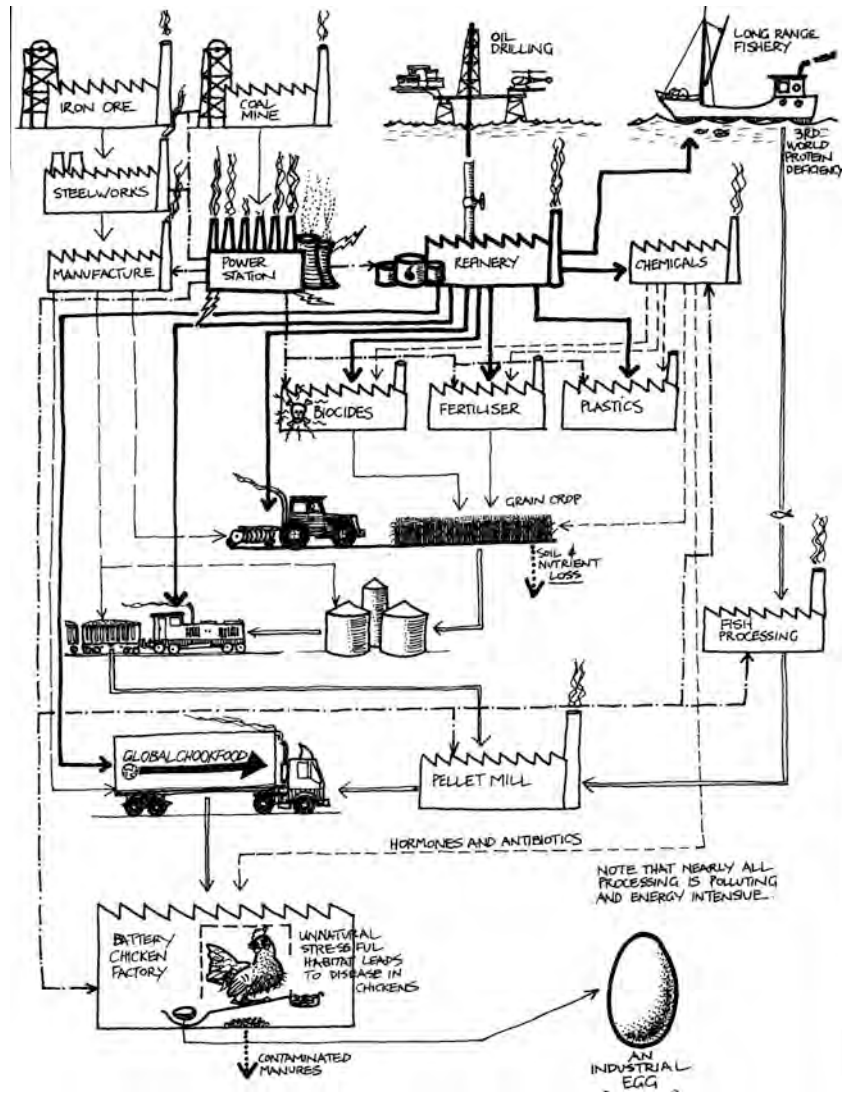
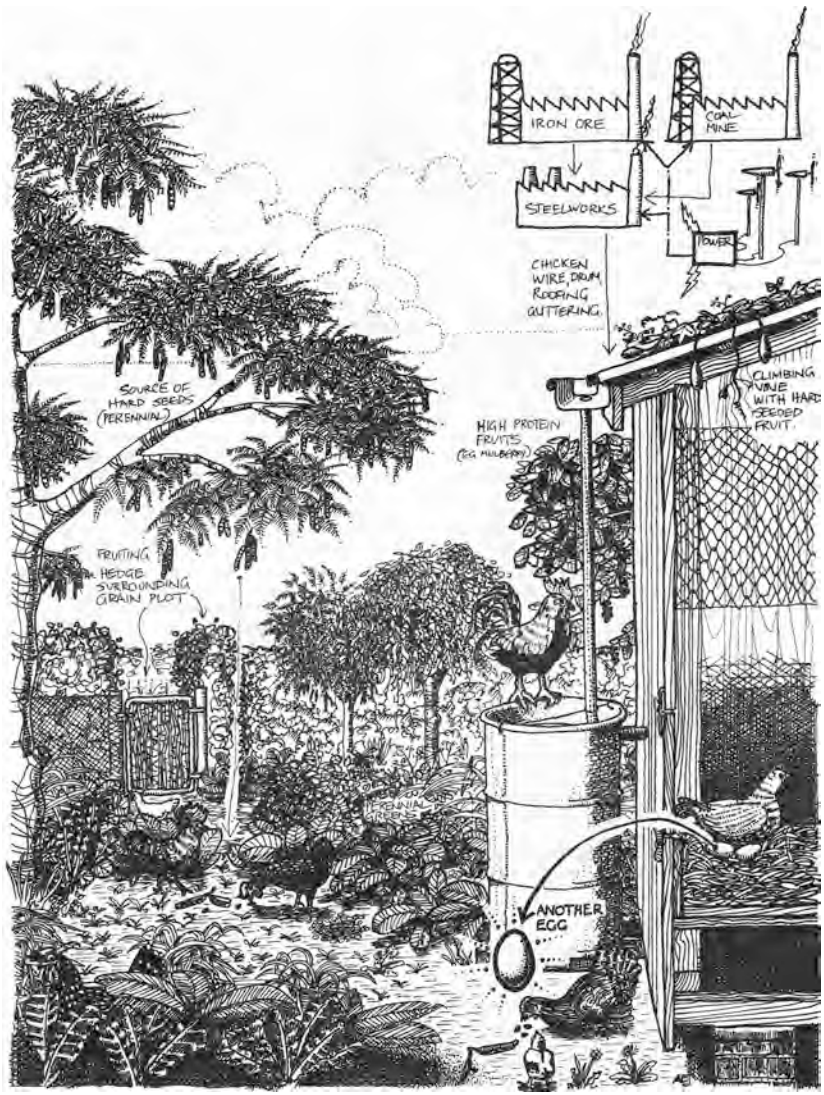


Figure 10. Permaculture System vs. Industrialized Agriculture System (Mollison, 24 – 25).

Permaculture design principles can be applied to any landscape to make it more sustainable, but it is most often used at the home scale. The food axis is compressed in a permaculture system—home owner is food producer, processor, and consumer. The immediate landscape that surrounds the home provides a variety of foods through annual and perennial crops, small livestock, orchard, and food forest. It is important for architects and planners to understand and impliment permaculture principles as a method for providing food security at the neighborhood and city scale. The holistic approach to providing human needs by integrating sustainable social, economic, and ecological systems will be useful as we continue to add to the list of negative affects from the industrial agricultural system.

Food Network, Food Desert

"As the modern city emerged over the past 200 years, urban space dedicated to food production diminished while urban space dedicated to food consumption expanded. As the physical distance between producer and consumer increased, so too did the psychological gap between them, until in the 20th century food became an abstract commodity, unmoored from the local and regional" (Esperdy in Franck, 44).

Two polar food cultures have developed in the contemporary American city. One trend is the general awareness of the problems created by the industrial agricultural system with people striving to reestablish a connection between consumers and producers. For example, people are purchasing local and organic foods because it is better for their health, the environment, and their local economy. Not only do local farmers benefit, but also small-scale food artisans and entrepreneurs. People enjoy bread from local bakeries, buy produce at farmer's markets, demand grass-fed meat, join the Slow Food Movement, or campaign for the labeling of genetically modified foods. Food has become a hobby for those who can afford it, which is reflected in the market where items such as organic wine and slickly packaged olive oil fetch outlandish prices. These foodies and gastronomes enjoy fine dining, television food programs, and know how to cook in their fully equipped, expansive kitchens.

It is unfortunate that healthy food has become a privilege for those with disposable incomes. At the opposite end of the spectrum are those who face physical and economic barriers to fulfilling basic food needs. As residents migrated to the suburbs businesses and services began to disappear from the inner city. Neighborhoods in inner city areas were also physically cut off from services through zoning policies, Urban Renewal, and Interstate construction. These circumstances have turned many neighborhoods into food deserts.

A "food desert" is defined as an area with limited access to affordable and nutritious foods. These areas lack grocery stores and supermarkets and are predominately low-income neighborhoods (Gallagher, 3). "Access" is determined by the ease and distance required to find healthy food, especially fresh fruit and vegetables. Low-income neighborhoods experience lower vehicle ownership rates,

which exacerbate the access problem (APA, 5). People in food deserts usually walk or rely on public transportation. A comfortable walking distance is one kilometer or approximately a half-mile. The locations of supermarkets far exceed this distance in relation to a food desert, and the majority of American cities are not pedestrian oriented. This makes walking a couple of miles with grocery bags difficult and time-consuming. Adequate and efficient public transportation is also still lacking in many cities; to get to a grocery store that is just two miles away can sometimes involve a bus change.

Although called food deserts, these areas are not completely devoid of food; they have a higher density of convenience stores that offer a significant amount of unhealthy choices. Because of their proximity, residents in a food desert purchase most of their food from fast food venues, gas stations, and discount and drug stores. Any fresh produce, meat, and dairy sold at these types of stores are more expensive than at a grocery store, making the cheap prices of processed foods more accessible to low-income families. The lack of access to sufficient nutritious food has led to an extreme rise in diet related diseases. Obesity, heart disease, certain cancers, and Type II diabetes have been found to be higher in food deserts while rates of these problems in neighborhoods with supermarkets offering healthful food choices are significantly lower (APA, 4).

There have been a variety of initiatives aimed at increasing the availability of fresh food in urban centers. The establishment of farmer's markets is a typical planning strategy that has been employed as early the 1970s. Markets connect regional farmers immediately with urban consumers, which reduces pollution and cost from transportation while preserving farmland (Franck, 37). The restoration of historic market buildings in larger cities is instrument to economic revitalization while seasonal markets bring vitality to downtowns (Esperdy in Franck, 44). The success of farmer's markets comes predominately from middle and upper class patrons, however many markets are now accepting SNAP benefits (the new program name for foodstamps) to deliver healthy, local food to a wider audience.

Community Supported Agriculture (CSA) programs are another popular way to connect urban consumers with regional producers. CSAs are great ways to provide

farmers with economic stability. Subscribers purchase a share of the farm's production at the beginning of the season and are given in return a share of the produce, typically on a weekly basis. A share will often include fruits, herbs, and vegetables, and sometimes eggs, milk, honey, and meat are available depending on the farm. Some CSAs require the shareholders to put in a minimum amount of work hours at the farm. This can reduce the cost of the share, while providing a physical connection to the landscape that produces their food. CSAs are successful in providing fresh produce to urban residents, however the price of seasonal shares is often too expensive for low-income people.

Community gardens are a successful way to reconnect people with the origins of their food and increase the access to fresh fruits and vegetables in low-income areas. There are several benefits to establishing community gardens. They beautify blighted areas of a neighborhood, which may reduce crime and act as a catalyst for community development. They provide and preserve green space while reducing the urban heat island effect. Community gardens bring people from diverse backgrounds together stimulating intergenerational and cross-cultural interaction. Cultivating and nurturing a plot of land instills a sense of pride and ownership in the participants. This leads to exponential positive change as people begin to invest in their neighborhood beyond the garden. While reducing a household food budget, community gardeners can also enjoy the exercise, recreation, therapy, and educational experience.

Similar to the cooked food delivery systems of the early 20th century, mobile markets are a unique way to bring affordable fresh food to low-income residents. The People's Grocery in Oakland, California has taken the task of establishing connections between consumers and producers one step further by fostering local economic empowerment. They hire local high-school students who work part-time during the school year and full-time in the summer running the mobile market, working in community gardens, and taking classes in business, nutrition, and cooking (Franck, 38). This program demonstrates how food issues act as a social organizer encouraging a culture of cooperation rather than competition.

Community kitchens offer economic benefits as well as provided food for those in need. Public and community kitchens can be either public or privately owned

establishments and can describe several different activities. Some are traditional soup kitchens providing meals to the poor and homeless. Others offer culinary training programs to unemployed people to assist them in finding a food industry job. Community kitchens can also be business incubators for people trying to launch their own business, but cannot afford the start up cost of equipment and certifications. Kitchen space can be rented in a communal or private setting. Incubator kitchens foster community and preserve and celebrate local food culture.

Farmer's markets, community gardens and kitchens, CSAs, and mobile markets all contribute to increasing the availability of healthy, fresh food in the city. Although low-income residents benefit in some way from each of these programs, not one fails to address an important hindrance to their participation: their lack of time. A low-income family can be given access to land, but may not have time to cultivate it, may be given a basket of fresh produce but may not know how to prepare and cook it, nor have the time to do so. People with less means work harder to pay bills, rent, and buy food. It may be economically beneficially for a household to grow their own food and learn how to cook, but single parents who work two jobs and rely on time-consuming public transportation for their commute do not have time to maintain a garden or cook.

A lack of time affects people from all economic backgrounds. Americans work longer hours consuming the majority of their meals outside the home. People grab meals between cases, classes, and meetings. Hand-held breakfasts are consumed during the commute and lunches eaten on top of office desks over the computer. The microwavable, just-add-water, individually packaged meals that feed this culture are highly processed and contribute to negative health issues. This situation is not exclusive to adults as today's youth are encouraged to participate in several extracurricular activities while balancing schoolwork and employment.

Busy and more mobile lifestyles have nearly eliminated the home-cooked meal. The decrease in large family homes to individual, couple, and single parent households over the last century has added to this predicament. In 2000, architect Greg Perlman declared, "the dining room and kitchen are under threat" (Duruz, 23). The loss of time and will to cook has led to a decrease in the size of kitchen and dining spaces in the home or has eliminated them all together.

Cooking and eating spaces have always been the center of the home, with the hearth often considered synonymous with dwelling. Kitchen and dining spaces are important for fostering a sense of homeliness and permanence. The fragmentation and disappearance of the kitchen and dining room has contributed to feelings of placelessness and nostalgic longings for home. Without these social spaces, culture and family structure are experiencing negative changes.

Technological distractions and isolated eating conditions have replaced the social space of the family dinner table. Recent studies in Britain relate widespread problems in today's youth, such as insufficient listening and communication skills and short attention spans, to the lack of regularly dining with adults (Steel, 215). Shared meals have always been an informal setting where appropriate social interaction is learned and reinforced. A generation of people who don't know how to properly use their utensils or carry on a dinner conversation is forming from the lack of shared family meals.

As the dining table becomes a symbol of a past tradition, the kitchen is being reduced down to the use of a microwave. The majority of Americans have lost basic culinary skills. Negative health and environmental consequences that come from industrialized agriculture makes cooking at home an important tool for contemporary society. People who cook at home have more control over how meals are prepared and what foods go into their bodies. Cooks are connected to the landscape in a special way because they know where certain things grow, how products are prepared, and ways to source, kill, clean, and cut meat (Steel, 164). This knowledge was common to everyone a couple generations ago, but is now only common among professionals. The city-dweller has no connection with food other than trying to follow a recipe or reading a label on the back of a food package.

The activities of cooking and sharing food are important tools for placemaking and nurturing a local and regional identity. Much of our built environment has become homogenous and banal. This is true especially for food spaces where the big box design dominates fast food, grocery, and wholesale stores, and large food processing factories. The process of standardization and efficiency has removed unique food experiences from our cities.

“One of the great ironies of American fast food is that it is the product of one of the biggest and richest gastronomic inheritances on earth: the ethnic melting pot created by European migration to the USA.” In *Paradox of Plenty*, Harvey Levenstein argues the rich cultural mix during several waves of immigration led to a national crisis of food identity. As successive waves of Irish, Italians, Germans, Hungarians, and Poles landed on American shores from the 1880s onward, a desperate search began for a common food acceptable to all. Many felt they had to ‘Americanize’ their native meals by taking out the ingredients that gave them their distinguished flavor and identity (236-237). The result was simple, tasteless, ubiquitous food without regional or local connotation or heritage.

We have all become migrants "retracing, through food, our connections to time and place" (Duruz, 23). Architects and planners can organize the built environment around food spaces that celebrate the daily rituals of food growing, purchasing, cooking, and eating. The expression of local food traditions, products, and seasonal dishes can stimulate the local economy, foster community, and generate a territorial identity.

The community food system concept is a useful tool for planners and architects to realize these goals. "A community food system is a food system in which food production, processing, distribution, and consumption are integrated to enhance the environmental, economic, social and nutritional health of a particular place" (Wilkins, 1). It can refer to a variety of scales from the neighborhood to the town, county, or bioregion. Although similar to the concepts of "local" and "regional" food systems, a community food system uses a comprehensive approach to strengthen existing and develop new relationships between all food system components within an area.

As opposed to the industrial food system (that relies on a global production, processing, and distribution system) a community food system is spatially connected to the people it serves. It addresses food security issues at a community wide context by developing ways for an area to acquire greater self-sufficiency in food production and processing. Sustainable practices not only in agricultural production but also in social aspects, such as fair labor practices and community participation in decision making, are important facets to a community food system (Wilkins, 2).

The improved health, economy, and environment are goals of a community food system. Increased access to affordable, nutritious food improves the health of a community. Businesses related to food and agriculture create jobs can recirculate financial capital back into the community (Wilkins, 2). Bringing food production and food processing activities back into local hands strengthens a sense of ownership and fosters future opportunities for community investment. Participation in local food activities connects people back to nature and helps to define a sense of place and community identity.

Although a relatively new concept, Growing Power, a Community Food Center in Milwaukee, Wisconsin, has been implementing the community food system concept since it began in 1993. The Community Food Center produces food for local residents, converts six millions pounds of local waste every year into compost, and offers training, workshops, and technical assistance for people interested in organic food production.

Growing Power also runs a couple larger farms within the area, but its urban headquarters on a historic two – acre farm is its main demonstration space (Figures 11 & 12). Here six greenhouses hold over 12,000 plots for produce as well as an extensive vermicomposting (composting with worms) and aquaponics system. Bees, goats, hens, ducks, and rabbits contribute to the overall system. An anerobic digester produces energy from the farms waste and 100,000 pounds of waste is composted on per week on site.

There are a variety of ways Growing Power engages the community in food issues. Tours of the facility, workshops, and volunteer days allow the public to learn more about way they do and ways to start similar projects in thier communities. Internships and Youth Corps engage college students and young people in entrepreneurial activities. These programs teach basic organic gardening skills while offering professional work experience. Growing Power also works in other areas of the region through outreach projects such as the assistance in establishing community gardens and offereing healthy food and education at community health centers.

Produce, value-added products, worm castings, compost, and plants are sold at their on site market to the public. They also distribute produce through a Market Basket Program and the Rainbow Farmer's Cooperative. They sell directly to



Figure 11. Plan of Growing Power Site. (www.growingpower.org).



Figure 12. Bird's Eye View of Growing Power Site. (www.bing.com/maps).

restaurants and farmer's markets and a portion of their produce is donated weekly to area food shelters. All of the activities at Growing Power provide important opportunities for communities and individuals to network with each other to work toward the goals of promoting food security and healthy and environmentally sound food production practices.

Growing Power is one of the few places in the United States that has established an integrated and networked approach to improving access to healthy food in low-income areas. Philabundance in Philadelphia and the Sustainable Food Center in Austin, Texas are a couple of other Community Food Centers currently working toward community food system goals.

Community Food Centers are developed mainly out of agriculture and social improvement endeavors, but planners and architects play an important role in helping to create these sustainable food systems. At this pivotal point in our food history it is pertinent food issues be embraced by architects as housing issues were during the turn of the 20th century. However as modern architects embraced industrial technology and standardization to produce affordable housing, the same efficient, one-size-fits-all approach will not mend our current food system. Architects have the opportunity to embrace community food system concepts to develop new architectural programs that define integrated relationships between spaces of the food axis needed to provide access to healthy, local food.

Five Points Community Food Center

Concept: Engage, Empower, Educate

The Five Points Community Food Center is an architectural manifestation of a community food system. Where a community food system creates connections between food producers, processors, distributors, and consumers by fostering communication and promoting strong relationships, a community food center spatially gives form to community food system ideals. By compressing all components of the food axis onto a single, small-scale site within a food desert neighborhood residents are able to engage with all aspects of the food system, while gaining access to fresh produce and healthy, affordable meals. The Five Points Community Food Center provides jobs, education, and serves the community as a secular gathering space. It has three main goals: to engage, empower, and educate the people of Knoxville, specifically those living in the East Knoxville Food Desert, in food related issues and activities.

The gardens, greenhouses, orchards, and livestock areas are the parts of the Five Points Community Food Center that engage people in the production component of the food system. The seed bank, honey-house, cellars, drying space, and kitchens engage people in the processing, preserving, and cooking of food. A large interior communal dining area and exterior seasonal pavilion and plaza provide a convivially eating atmosphere for the consumption component of the food system. The compost and grey water systems used for waste disposal are visually expressed within the facility to remind guests waste is an important part of the food cycle. When guests participate in applying finished compost back to the landscape their engagement in the food system is complete and can begin all over again.

The Community Food Center requires many employees, volunteers, and participants to make it a successful project. If members of the immediate community cannot be identified to run the center at the beginning of the project development then professionals familiar with the variety of programs included at the center will be utilized. The professionals will then train employees from the neighborhood and greater community. The goal is to have the entire Community Food Center operated by the community members it serves. Funding for job training for this transition can be

provided through Empowerment Zone money. Managerial, facility management, outreach program coordinators, and kitchen and food production jobs will provide a multitude of economic empowerment opportunities.

Participation in food growing activities fosters a sense of empowerment and ownership for individuals of the neighborhood. The incubator kitchens assist small business ventures, which are also supported by the market spaces where products can be featured at the interior market and seasonal farmer's market held on the plaza. The market operates as a cooperative, which keeps capital within the local economy and provides investment for future endeavors.

Educational opportunities for people of all ages are available in every space of the center. Training for growing food in a sustainable system is available, as well as in traditional methods for food preservation. Visitors can learn nutritional information as they help prepare and cook healthy meals in the main kitchen. Local and seasonal foods are available to reintroduce the community to foods often overlooked and underused. The incubator kitchens double as demonstration spaces for food workshops. The library provides a small, but comprehensive selection of literature related to food issues, cooking, and gardening. The auditorium is used for films, lectures, and large scale cooking demonstrations; it also can be used for other public events.

There are currently a few programs in Knoxville that address food access issues within the urban center. The Second Harvest Food Bank of East Tennessee, Market Square Farmer's Market (which now accepts SNAP benefits), the Knoxville Area Rescue Ministries Abundant Life Kitchen, and Beardsley Farm all increase access to fresh food for inner city neighborhoods. The Five Points Community Food Center contributes to this issue, but provides a larger variety of food related activities that, like a permaculture system, uses an integrated approach to improve negative problems in a food desert. If one program is not immediately economically successful or does not provide appropriate social improvement, the other programs can absorb the loss and still maintain overall sustainable social, ecological, and economic change.

Place: Five Points, East Knoxville, TN

From downtown Knoxville four distinct areas stretch in each cardinal direction. South Knoxville, across the Tennessee River, has a general country feel with its large tracts of wooded and agricultural land. West Knoxville stretches down Kingston Pike with one shopping mall after another visually combating for driver's attention. Mini-mansion filled West Knoxville neighborhoods of lawn worshipping homeowners lack any sort of cultural identity. North and East Knoxville are the oldest parts of town with both areas housing many historic homes. They both have similar beginnings—as agricultural homestead communities that were eventually annexed into the city. The current main difference between the two neighborhoods is the ethnic mix of their residents. North Knoxville has become predominately a white residential area, and East Knoxville is predominantly made up of African American and Hispanic citizens.

East and North Knoxville were not always segregated in this way. East Knoxville grew out of a small community known as Shieldstown that lied on the eastern bank of First Creek. John Shields developed this area in the middle of the 19th century. His land stretched from Howard Street (now known as Linden Avenue) to Bertrand Street. The first homes in the area were built on Bertrand, Olive, Linden, and Jessamine Streets, and McCalla Avenue. Magnolia Avenue did not exist at the time; Park Avenue, its predecessor, went only from Broadway Avenue to First Creek (Brewer, 9). Many other subdivisions were developed adjacent to Shieldstown during this era, and in 1907 they were incorporated into Knoxville and all generally became known as Park City.

The Park City area was home to many prominent Knoxvilleans during the 19th and 20th centuries. The neighborhoods were vibrant with parks, schools, and churches. A diverse mix of people all lived within proximity of each other, which contributed to a variety of thriving family-owned businesses. Many of these businesses were located along Vine Avenue, like Easley's Grocery and Sylvester McBee's Fruit Stand (Figures 13 & 14). Where Vine Avenue met Central Avenue marked the Bowery District (today known as the Old City), which was home to many minority residents and several African American owned businesses (Figure 15).



Figure 13. Easley's Grocery Store, 1112 East Vine Avenue. (Brewer, 88).



Figure 14. Sylvester McBee's Fruit Stand, 701 East Vine Avenue. (Brewer, 90).



Figure 15. Businesses in the Bowery District, 1950s. (Brewer, 86).

East Knoxville used to be connected to downtown with a walkable street block pattern (Figure 16). First Creek was the only existing physical barrier between downtown and East Knoxville. It flooded often, and in the late 1950s and 1960s was built over close to the city center for the construction of James White Parkway and Interstate 40. This new construction controlled the flooding that had occurred and was part of a larger overall urban renewal project that wiped out the majority of African American neighborhoods and businesses in the Bowery District, along Vine Avenue, and many other East Knoxville streets. Minority residents were displaced and their businesses did not survive the transition. Most people moved farther east into Park City neighborhoods. Vine Avenue was cut off and became known as Summit Hill Avenue.

After the creation of Interstate 40 and James White Parkway East Knoxville began to slowly deteriorate. The physical separation from the city fabric left East Knoxville neighborhoods cut off from services and made getting to other parts of town more difficult and time-consuming. This turned the area into a food desert (Figure 17).

The East Knoxville Food Desert Map depicts the three grocery stores that currently serve the entire East Knoxville area and a majority of North Knoxville as well. One Kroger grocery store is located on Broadway Avenue and another on Asheville Highway is directly adjacent to a Food City. The large white void on the west side of the map is composed of the Interstate system, Hall of Fame Drive, and James White Parkway.

The main Knoxville Area Transit (KAT) routes that run to these grocery stores are noted with red lines and depict how difficult it is for residents to complete basic grocery shopping if they rely on public transportation. From the center of the Magnolia Avenue corridor area the distance to each store is between 2.5 and 3 miles. By car each distance only takes under ten minutes of travel time, however about forty percent of the residents of this area do not own a vehicle, making walking and public transit the main means of transportation. There are two KAT bus routes that connect the Asheville Highway Kroger: the #31 Magnolia Avenue bus runs from downtown Knoxville through the Burlington neighborhood and back, and the #90 Crosstown bus runs down Martin Luther King Jr. Avenue parallel to the Magnolia line. Both routes run every half hour during the weekday and hourly on the weekend making bus travel to and from the grocery stores incredibly time-consuming.

Accessing the Broadway Avenue Kroger, which in physical terms is the closest grocery for most residents, is more complicated by bus. One must take the #31 bus toward downtown and transfer at the transfer point in front of the City County Building onto the #22 Broadway Avenue bus or get off on Magnolia Avenue at the Gay St. intersection and walk to the catch the #22 on Broadway Avenue after it has left the transfer point. The transportation time to and from the store is around an hour for this direction as well. Figure 18 shows all of the bus routes available to residents in this area and further demonstrates how difficult public transport is for grocery shopping because the buses run from downtown through large tracks of residential areas. The Five Points Community Food Center site is highlighted in dark gray near the center of the image.

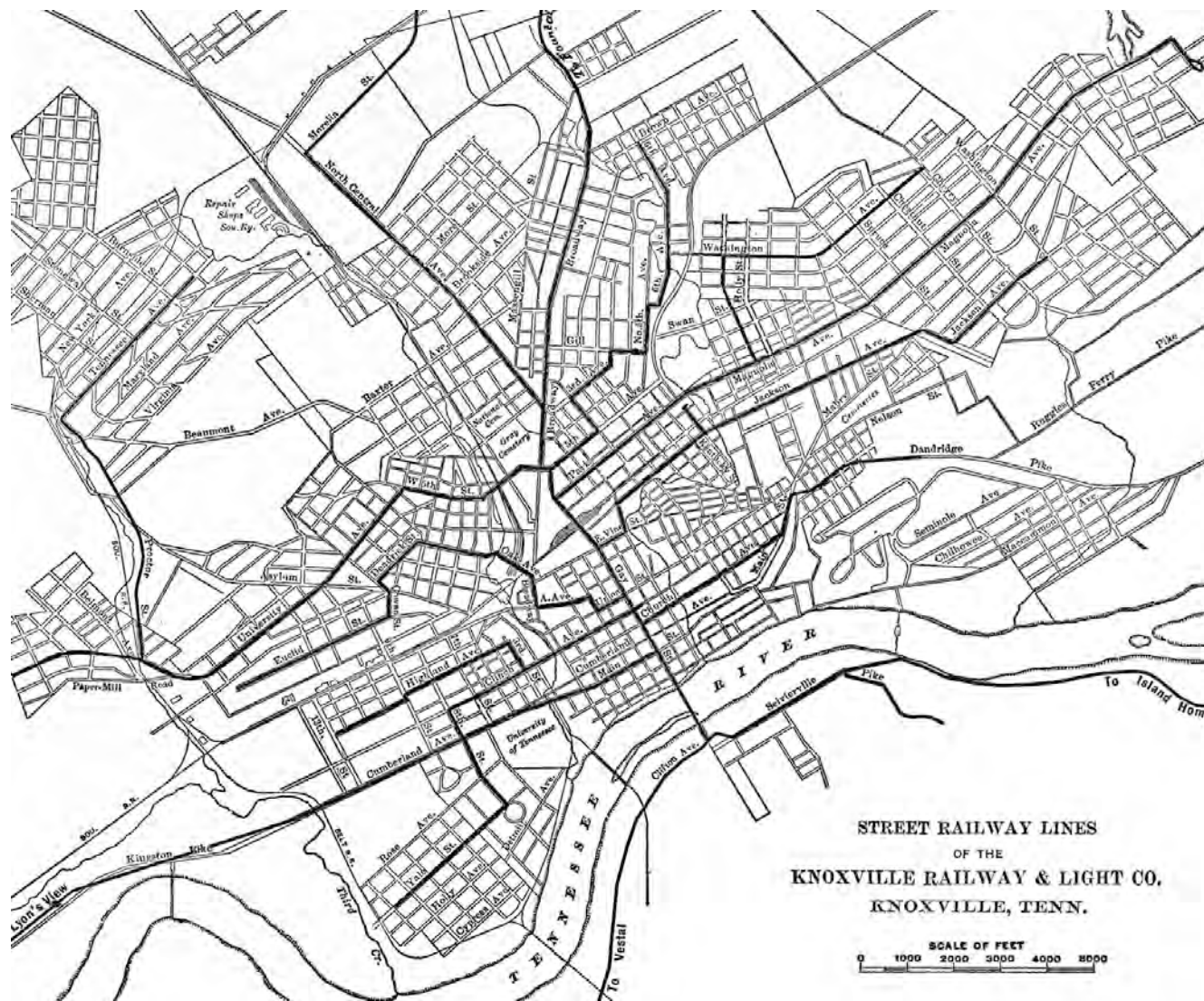


Figure 16. 1913 Map of Knoxville, Tennessee. (http://www.lib.utexas.edu/maps/mcgraw_electric.html).



Figure 17. East Knoxville's Food Desert. (Author).



Figure 18. Knoxville Area Transit routes in East Knoxville. (Author).

The Magnolia Avenue corridor borders three main neighborhoods. Parkridge lies to the northwest of Magnolia Avenue, Burlington to the northeast, and the Five Points neighborhood to the south. Figure 19 shows how these neighborhoods do not have a grocery store to provide fresh food for them and most rely on the disproportionate number of convenience shops. The outlined site for the Five Points Community Food Center shows how this facility serves all three main neighborhoods along the Magnolia Avenue corridor. It is located at the heart of the Five Points neighborhood and directly within a redevelopment zone, which is part of a larger 16-mile Knoxville Empowerment Zone. It also lies directly adjacent to the 500-unit Walter P. Taylor homes, a public housing area that could benefit from the services provided by the facility.

The East Knoxville area generally has higher poverty rates than the rest of Knoxville. Specific statistics for the Five Points area are as follows: The median household income in 2008 was \$31,988 for all of Knoxville; in Five Points it was \$13,284. The percentage of the population below the poverty level in Five Points is 44.6%, where as it is around 20.8% for the total Knoxville population. There are 21.1% of single-mother households in Five Points and only 9.2% in all of Knoxville. The average number of cars owned by an apartment dweller in Five Points is .7 and it is 1.2 in the rest of Knoxville. (Urban Mapping, Inc.). This data shows supports the social and physical evidence of the neighborhood that the residents here are living in a food desert. Low-income and the lack of mobility pose significant barriers for the residents of Five Points to acquire healthy food.

In 1999 Knoxville was designated as one of 15 areas qualifying as a federal Empowerment Zone, which is the largest federal grant program for community revitalization. The purpose of the program is to stimulate the creation of new jobs, to empower low-income people and families to become economically self-sufficient, and to promote revitalization of distressed areas.

After 1999 several projects were formulated in attempts to revitalize East Knoxville neighborhoods, but it was not until 2006 that any significant project was realized. The Five Points Village Shopping Center was completed in 2006. It was developed by Knoxville native Leroy Thompson's company BDT Management and

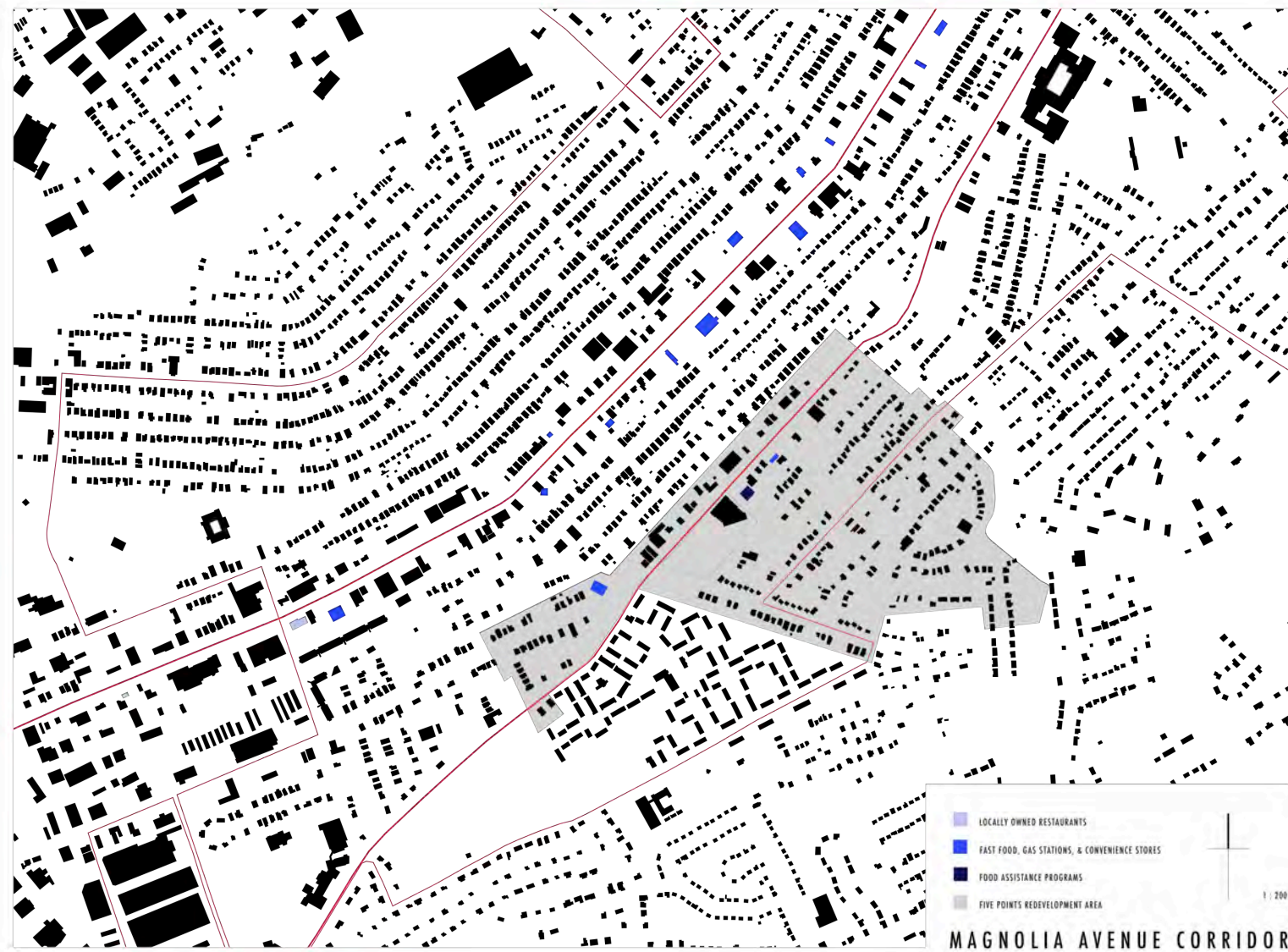


Figure 19. Magnolia Avenue Corridor in East Knoxville. (Author).

Development LLC (Harris). He funded the project at 2410 Martin Luther King Jr. Avenue with his own funds, taxpayer money, city and county government funds, Empowerment Zone funds, and money from KUB (Harris). The anchor retail space for the shopping plaza was a 20,000 square foot IGA (Independent Grocers Alliance) affiliate grocery store called Metro Village Market, which Thompson co-owned with Norman Wright. Wright had run several grocery stores throughout Knoxville in the past as co-owner of Cox & Wright grocery stores. They were family owned businesses. There used to be four in Knoxville including two in the East Knoxville area.

This six million dollar project was meant to act as a catalyst for area investment, increase property value, create jobs, and increase spending in the inner city. In addition to the grocery store 48,000 square feet of additional retail space was created. The first tenants were a Wells Fargo Home Mortgage Office and a Knox County Clerk Office. The grocery store offered produce, seafood, deli items, and the typically dry and canned goods (Harris). At its opening in May 2006, Thompson expressed interest in more than just turning a profit. He wanted young workers to learn entrepreneurial skills at the grocery while working to improve their community.

Although a great attempt to provide food access in a food desert neighborhood the facility unfortunately only stayed open for eight months. The reasons for its failure were unclear, but ranged from alleged high prices to the difficulty in changing entrenched shopping patterns (Gibson, 2007). Leroy Thompson also admits they underestimated the problems of the Five Points Neighborhood that threatened the success of the plaza, specifically issues posed by the nearby Walter P. Taylor public housing complex. "What we learned is it's going to be very difficult to attract the type of quality retail outlets that we want until we deal with some of the peripheral issues," said Thompson (Gibson, 2007).

Walter P. Taylor Homes is known for its high crime rate, which creates difficulties in attracting potential investment, customers, and real estate in the neighborhood. Knoxville's Community Development Corporation (KCDC), which owns the homes, agrees that for change to be successful in the area the public housing should be removed and replaced with affordable single-family homes. This is the strategy KCDC used for the College Homes housing project in the Mechanicsville area (Gibson, 2007).

The Mechanicsville housing program has been created many positive changes for the area; retail has slowly been returning including the recent opening of a major grocery store.

The Five Points Village Plaza is now known as the Harvest Plaza because it houses the Eternal Life Harvest Center—an area church that has a variety of community outreach programs. Since the closer of the Metro Village Market, the Wells Fargo and County Clerk offices have both left. Besides the church, the only other occupant on the site is a gas station and its associated convenience store, which has become just another space for processed food in the East Knoxville food desert. (Figures 20 & 21). Placing the Five Points Community Food Center on an old grocery store site is a unique opportunity to pick up where the Metro Village Market failed. The integrated approach to food issues that the center provides will ensure a greater success than its predecessor.

Figure 22 shows an over view of the site. The apartment buildings of Walter P. Taylor sit in large blocks to the south of the site. A .25 mile comfortable walking radius line has been circumscribed around these homes to demonstrate how difficult is it currently for these residents to reach healthy food sources. The buildings highlighted in medium blue show the venues where processed food is available. Any produce, dairy, and meat at these retail outlets are overpriced making it more convenient to eat cheap, unhealthy food. During site observation I saw many elderly residents pushing shopping carts from their home at Walter P. Taylor down Martin Luther King Jr. Avenue to a Walgreens store six blocks away and laboriously caring there items back home.

The Five Points Community Food Center (FPCFC) is located within walking distance of residents of Walter P. Taylor and is accessible by both major KAT bus lines (depicted with red lines, with bus stops shown as red dots). The dark blue building on Figure 22 is the Love Kitchen, which has been serving food to those in need from this location since 2001. Many services of the FPCFC and the Love Kitchen are similar and it is anticipated this organization could be absorbed into FPCFC and would enjoy the use of new equipment and a larger space.



Figure 20. Bird's Eye View of site with old Metro Village Market building. (www.bing.com/maps).



Figure 21. Parking lot of Harvest Plaza looking south toward Walter P. Taylor Homes. (Author).

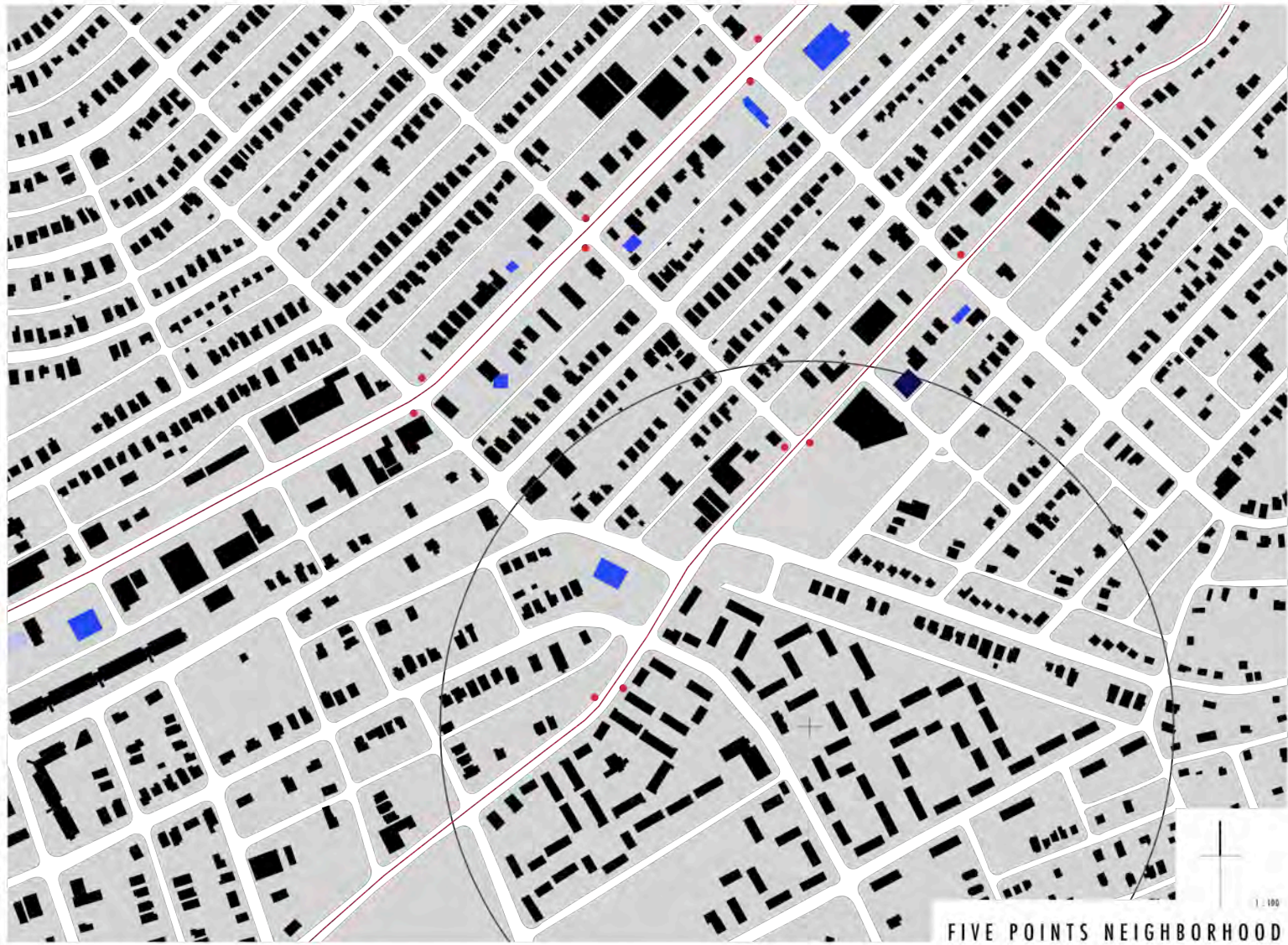


Figure 22. Five Points Neighborhood Site Map. (Author).

Program: Grow, Preserve, Cook, Share

The architectural program is organized by the food activities of the food axis that take place under the broad categories of growing, preservation, cooking, and sharing. (Refer to Figures 23 to 30 located in the Appendix).

Growing: Includes all the spaces related to food production—the landscape, orchard, greenhouse, and animals spaces, as well as the greywater, rainwater, and compost systems. The Five Points Community Food Center will serve an average of 100 citizens per day, which requires ample spaces for producing a variety of foods.

The most important space of the food growth cycle is the composting area, since healthy food cannot be grown without healthy soil. From the end of the food cycle, as food scraps and waste come from the kitchen and dining areas, the food is collected and converted into compost in thirteen compost bins. The substantial space allotted to composting allows for the center to collect other waste from neighborhood homes to divert it from the waste stream while teaching people about the benefits of composting.

The other main soil-building component is the growing of grain. The grain will be used for the bakery, and the straw after harvesting will be returned to the soil to increase organic matter. Chickens and ducks are important to the soil building system as they eat unwanted bugs and defecate on the soil adding manure. There is not a current designed facility for goats and rabbits, but these animals could easily be added to the system in the future, as goats are good for weed management and rabbit manure has the highest ratio of nitrogen out of all livestock manure.

Over three and a half acres are dedicated to food production on the site. The terraced topography provides a variety of microclimates for plant growth. The landscape is constantly in flux, as it reflects the climate, season, and specific environmental context of the site. An orchard consisting of a variety of trees is spread around the west and south areas of the site to act as a windbreak and block a portion of summer sun. Common and useful fruits and nut trees are used, with a heavy focus on native trees. Unusual varieties, such as pawpaw and persimmon, offer educational opportunities to people who are unfamiliar with native edibles.

The main pedestrian path to the Community Food Center from the southwest to the northeast follows an edible narration beginning with a micro forest community of plants in the southwest corner, followed by a prairie area where grain for the facility is grown, and then low lying plots until the landscape blends into the organized planters of the plaza near the main entrance. The community garden plots to the south of the entry plaza are a transition between the most public part of the landscape and the semi-public section of the landscape. There are 132 garden plots, which will serve one out of two families at Walter P. Taylor Homes. Each plot is eight by eight feet, which could easily be split between individuals and small families. The community garden plots and edible narration walk are fed by an irrigation system that functions from rainwater collected from the roofs and also helps divide the landscape spaces.

On the ground level facing the south is a row of greenhouses. These spaces are used for starting seedlings and growing plants in the winter. The terrace to the dining area becomes the roof of the greenhouse and the railing is a planter filled with herbs for the kitchen. Rainwater is collected from the sloped glass of the greenhouse and captured below to feed an aquaponics system that houses tilapia and perch. Water used for the greenhouse plants on the stacked shelves also filters down into this aquaponics system.

Fish and edible aquatic plants are also kept in the grey water filtration ponds. Moist loving edibles like elderberry are planted around the southwest perimeter of the greywater pond to protect wildlife from afternoon sun by providing a cool microclimate and windbreak. Ducks spend most of their time in this area and at night are housed on the southeast side, as are the chickens in their henhouse.

The apiary is also located in the southeastern corner of the site. Twenty beehives face southeast for morning sun exposure. The apiary has abundant sources of nectar and pollen within one mile of the beeyard, a source of clean water within .25 miles, good air circulation, and protection from direct winds and afternoon sun. The apiary is accessible by vehicle from the loading dock and protected visually from the street by a high stonewall to prevent vandalism and theft. Bee interaction between people is kept at a minimum because the apiary is located in the semi-public zone.

Preserving: Includes the root cellars used for traditional winter crop storage, the seed threshing, processing, and storage area, and the drying space located under the trusses over the main kitchen space. It also involves any space utilized for processing raw ingredients for long-term storage, such as the honey house, main kitchens, and demonstration kitchens.

Like the compost area for soil production, the seed bank is one of the most important parts of the Five Points Community Food Center. It is located on the ground level along the circulation corridor behind the greenhouse spaces. Built into the topography of the site naturally keeps the temperatures cool required for seed preservation. The bank that shares a wall with the greenhouse space showcases what species are currently being preserved at the facility. Visitors can circulate down the corridor reading about different plants and pulling out individual drawers to view the seeds. The opposite wall holds the public seed bank where anyone can place seeds to share in the various nooks and take seeds that other visitors have left. Some of the Center's seeds will be shared throughout the year as well.

The honey house is on the main level but adjacent to the apiary for convenient extraction and processing of honey. The kitchen spaces, including the bakery, will continuously be filled with life as food is pickled, baked, fermented, and canned. The heat from the main kitchen will be used to speed up drying of bulbs and seeds before storage in the rafters of the high truss space.

Cooking: Includes the main production kitchen that has the major prep and storage areas for daily cooking and also houses the bakery, the two business incubator/demonstration kitchens, and the seasonal cooking pit in front of the entrance.

The main kitchen, although the production kitchen for the dining hall is larger than restaurant kitchens because community engagement is at the heart of every activity at the Five Points Community Food Center. Four large prep tables are located in the center of the space for communal chopping, peeling, and shucking. The circulation corridors though the space are larger to accommodate large groups of visitors and volunteers as well as provide space for handicap accessibility. The space is open to allow visitors to view the activity of processing and cooking the food grown on the site.

Each demonstration kitchen is also set up with the community aspect in mind. A single large table that accommodates comfortably twelve people is used to engage participants together. These spaces are available to rent when workshops are not being for small food businesses. Large interior windows engage visitors in what is happening in the space.

The seasonal cooking pit at the front entrance will be used through the summer for neighborhood barbeques. Smoke pits appear all summer long in East Knoxville, as neighbors, churches, and restaurants bring this activity outdoors bring vibrant life to the streets. By providing this space on the front porch of the Five Points Community Food Center more people can get introduced and involved with the types of experiences and services the facility provides.

Sharing: The dining hall is the main gathering space of the center. Long linear tables make every meal a community one to connect people from diverse backgrounds. The dining space overlooks the landscape from which the meals are prepared connecting visitors to the land.

The market space fronts Martin Luther King Jr. Avenue to provide customers easy access to this element without having to traverse the whole facility if they do not wish to. The market offers produce and other products made on site and will partner with local farmers to provide a larger variety of products (such as meat and dairy) to the area.

The auditorium space and the library are areas where sharing is not related to the consumption of a meal, but to the consumption of knowledge about food. Workshops, films, lectures, and small groups can use these spaces all year round to meet and educate each other.

Supporting Spaces: A small office within the entrance lobby provides visitors with information and is where people can rent kitchen spaces or borrow tools for use in the community garden plots. A workshop on the ground level supports the overall facility, especially the landscape spaces. Laundry, mechanical rooms, restrooms, and storage space are also included.

Design: Landscape, Kitchen, Table

The design concept focuses on the three main spaces of the food axis: the landscape, kitchen, and table. The landscape is functionally an important component to the project, but is also used to enhance the overall experience at the Five Points Community Food Center. As guests walk around the site the landscape will offer tactile, scent, and visual experiences. The landscape will be in constant transformation as it changes with the seasons with the facility a permanent fixture in the north corner of the site.

The kitchen is the heart of the building. Its hierarchical importance is expressed to the neighborhood through a double height space topped with a steep double inverted truss system. This pitched cathedral like space is meant to fit in with the vast number of churches within the area. The kitchen includes the bakery, which provides a literal iconic hearth rooting the building to the landscape through the construction of an eleven-foot diameter brick bread oven.

The bakery is the first space seen when visitors come through the entrance. Visitors can gather around the counter that surrounds the bakery to drink coffee and eat fresh bread or just enjoy the smell of fresh bread baking and the action of the bakers. The market space, library, and auditorium are accessed from the left of the bakery, but the main sequence for a typical visitor would be to the left down the corridor toward the dining area.

As one moves down the corridor to the dining room the demonstration kitchens can be viewed through windows to the right and the main kitchen cooking area can be viewed to the left. The kitchen is set up with a single-line cafeteria serving stations. Patrons move along the kitchen edge viewing the cooking activity while selecting their food choices. The tables provided for dinners in the large double height space promote a convivial atmosphere because everyone must dine together—no individual tables are provided. The tables penetrate the south façade reaching out to the landscape to connect the dinners to the soil where the food they are eating has come from.

As one exits the dining room, the dish pit, recycling and composting station, and bamboo greywater system are all spaces the diner must interact with to dispose of food

waste. These spaces remind diners of the cycle of food. To exit to the landscape one can either go out the doors onto the balcony in front of the tables or down the stairs through the seedbank and greenhouse space to reach the lower level gardens.

Although I have described the main linear path for a visitor to the Five Points Community Food Center, the sequence does not necessarily unfold in a linear path. There are several paths for users depending on the food activity taking place. These activities make up a web of connections that is functions like a permaculture system. A single main linear path would reflect the paradigm of the industrialized agricultural system. Rather than rooms strong along a path, the activities that occur in the landscape, kitchen, and at table are considered as activity arenas as Elizabeth Cromley used to depict activities of a domestic food axis.

Spatially overlapping food system activities expose visitors to several components of the food cycle as they move through the center and participate in growing, preserving, cooking, and sharing. The center engages visitors in the food system through a full sensory experience, with a major focus on tactile, taste, scent, and visual qualities of food. Layers of sequences reflects the multiple types of transformations available along the production-consumption continuum. Relationships such as seed to plant, raw ingredient to cooked, kitchen to table, landscape to kitchen, and waste products to new soil are all expressed as full sensory experiences in the Five Points Community Food Center.

Resolution: Serving a Food Desert

The Five Points Community Food Center's overall goal is to provide access to fresh, healthy food for residents of a food desert. Yet it accomplishes so much more. By focusing on the interrelationships and interdependence of living things and their environment it creates lasting positive economic, social, and environmental change in the area. It is the antithesis of the modern scientific approach to problem solving that isolates and separates parts of a system into individual components ignoring the relationships between them.

By participating in the spaces that engage, empower, and educate visitors can improve themselves, their families, and their communities. People young and old can participate in programs at the Five Points Community Food Center. The site also serves as a model for other communities to start something similar in their towns and urban areas. Architects and planners can no longer ignore food issues. To create lasting change we must challenge through policy and practice new integrated food systems to feed urban areas.

References

- American Planning Association (APA). "Policy Guide on Community and Regional Food Planning." 11 May 2007. *American Planning Association*. 4 August 2010 <<http://www.planning.org/policy/guides/pdf/foodplanning.pdf>>.
- Berry, Wendell. *The Unsettling of America*. (Sierra Club Books: San Francisco, 1986).
- Brewer, Becky French, and Douglas Stuart McDaniel. *Images of America: Park City*. (Arcadia: Charleston, SC 2005).
- Carson, Rachel. *Silent Spring*. (Houghton Mifflin: New York, 2002).
- Cromley, Elizabeth C. "Transforming the Food Axis: Houses, Tools, Modes of Analysis." *Material History Review* 44 (1996): 8 – 22.
- Duruz, Jean. "Home Cooking, Nostalgia, and the Purchase of Tradition." *Traditional Dwellings and Settlements Review*. XII (2001): 21 – 32.
- "Episode 102." *Jamie Oliver's Food Revolution*. ABC. 26 March 2010.
- Fernandez-Armesto, Felipe. *Near a Thousand Tables*. (The Free Press: New York, 2002).
- Franck, Karen A. *Food + Architecture*. (Academy Press: London, 2003).
- Franck, Karen A. "Food for the City, Food in the City." *Architectural Design* 75 (2005): 35 – 42.
- "Five Points neighborhood in Knoxville, Tennessee (TN) 37914, 37915, 37917 detailed profile." *Urban Mapping, Inc*. 15 August 2010 <<http://www.city-data.com/neighborhood/Five-Points-Knoxville-TN.html>>.
- Gallagher, Mari. "Food Desert & Food Balance Community Fact Sheet." *Mari Gallagher Research and Consulting Group*. 15 August 2010 <http://marigallagher.com/site_media/dynamic/project_files/FoodDesertFactSheet-revised.pdf>.
- Gibson, Mike. "Five Points Forges On." 23 August 2007. *Metro Pulse*. 15 August 2010 <<http://www.metropulse.com/news/2007/aug/23/five-points-forges-on/>>.
- Harris, Roger. "Five Points Village Opens for Business." 17 March 2006. *The Knoxville News-Sentinel*. 15 August 2010 <http://www.redorbit.com/news/science/433484/five_points_village_opens_for_business/index.html>.
- Hayden, Dolores. *The Grand Domestic Revolution: A History of Feminist Designs for American Homes, Neighborhoods, and Cities*. (Cambridge: MIT Press, 1981).
- Hodgson, Petra Hagen, and Rolf Toyka. *The Architect, the Cook, and Good Taste*. (Birkhauser: Berlin, 2007).
- Hoppe, Emilie. *Seasons of Plenty, Amana Communal Cooking*. (Iowa State University Press: Ames, 1994).

- Horwitz, Jamie, and Paulette Singley. *Eating Architecture*. (MIT Press: Cambridge, 2004).
- Howard, Ebenezer. *Garden Cities of To-Morrow*. (London: Swan Sonnenschein & Co., 1902).
- Levenstein, Harvey. *Paradox of Plenty: A Social History of Eating in America*. (University of California Press: Berkley, 2003).
- Kimbrell, Andrew. *Fatal Harvest: The Tragedy of Industrial Agriculture*. (Island Press: Washington, 2002).
- King, F. H. *Farmers of Forty Centuries: Organic Farming in China, Korea, and Japan*. (Dover: New York, 2004).
- Kostof, Spiro. *The City Shaped: Urban Patterns and Meanings Through History*. (Little, Brown, & Company: Canada, 1991).
- Lappe, Frances Moore. *Diet for a Small Planet*. (Random House: New York, 1971).
- Le Corbusier. *The City of To-Morrow and Its Planning*. (Dover: New York, 1987).
- Marx, Leo. *The Machine in the Garden: Technology and the Pastoral Ideal in America*. (Oxford University Press: New York, 1964).
- Mollison, Bill. *Permaculture: A Designer's Manual*. (Tagari: Tyalgum, Australia: 1988).
- Morrow, Rosemary. *Earth User's Guide to Permaculture*. (Kangaroo Press: Australia, 1994).
- Mumford, Lewis. *The City in History*. (Harcourt: New York, 1989).
- Percival, John. *The Roman Villa*. (London: Pitman Press, 1976).
- Pollan, Michael. *The Omnivore's Dilemma: A Natural History of Four Meals*. (Penguin Group: New York, 2006).
- Pollio, Vitruvius. *The Ten Books on Architecture*. (Dover: New York, 1960).
- Schlosser, Eric. *Fast Food Nation: The Dark Side of the All-American Meal*. (HarperCollins: New York, 2002).
- Standage, Tom. *An Edible History of Humanity*. (Walker & Company: New York, 2009).
- Steel, Carolyn. *Hungry City: How Food Shapes Our Lives*. (Random House: London, 2008).
- Steel, Carolyn. "How food shapes our cities." *TED Talks* July 2009. 4 August 2010
<http://www.ted.com/talks/lang/eng/carolyn_steel_how_food_shapes_our_cities.html>.
- Teilhard de Chardin, Pierre. *The Phenomenon of Man*. (Harper Perennial: New York, 1975).
- Viljoen, Andre, *Continuous Productive Urban Landscapes* (Oxford: Architectural Press, 2005).

Wilkins, Jennifer, and Marcia Eames-Sheavly. "A Primer on Community Food Systems."
Cornell University Department of Horticulture. 15 August 2010
<<http://www.hort.cornell.edu/department/faculty/eames/foodsys/primer.html>>.

Appendix

INDUSTRIALIZED AGRICULTURAL SYSTEM



INPUT OF RESOURCES



PRODUCTION



PROCESSING



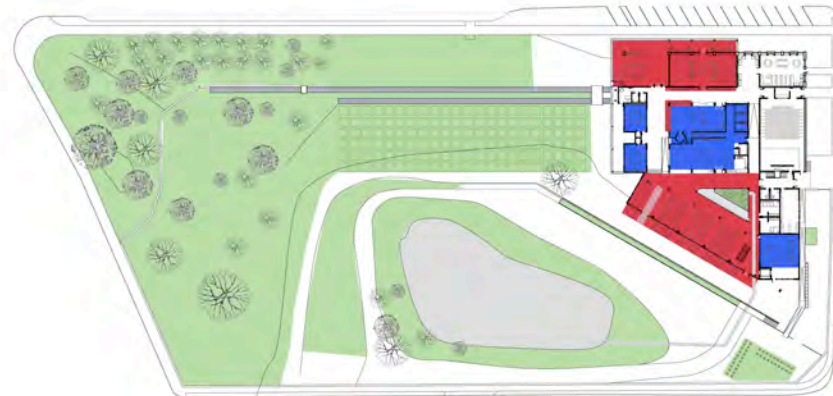
CONSUMPTION



OUTPUT OF RESOURCES



COMMUNITY FOOD SYSTEM



COMMUNITY FOOD CENTER

Figure 23. Food Systems Comparison. (Author).

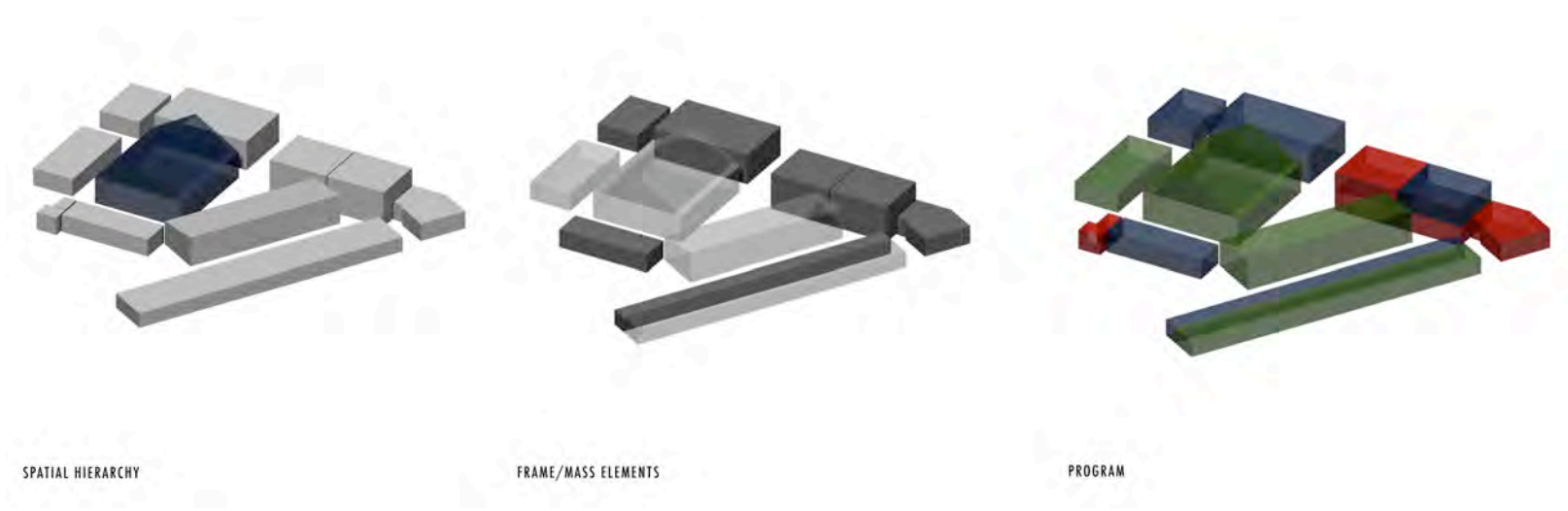


Figure 24. Project Diagrams. (Author).



Figure 25. Five Points Community Food Center Site Plan. (Author).

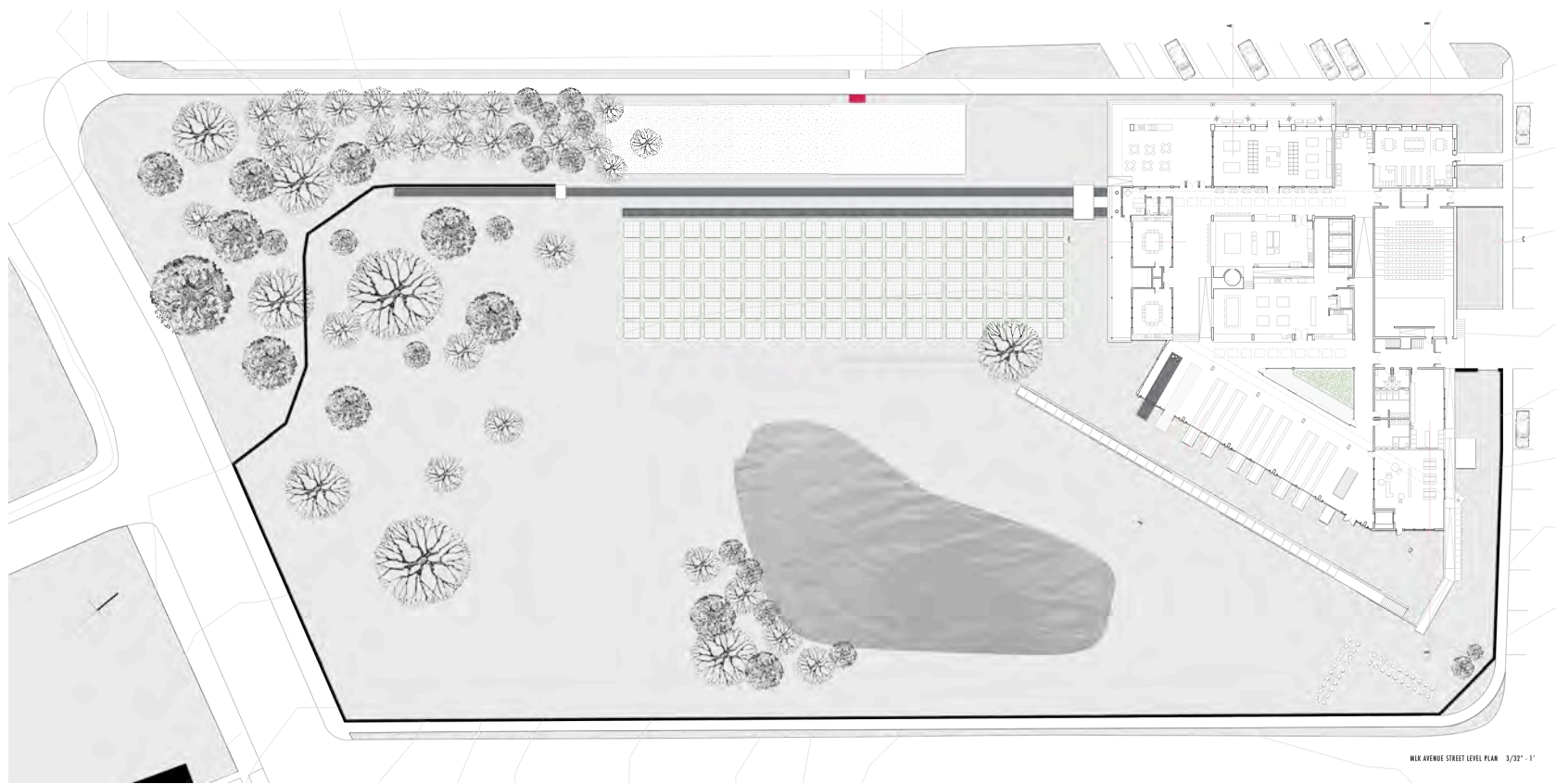


Figure 26. Five Points Community Food Center Street Level Plan. (Author).

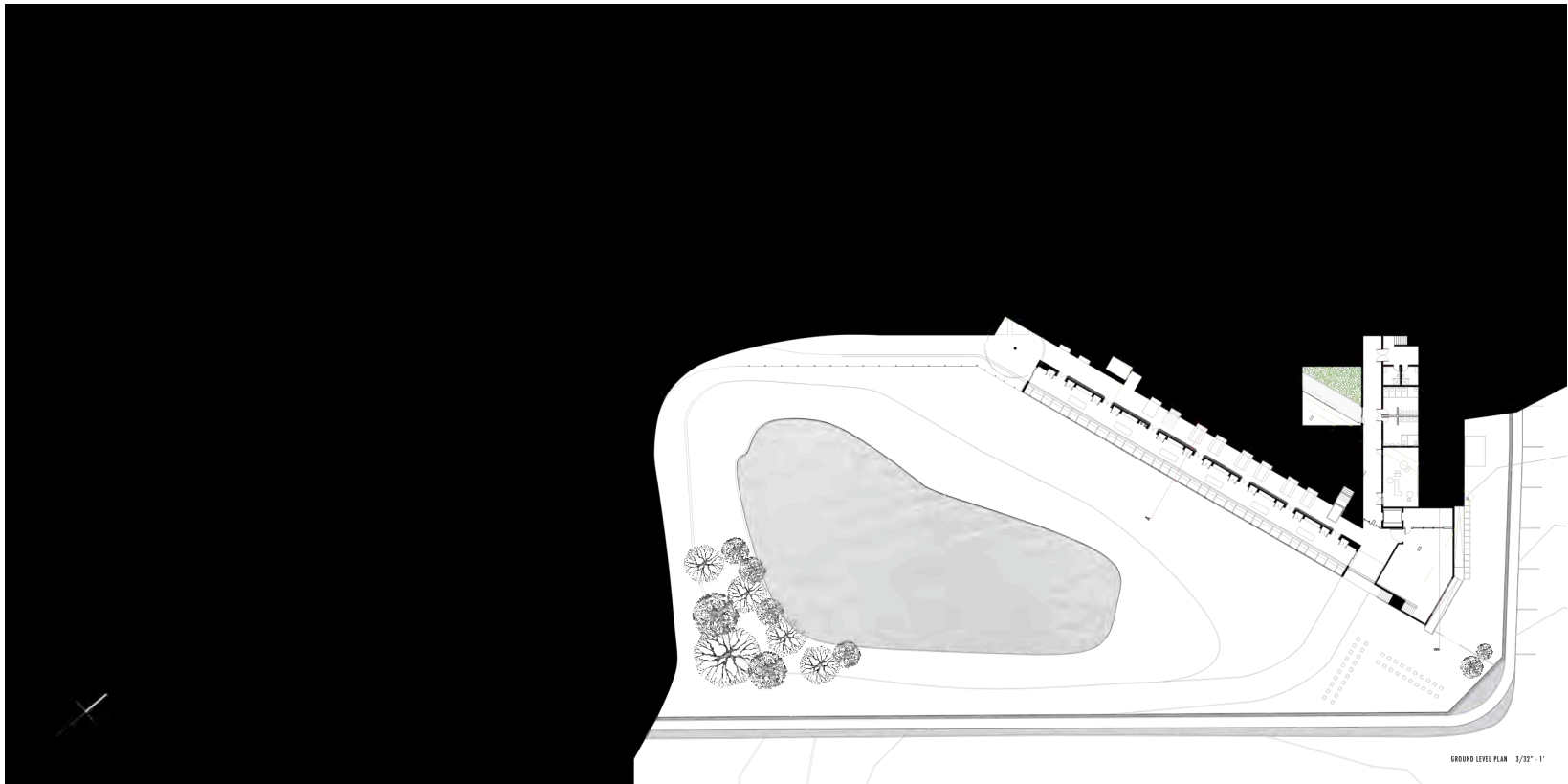


Figure 27. Five Points Community Food Center Ground Level Plan. (Author).

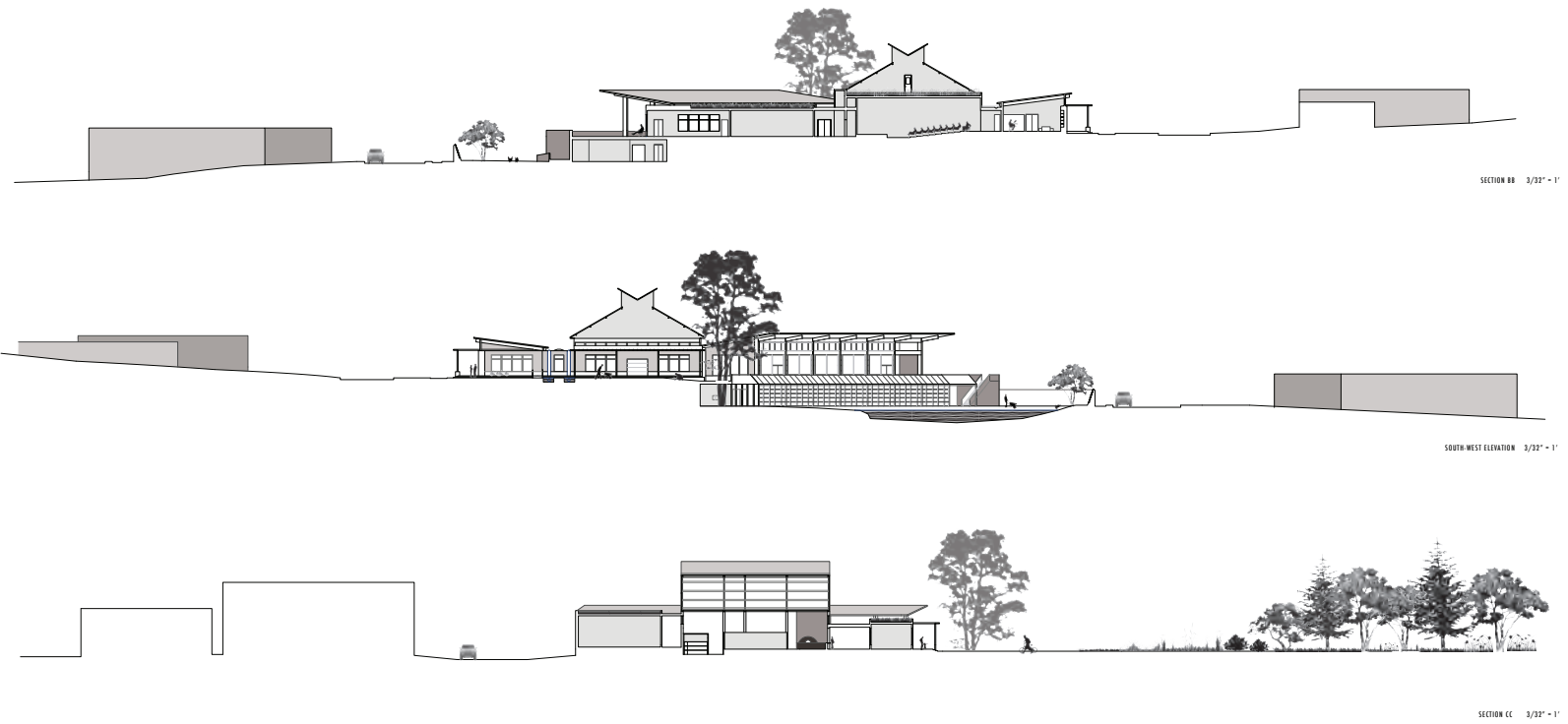


Figure 28. Five Points Community Food Center Sections and Elevations 1. (Author).

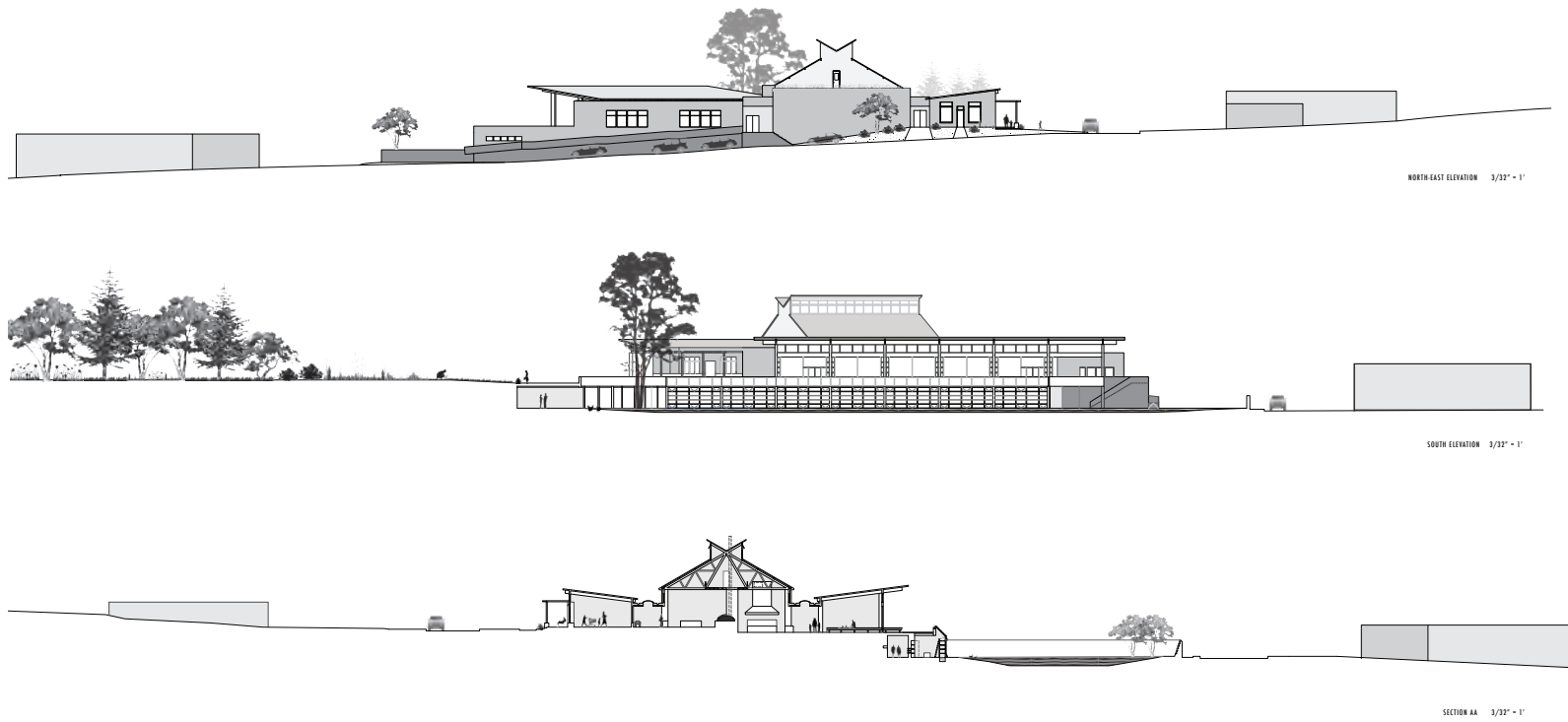


Figure 29. Five Points Community Food Center Sections and Elevations 2. (Author).



Figure 30. Five Points Community Food Center Martin Luther King Jr. Avenue Elevation. (Author).

Vita

Shannon Elliott is native to the wild, wonderful state of West Virginia. She has participated in a variety of educational programs seeking to combine her passion for ecology and architecture. The most profound was her experience during the West Virginia Scholar's Academy during the summer of 1998 on top of Spruce Knob. Since then she completed a Permaculture Design course in 2003 at the Farm in Summertown, TN, where she learned making compost can solve any problem. She served as an AmeriCorps volunteer in 2004 teaching inner-city school children about recycling, composting, and gardening. In the summer of 2006 she lived at Arcosanti in Arizona, which confirmed her conviction that society does not evolve from white-collar intellectuals espousing theories from behind a desk, but from the active implementation of ideas through the use of one's hands laboring under the sun. She completed two degrees at the University of Tennessee, Knoxville: a Bachelor of Arts in Interdisciplinary Programs focusing in Urban Studies with a minor in Geography (December 2006) and a Master's of Architecture degree (August 2010). She resides in Tennessee spending her time vermicomposting, growing food, and saving seeds.