

Agrihoods:
A contemporary planning strategy to shorten a community's food
supply chain

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Abstract

The Canadian food system, represented in the attitudes of both food corporations and consumers, currently functions as a footnote in a neoliberal agenda that does not consider its processes' environmental or social implications. With a lack of broad coordination of the activities that make up the global food system, professional planners have started to recognize that many facets of the food system influence most, if not all, planning practice.

A recent strategy employed by planners to align societal objectives through sustainable food systems is the implementation of "agrihoods" - master-planned communities designed around food or agriculture activities.

This research looks to determine whether or not the agrihood community design is successful in supporting a sustainable food system through the examination of two agrihood case studies and their abilities to foster and sustain a short food supply chain.

It is determined that agrihoods are effective in shortening the food supply chain associated with the local food system's production side. However, the residents or consumers in the agrihood communities are still participating in long food supply chains. It is recommended that a universal definition and standards be developed for any community using the term "agrihood" to enhance the design concept's overall sustainability and ability to foster sustainable local food systems

Foreword

This research was conducted in fulfillment of the requirement of York University's Master of Environmental Studies program to produce innovative research on a topic that showcases the interdisciplinarity and the broad relevance of the program's discipline.

With a keen interest in the intersections of food and urban planning, my research looks to highlight the importance of food in a holistic planning approach.

This paper applies the insights and skillset of a planner, learned throughout my coursework in the MES program, in approaching innovative solutions for a sustainable food system.

Table of Contents

Abstract	i
Foreword	ii
Table of Contents	iii
Table of Figures	iv
Introduction	1
Sustainable Food Systems	2
Food Supply Chains	13
Food System Planning	19
Agrihoods	22
Methodology	27
Case Studies	32
<i>Serenbe</i>	32
<i>Prairie Crossing</i>	46
Comparative Case Study Analysis	59
Conclusion	71
References	77
Appendices	88

Table of Figures

Figure 1.0	Table of the qualifying characteristics of each case study	P.29
Figure 2.0	Master plan map of Serenbe	p.40
Figure 2.1	Chart of face-to-face interactions of Serenbe resident purchases	p.45
Figure 2.2	Chart of extended interactions of Serenbe resident purchases	p.46
Figure 3.0	Master plan map of Prairie Crossing	p.50
Figure 3.1	Chart of face-to-face interactions of Prairie Crossing resident purchases	p.57
Figure 3.2	Chart of proximate interactions of Prairie Crossing resident purchases	p.68
Figure 4.0	Depiction of food activities in the case study communities	P.68 & 74

Introduction

Food plays a unique role in society as no matter one's gender, race, class, religion, profession, or values, the need for food is inescapable. Oddly, not many think about where their food comes from beyond the grocery store. Starting in the mid 19th century, the origin and production methods associated with food products became irrelevant concepts in the eyes of the consumer, which today, creates a lack of accountability and transparency from food producers. This relationship or lack of relationship between consumer and producer has made for a complex and lengthy food supply chain.

As consumers distance themselves from the food practices that affect their food prior to their purchase, quality control is lost. A lack of surveillance has led the food system to become increasingly wasteful, inefficient, and wrought with redundancy and social inequities. The Canadian food system, represented in the attitudes of both food corporations and consumers, functions as a footnote in a neoliberal agenda that does not consider its processes' environmental or social implications.

With little coordination existing between facets of the food system, professional planners have, in recent years, taken accountability for particular food functions, recognizing the significance of healthy food systems in a functional and sustainable society. This recognition by planners has led to the inception of *food system planning*, particularly in America, as a burgeoning branch of professional planning. This informal planning stream looks to approach broader societal goals of public health, ecological integrity, and social justice through a food lens.

A recent strategy employed by planners to align societal objectives through sustainable food systems is the implementation of “agrihoods.” Agrihoods are master-planned communities designed around core activities relating to food or agriculture that often look to create more sustainable lifestyles for residents while facilitating a sustainable food system.

An essential component of a sustainable food system is the design of the corresponding food supply chain. Typically, the longer the food supply chain, the more complex and wasteful the food system becomes. In an effort to determine whether or not the agrihood community design is successful in supporting a sustainable food system, two agrihood case studies are assessed for the abilities to foster and sustain a short food supply chain. Additionally, common themes are collected and explored in determining how the reality of agrihood communities match the objectives and understandings of agrihoods depicted in academic literature. Each theme is evaluated for its significance in creating a universal definition of agrihoods in the context of practical community planning and design.

Sustainable Food Systems

The current global food system is highly impersonal and industrialized, a transition that some scholars attest to the "Green Revolution" that took place in the 1960s (Patel, 2013; Rosset, et al, 2000, to name a few). The Green Revolution, to summarize, was an agricultural boom that took off in predominantly underdeveloped countries with existing agricultural economies - though North America participated as well (Rosset, et al, 2000). This boom, initiated by the breeding and distribution of wheat seeds that displayed a heightened response to chemical inputs and controlled irrigation, improved the yield-to-input ratio (ibid). The methods used to modify the wheat seeds were also employed on rice, corn, and many other cash crops. These seeds were quickly passed onto other continents to increase food production globally, bolster the global economy, and possibly reduce growing hunger rates around the world (ibid).

This agricultural transition marked a significant change in attitudes towards food production. Agricultural production began to hold financial promise for more than just the family farm on a massive global scale. The Green Revolution fostered massive corporate investments in an industry previously viewed as second-rate (ibid). Agricorporations and government entities were able to masquerade their hefty investments as philanthropic quests to solve the world hunger crisis. In Canada, with more investment came a centralization of the food system, which empowers a small number of agricultural and retail giants while reducing the number of viable small, local producers and retailers. The Green Revolution could be deemed responsible for transitioning food in the collective mind from a life source to a commodity.

Food commodification is essentially the foundation on which today's industrialized food system is situated (Vivero-Pol, 2017; Pollan, 2009; Ladner, 2011; Patel, 2013; Johnston, 2008). Food commodification is "the reduction of [foods] multiple values and dimensions to that of market price" and where "profit maximization [is] the only driving ethos that justifies the market-driven allocation of such an essential for human survival" (Vivero-Pol, 2017, p.3). Other analysts have delved deeper into understanding the global implications of the Green Revolution on hunger rates, economic stability, and social attitudes towards food (see Feder 1976, Perkins 1997, Ross 1998, Cullather 2010).

However, others attribute heightened food commodification to about a decade earlier during the post-war "industrialization" era. In reference to the changing food landscape, Gilson and Kenehan define the industrialization era as one that utilized technological advances (such as chemical, and biological) and mechanization to make mass food production possible (2019). This era created a momentous shift in the food industry as it happened alongside a significant

transition in societal norms. Women were the typical food purchasers and meal preparers until that point, and they started to become permanent fixtures in the workforce after being granted the privilege to work during wartime when men were overseas (Jaffe, Gertler, 2006). As a tactic to restore "natural" gender roles and draw women back into the kitchen and away from the workforce, convenience foods (for example, canned spaghetti dinners and boxed macaroni and cheese) were marketed towards women. They were meant to be exciting and innovative experiences for women in the kitchen (ibid). Though, incidentally, convenience foods also appealed to those women who *stayed* in the workforce and were experiencing shrinking amounts of free time. In only a few short years, convenience became the most prized selling feature of food items, above freshness, locality, or even health benefits (ibid).

The industrialization era saw food items treated like any other commodity by industry and eventually by consumers. Production processes favoured uniformity and efficiency (ibid). Society's contemporary expectations of perfect, pristine, consistent looking and tasting food (which is at odds with nature's tendency towards variety) stemmed from the industrialization era.

It seems that both industrialization and the Green Revolution worked in concert to create the aggressive form of path dependency on cheap, efficient, convenient, commodified food that holds the reins of today's globalized food system. The industrialization era saw changes in the attitudes and priorities of consumers, where the Green Revolution was a response to these shifts - significantly expanding the scale of food production. Ultimately, these notable transitions enabled the agricultural industry to become a serious player in the global economy.

Today's food system has stalled in this same industrialized and globalized state. The corporate-controlled, profit-driven food system currently in place is wreaking havoc on the social, political, economic, and environmental structures that support it. Today, consumers' food choices are not crafted by season, region, the existing range of options, or even taste preferences. Consumers' choices are defined by the bottom line of major food corporations. With the industrial shift came a drastic change in control over food production processes, relegating power held by farmers and other food laborers to agri-corporations (Patel, 2013).

Mounting corporate power weakens the Canadian food system in many ways. Six areas appear to be the most significantly affected by the globalized food system: *social, political, health, economic, ethical, and environmental*. The list of issues affecting today's food system is by no means exhaustive nor insular. There exist connections between any of the issues listed.

Social:

Unequal access to healthful foods are often represented by food deserts: urban neighbourhoods and rural towns without ready access to fresh, healthy, and affordable food (USDA, 2015). Food deserts are becoming a common issue plaguing urban, suburban, and rural communities (Shannon, 2016). They commonly exist in neighbourhoods that are unequally disadvantaged in the realm of most other social services - namely low income and racialized communities (ibid). The inaccessibility of healthful food in these communities is quite easily exposed by an evident inverse relationship between obesity rates and income levels prevalent in North America (Shannon, 2016; Ogden, et al, 2017). These issues arise when food is no longer considered a necessity, but a commodity, incentivizing major food retailers set up in areas where capital accumulation is at its highest. These corporations are businesses, after all, not social planners, and it makes for good business to market to the wealthy.

Food commodification has led consumers down the unfortunate path of commodity fetishism, which refers to the consumer's ability to demonstrate psychological and physical distance while prioritizing emotions and desires (Jaffe, Gertler, 2006). This phenomenon is class-based and where those with higher economic status fetishize and associate a higher status to certain foods that only the elite have the financial resources to attain (Johnston, 2008). As fetishization of food eradicates the view of food as a life-sustaining necessity and renders certain foods or diets as indicators of wealth, public perception changes towards those who identify as food insecure. The food-insecure are often labelled as lazy, inadequate, or unresourceful and regularly blamed for their circumstances (Power, 1999).

Research has shown that social eating behaviors (consuming meals with friends, family, or colleagues) can increase happiness, improve trust levels, develop social networks, and increase community engagement (Dunbar, 2017). Additionally, those that dine as a family show improved nutritional balance, enhanced psychosocial functioning, and even advanced literacy and language skills (Villares, Segovia, 2006). As consumers often look for meals that are the quickest or most convenient, seated meals shared as a group are slowly becoming an event of a past generation. In fact, 20% of meals eaten by North Americans are taking place in cars, so many of many of the hard social benefits of sharing meals together are being lost (Pollan, 2009).

Political:

Canada is experiencing rising rates of food insecurity. In Canada, there are approximately four million residents that qualify as food insecure (Robin, 2019). Many that identify as food

secure are just a few missed paycheques away from becoming food insecure (ibid). The volatility of one's food security status is a red flag of the Canadian capitalist political structure that disenfranchises and excludes particular subaltern groups based on race, gender, and class. Capitalism is at the root of *many* of the issues plaguing the contemporary food system (See: Welsh, MacRae, 1998; Slocum, 2006; Jaffe, Gertler, 2006; Clapp, 2014), but will not be unpacked here.

Those that identify as food secure, particularly those in urban centres, could be closer to food insecurity than they realize. Researchers estimate that most food retailers in major urban centres only have approximately three days of fresh food and up to seventeen days of all other food products available (Bristow and Kennedy, 2013; Medical Officer of Health, 2008). This issue is the result of complex trade agreements, far-reaching transport routes, and the involvement of many intermediaries in the food supply chain, which is discussed in further detail in the *Short Food Supply Chain* section of this paper.

The loss of food sovereignty has become a relevant issue for Canadian communities - particularly Indigenous communities. Regarding Indigenous communities, loss of sovereignty is attributed to widespread deskilling of traditional hunting, trapping, foraging, and food preparation skills caused by the residential school system and assimilation efforts enacted by the Canadian government for nearly a century (Coté, 2016; Hoover, 2017; Toews, 2018).

Other non-Indigenous communities, mainly farming communities, have also experienced deskilling due to industrialization's influence on production practices, leaving little room for traditional farming skills or even choices in crops (Braun, Beckie, 2014). The industrial system requires farmers to make use of modern inputs and equipment to produce enough volume to turn a profit. Many farmers have also transitioned to cash crops instead of whichever crops the generations before them may have planted - again to maximize profits (ibid). Additionally, the populations are decreasing as younger generations move towards more urbanized areas for work or to further their education, so traditional farming skills are not passed on to new generations (ibid).

The globalization of the food system has led to illogical and redundant trade patterns of food in Canada. Settlers originally colonized Canada as a resource exporter for settler homelands (Toews 2018). Exports included natural resources and agricultural products that the European countries either did not have the climate or space to produce themselves (ibid). The "provider nation" identity resonates with Canada today. For nearly a century, Canada has carried out redundant, resource wasting food trade patterns to satisfy trade agreements. There are many trade agreements where Canada imports the *same* items that are produced locally and exported.

Aside from the illogicality of these patterns, these agreements consume resources while creating waste and emissions that could be avoided with more strategic trade patterns (Saunders, 2018).

Health:

For decades Canadians have increased their consumption of hyper-processed foods. Increased accessibility and affordability associated with processed food is mostly responsible for this increase. Food corporations can reduce ingredient costs and extend a product's shelf life and therefore reduce waste through hyper processing and the adding of preservatives. Overconsumption of hyper-processed foods increases the consumer risk to the four main types of chronic non-communicable diseases: cancer, cardiovascular disease, diabetes, and respiratory diseases (Moubarac, et al, 2013; Fiolet, et al, 2018).

Many argue that hyperconsumption of processed foods is a result of a continent-wide and an increasingly globalized loss of food literacy and deskilling (Jaffe, Gertler, 2006; Kornelsen, 2009; Braun, Beckie, 2014). Consumers no longer understand seasonality, regionality, or general nutritional information about common food items. In North America, food waste expert and professional chef Dan Barber decries (North) America's lack of "national cuisine" as the precursor to a general loss of food literacy (Goldberg, 2015). He believes this absence renders North Americans susceptible to fleeting food trends without questioning health, environmental, or industrial impacts (ibid). Barber's theory explains the frequency and fervour for which North Americans adopt fad diets and blindly accept the gospel of "superfoods" without questioning the health implications or accuracy of the associated health claims.

The consumer's lack of questioning behind certain claims or practices is essential in the factory farm's success. Factory farm animal rearing, which frequently involves the administration of hormones and antibiotics to animals, is affecting (and diminishing) consumer health in a handful of ways. The high-efficiency production models of these farms, supported by economies of scale, reduce meat costs for consumers and, consequently, increase consumption rates (Pollan, 2009). Meat-heavy diets are elevating saturated fat intake at an alarming rate which is contributing to the steady incline of non-communicable diseases and obesity in North America (Stathopoulos, 2010). Additionally, the consumption of growth hormones by proxy of meat consumption is linked to heightened susceptibility to certain types of cancer, deficiencies in biological growth and development, heart complications and neurobiological disruptions (Stathopoulos, 2010; Jeong, et al, 2010; Moussa, 2009; Young, 2019). Furthermore, augmented antibiotic ingestion via factory

farm meat has threatened the efficacy of antibiotics used to treat human illness and infections (Stathopoulos, 2010).

Factory farm conditions that produce unsanitary and stressful living conditions for the animals, and often workers, have been linked to the spread of infectious diseases like avian flu and swine flu (ibid). Notably, Mad Cow Disease was spread to humans through the consumption of beef cattle that were fed ethically dubious diets of their own species in the early 1990s (ibid).

As consumer obsessions with "beautiful" and uniform food grow (which is discussed further in the *Environmental impacts* section), Western society is eating a more homogenized diet. In North America, we only have two or three varieties of tomatoes that are specially selected based on genetic dispositions to grow symmetrically and withstand long haul transport without bruising or splitting (Ladner, 2011). The same is true about apples selected for their aesthetic appeal and for the one type of banana available - the *Cavendish* - for its moderate degree of curvature that fits the modern consumer's ideals of a banana's physique (ibid). The growth of monocultures in vast quantities becomes a feeding ground for pests and diseases alike (ibid). These diseases and bacteria are then passed along to humans resulting in severe illness and sometimes death. Common recurring bacterias that permeate plant-human infections include e.coli and listeria (ibid).

Economic:

The Green Revolution and industrialization are responsible for the food industry's adoption of Taylorism and Fordism production models. These models prioritize efficiency, predictability, and calculability - McDonaldization, as it is referred to in the food industry (Jaffe, Gertler, 2006). McDonaldization, prioritizing a "quantity over quality" mentality, is starkly exemplified by institutions like factory farms or fast food establishments that produce and exchange food as a commodity. Food commodification, in tandem with Tayloristic production methods, has increased the availability and accessibility of food items. As per the supply and demand principle: increased availability drives down commodity prices. Low food prices have changed consumer expectations on the "worth" of their food - arguably both fiscally and psychologically. Canadians spend only 13.5% of their annual income on food (Statistics Canada, 2017), which is only a fraction of what Canadians would have spent before the complete industrial overhaul of the food system (Roser, Ritchie, 2020).

Though consumers enjoy reduced food prices, it has systematically confounded the financial viability of family farmers. Consumers have displayed a significant shift in food attitudes

since the green revolution. The psychological distancing exhibited by consumers towards their food choices has perpetuated the commodification of food, which in turn justifies the McDonaldization of the industry. These conditions have led to significant price drops in all areas of the food sector. Farmers, however, still put in the same amount of work, pay increasing costs for equipment and inputs, suffer from yield losses due to unpredictable climates, all of which can reduce their ability to render even minimal profit margins. Canadian net farm income dropped by 45% in 2018 alone, and nearly half of all Canadian farmers have secondary jobs, unrelated to farm activity, to provide themselves with a livable income (Statistics Canada, 2019; Statistics Canada, 2017).

"Superfoods" and Canadians' blind acceptance of their claims (discussed in the *Health* implications) also have harmful effects on many nations' economies. The events that connect superfoods to economic ruin tend to follow a prescribed sequence. First, an arbitrary and often dubious health claim is attached to an exotic food item, atypical to the North American diet. Next, media, whether formal or informal, support these claims and trigger mass adoption of the superfood fad diet, especially with society's elite. Then, the countries that produce these products homogenize their agricultural industries to produce the superfood "flavour of the week" (Shin, et al, 2018). This homogenization then floods the market, driving down buying prices for farmers, as per the supply and demand principle, and when the fad ends, as they inevitably all do, the livelihoods of many farmers as lost as are the investments that were put into transitioning their farms to grow superfoods (ibid).

Examples of superfoods that have wreaked havoc on international economies include moringa in Bangladesh in the 70s and *again* in the 80s (Reuteman, 2011), quinoa in Bolivia and Peru in 2011 (Blythman, 2013) and teff in Ethiopia - though fortunately they learned from precursory superfood trends and managed to stabilize teff's market price through the implementation of a policy similar to Canada's supply management (Shin, et al, 2018).

Ethical:

Due to increasing demands for product quantities at reduced prices, agribusinesses and corporations are looking to cut labour expenses as they typically represent the highest operational cost (McGinnis, 2018). In Ontario, in particular, agribusinesses are hiring migrant workers through the federal Temporary Foreign Worker Program (Lee, 2016).

Workers that participate in this program are offered improved quality of life in Canada and are instead met with cramped living conditions, constant surveillance, unlivable wages, and in

some cases, are forced to pay illegal fees to employers (ibid). The workers that wish to speak out about their poor treatment and illegal payments are often extorted by the employers and brokers with threats of dismissal from employment (ibid). Most workers are forced to endure these hardships for the entirety of their contract and often return home with no savings or learned skills (ibid).

Questionable ethical treatment extends to the animals involved in the agricultural industry as well. Demands and expectations for mass production in the meat, dairy, and egg sectors of the food industry produce some of the most disturbing consequences that are one of the most difficult to swallow (literally) amongst informed consumers. Livestock raised in factory farm settings (and even those in smaller-scale operations) are living in realities that we, as humans, could only describe as nightmarish. Without describing some of the horrifying details faced by each of these animals (that is best left up to Michael Pollan in *An Omnivore's Dilemma* [2009] or to Peter Singer in *Animal Liberation* [2015] - though some standards and practices differ in Canada), one could describe the lives of all livestock as short, cramped, bloated, uncomfortable, dark, smelly and above all - inhumane. Canadian food regulations tend to focus heavily on food safety and fraud prevention, so there are not many regulations relating to the comfort and dignity of livestock animals. Those that do exist are fairly ambiguous, leaving their interpretation up to farmers.

There are labels on meat or dairy products that appear to prioritize animal welfare, such as "organic," "grass-fed," "hormone-free," "free-range," however, these are sometimes more of a marketing gimmick than an accurate representation of how the animal was raised. There are a handful of labeling standards set out by the Canadian Food Inspection Agency that outline a specific set of requirements that producers must meet before using labels such as "free-range" or "hormone-free." However, there is no corresponding certification process (except for Organics), and producers only need to substantiate their claims should the CFIA initiate an investigation based on a consumer inquiry (Canadian Food Inspection Agency, 2019).

Environmental:

For decades, literature has drawn connections between the plights of the current food system and environmental costs (Nugent, 1999; Pollan, 2008; Sonnino, 2009; Marsden, Sonnino, 2012; MacRae, Winfield, 2016). The major environmental issues at the most rudimentary level of categorization affect the air, the ground, fauna, and flora. Agricultural runoff affects all four of these areas. Runoff from both livestock and plant crop farming activities significantly degrade water and air supplies on which surrounding plants and animals depend. Synthetic pesticides

containing toxic chemicals find their way into the surface and groundwater, affecting individual species, biodiversity, and sometimes human health (Statistics Canada, 2015).

Hormones and antibiotics forced into the systems of livestock and are eventually found in their waste. Livestock waste can sometimes end up in groundwater sources from overworked, mismanaged waste systems (Lee, et al, 2007). Synthetic fertilizers and cattle manure, standard input for many crop farmers, contain nutrients such as phosphorus and nitrogen - necessary for plant growth and healthy soil (Statistics Canada, 2015). Any excess of these nutrients not taken up by the plants or retained in the soil will find its way into bodies of surface water or groundwater (ibid). This can cause excessive growth of aquatic plants (such as algae), and the subsequent depletion of dissolved oxygen as the plants break down after they die (ibid). According to Statistics Canada, "this oxygen depletion can change the composition of the aquatic community and, in extreme cases, cause the death of fish and other organisms" (2015). Statistics Canada also states that drinking water can be severely impacted, putting the health of nearby communities at risk (ibid).

Manure used for crops can carry harmful bacteria and often do. In 2000, the town of Walkerton in Ontario suffered the effects of *E.coli* and *Campylobacter jejuni* bacteria contaminating their drinking water (Salvadori, et al, 2009). Manure containing these bacteria seeped into groundwater from a nearby farm, which resulted in more than two thousand people sickened and seven people killed from drinking the affected water (ibid).

A common and troublesome concern in agricultural runoff is sediment. Sediment is both a water pollutant itself and a carrier of other pollutants. The ecological impacts of sediment in watersheds include disruption to fish spawning gravels, reductions in light penetration required for health and growth of water species, and loss of general biological productivity of water sources (Weins, 1980).

One of the most environmentally cumbersome aspects of the food system and perhaps the greatest red flags of its dysfunctionality is the truly breathtaking rates of food wasted. Around 60% of all food produced in Canada is wasted (Janus, 2019). Nearly half of all food wasted in Canada is at the hands of the consumer, suggesting a wide discrepancy in the supply-demand principle guiding food purchases (Gooch, et al, 2014). The other half of food loss occurs in various stages of the supply chain, which each host a multitude of problems of their own (ibid).

The idealization by consumers of the "perfect" food mentioned in the *Health* implications contributes significantly to the 63% of all food wasted that is deemed avoidable (National Zero Waste Council, 2017). At every level of the supply chain, should the food not precisely reflect

consumer expectations of perfection and beauty, it is tossed. If the banana is too curved or the orange is not perfectly spherical, it is deemed unfit for consumption, creating a negative feedback loop that sustains an order of waste supported by the flimsy footing of aesthetics.

Beyond the sheer insensibility of operating a system that expresses this rate of loss and the contrition of missing opportunities to supply food to the food insecure, all wasted food contributes to the greenhouse gases currently overwhelming our ecological systems. Greenhouse gas emissions take the form of methane when discarded food items are sent to landfills instead of appropriately composted, which, unfortunately, is most of the time. Methane is estimated to be around 25 times more potent than CO₂ (ibid).

Greenhouse gas emissions from food waste, in particular, account for about 8% of total global greenhouse gas emissions (Frischmann, 2018). The resulting emissions degrade the environment and also waste the resources and inputs that went into producing the food that was never consumed. If the food system were to match the supply with the demand, there would be a significant reduction in the amount of freshwater, petroleum, fertilizer, pesticides, herbicides, grain, and many other resources used and needlessly wasted in the process of creating food items that would never see a consumer's plate.

Beyond creating excessive waste, consumer ideals of "perfect" foods have homogenized planting practices and reduced diversity of food types available (Ladner, 2011). The ubiquitous availability of perfect foods is bolstered by modern adaptations to field machinery and processing equipment. Modern equipment requires product uniformity to operate at peak efficiency (FAO, 2011).

When only certain flavours, colours, shapes, and sizes of food items are produced and readily available for consumers, can they be blamed for having narrow and rigid expectations of their food options? This homogeneity has rendered dominantly consumed foods increasingly susceptible to extinction through disease. Once a disease begins affecting a particular type of crop, it can prove difficult to control, and often a rapid spread of the disease is inevitable (Ladner, 2011). For example, the Gros Michel banana, the monoculture of the banana consumed by a previous generation, was utterly wiped out by the fungal disease *Fusarium wilt* in the 1950s (ibid).

Another form of excessive waste worth mentioning is brought on by the food system's absolute reliance on plastic packaging. Today, plastic is the main form of packaging used for all food items (Fagundes, 2019). Plastic food packaging is the basis for the World Economic Forum's prediction that there will be more plastic than fish by weight in oceans by 2050 (ibid). The major environmental issues with plastic packaging are the hefty greenhouse gas emissions associated

with the production and the decomposition of the materials, the use of (nonrenewable) fossil fuels in production, and its stubborn resistance to decomposition (Joyce, 2019).

The plastic problem has not been met with valid or permanent solutions. The production and disposal of "plastic alternatives" often pose identical consequences as plastic (ibid). Canada is very much dependent on plastic across all sectors. For years, the Canadian government has offered funding to anyone who can propose a possible solution through the Innovative Solutions Canada program - a program that provides seed grants for the research and development to innovative solutions to critical issues identified by the government (Innovative Solutions Canada, 2020).

Plastics and other technologies, including refrigeration, have led to an increase in "food miles." Food miles refer to the distance food travels from producer to consumer and the associated financial and environmental cost (David Suzuki Foundation, n.d.). With preservation technologies widely accessible to producers, food can travel long distances while maintaining freshness. In a country as vast as Canada, this is an essential tool in ensuring the food security of remote communities. However, it is not only remote communities receiving food from great distances but all communities. Friends of the Greenbelt found that the average food product currently travels twenty-five hundred kilometers before reaching an Ontarian's plate (2018). Though the David Suzuki Foundation argues that food miles do not reveal the whole picture of the "sustainability of a food product." The foundation finds that food miles only account for 11% of agriculture's carbon footprint, while eighty-three percent of agriculture's carbon footprint is directly affected by production methods (ibid).

This brings up the issue of cash cropping by major agri-corporations. Cash cropping typically refers to large scale planting of monocultures where maximizing profit is prioritized over environmental or ethically conscientious production methods (Pollan, 2009). This practice carries many environmental implications. A loss of biodiversity is the most common. Not only are a lesser variety of plants and animals harvested or raised for food, but the habitats and nutrients offered by these varieties are fulfilling the needs of fewer dependent plants and animals. This lack of biodiversity has a very significant off-shooting effect: it advances soil erosion. Soil erosion, the depletion of soil quantities and its arable properties, is a complex and deteriorative process with the ability to devastate entire ecological and agricultural systems (Montgomery, 2007). Research suggests that soil erosion has been the critical factor in the rise and decline of various civilizations in human history (ibid). Today, soil erosion ranks as one of the primary issues plaguing the

environment, concurrent with an escalating human population, decreasing water availability, energy, and loss of biodiversity (Pimentel, 2006; Pimentel, Burgess, 2016).

When farmers plant for biodiversity, their crops benefit from an arsenal of natural defence mechanisms against pests, weeds, and invasive species. Without these natural defences, imitation safeguards are often used, such as synthetic pesticides, herbicides, and fungicides (in non-organic farms) causing harmful effects on water quality, air quality, human health and biodiversity (Pollan, 2009)

Lastly, a very controversial topic and widely contested agricultural activity directly responsible for massive ecological harm is deforestation. Deforestation is the mass clearing of forested areas for an alternative permanent non-forested land use such as agriculture, grazing, or urban development (van Kooten and Bulte, 2000). Forests serve a meaningful role in the hydrologic cycle, soil conservation, prevention of climate change, and biodiversity (Chakravarty, et al, 2012). When deforestation occurs, many habitats and food sources are destroyed for reliant animals, and nearly half of all land-based animals reside in forested areas (WWF, 2019). Forests also serve as dense carbon stores, so when they are removed, the stored carbon and other greenhouse gases are released into the atmosphere (ibid). WWF accounts for forest loss as responsible for around 10% of global warming effects (2019).

Though there are many sectors responsible for deforestation, including mining, logging, and urbanization, agriculture is undisputedly the most significant culprit for permanent and irresponsible deforestation (Chakravarty, et al, 2012; WWF, 2019). Though the most prominent location for mass deforestation is in the tropical rainforest, Canada is also a significant contributor to world deforestation (Chakravarty, et al, 2012). In Canada, logging is most often considered the sector primarily responsible for deforestation, but in fact, resource extraction is responsible for 37% of deforestation, whereas agriculture is liable for 41% (Statistica, 2016).

Food Supply Chains

Long Food Supply Chain

Today, consumers are “living at the far end of a food chain, so long, so intricate and obscure that neither producer nor consumer has any reason to know the first thing about the other” (Pollan, 2009, p.34). If consumers were asked where their steak or their tomatoes are from, they would likely answer with “the supermarket,” which isn’t wrong but is a fractured snapshot of the

food's true origin. The reality is that most consumers are ignorant of the many hands their food passes through before making it to their dinner plate.

The impacts of industrialization and globalization discussed previously are predominantly responsible for the lengthening of today's food supply chain (Bazzani, Canavari, 2013). Each system alone might not have stretched the supply chain into the illogical, inefficient web that it has become today, but in tandem, they have served to "liberate" the food supply from nature and her constraints (Morgan, et al, 2008, p.2).

The modern expectation for infinite availability of all foods has required the food system to appropriate myriad intermediaries between producer and consumer. The *scale* at which food is expected to be available is largely responsible for supply chain complexity and the anonymity within the system that allows for a quantity over quality. By following the path of an individual item from farm to table in the industrial system, it is easy to see how economies of scale play a significant role in the lengthening and abasement of the food supply chain (for examples: see Deborah Barndt's *Tangled Routes* (2007) for the path of a Mexican tomato; the path of American corn in Michael Pollan's *An Omnivore's Dilemma* (2009); or Mancini and Arfini's *Short supply chains and Protected Designations of Origin: the case of Parmigiano Reggiano* (2018) for the supply chain path of Parmigiano Reggiano).

However, the underlying prerogative of production for economies of scale is profit maximization through commodification. The yields of each producer are treated as mere commodities passing through a supply chain rather than as natural, life-sustaining necessities. The industrial food supply chain typically sees foods traded at market price (which is not driven by demand, but by market forces), consolidated, purchased (typically by large agri-corporations), processed, packaged, transported, traded again to a retailer and eventually purchased by a consumer. Depending on the food item, various byproducts are created, which branch into additional supply chains. Tomatoes, for example, are consumed in their natural state, or processed with sugar to create ketchup, or cooked and combined with herbs and spices for canned tomato sauce, along with many other possible paths.

These long-winded processes have created devastating effects on the environment, on the labour market, and drastically for farmers. Agricultural industrialization has minimized farmer power in the food system across the globe (Marsden et al, 1999). Industrialization's vehemence for mass production inevitably allowed supply to significantly outweigh demand, reducing the value of commodity crops (Gilson, Kenenhan, 2019). Mass quantities created the need for large scale processors and distributors and all but eradicated the face-to-face interactions between producer

and consumer. This evolution of the agricultural industry has left farmers vulnerable to the ebbs and flows of the commodity market and leaves them powerless to self-determine pricing structures and, more severely, turn a profit.

This system serves to discourage farmers from investing in the quality of their products. Pressures of the industrial system force farmers to prioritize yield maximization, most often accomplished with the use of synthetic inputs. Farmers that choose to nurture their crops with a natural or environmental approach (like organic farmers) sometimes must do so at the expense of profit.

The industrial system disempowers consumers alongside farmers. Food quality, and in some instances food safety, has taken steps backward since industrialization - a disservice that disproportionately harms low socio-economic and racialized groups (Roos, et al, 1998; Shannon, 2016). So if the industrialized food system structure does not benefit the producers or the consumers, then whom does it benefit? Furthermore, if it does not appear to be driven by supply, nor by demand (as made evident by the abundance of food waste), what drives this complex, illogical supply chain? It is driven by corporate greed perpetuated by capitalism, which renders producers and consumers inconsequential pawns in a game of commodity trade. In this long, exploitive and wasteful food chain, poverty, food security and sustainability hang in the balance for the financial gain of a small number of individuals at the top of the agri-corporation food chain.

Short Food Supply Chain

Long food supply chains are a common symptom of the industrial or *conventional* food system where agriculture is conceptualized as strictly an economic sector (Morgan, et al, 2008). A short food supply chain (SFSC) is a core objective of the *alternative* food system: a system that takes an ecological approach to agriculture and empowers small production and retail companies in localized markets (ibid). The “conventional food system” and the “alternative food system” are often dichotomized throughout literature. Though in reality, some of the major structures and players of these two food systems remain the same.

However, one key distinction between these systems is the approach and attitude relating to each respective food supply chain. The alternative system specifically *organizes around* the supply chain, looking to validate each link while the conventional system’s financial priorities tend to *shape* the supply chain into whichever configuration best supports financial objectives.

The alternative food system looks to minimize value-adding processes in the supply chain to retain the majority of value capture with the primary producers (Marsden, Banks, Bristow,

2000) - in essence, shortening the supply chain. SFSCs are understood to reduce transportation costs, lessen CO₂ emissions, promote biodiversity, and enhance urban and peri-urban agriculture by connecting the consumer more directly with producers (Marsden, et al., 1999; Marsden, et al., 2000; Morgan, et al., 2008; Galli, Brunori, 2013; Canfora, 2016; Renting, et al., 2003).

SFSCs improve the resilience of the family farm by reallocating farmers' power previously lost to industrialization. SFSCs accomplish this from the demand side by informing and educating consumers on the value of local and sustainably sourced food (Galli, Brunori, 2013). SFSCs create the opportunity to strengthen consumer knowledge, value, and meaning associated with a product and its provenance, production, and consumption (ibid). SFSC's accomplish this by forging connections between producers and consumers, local communities, and civil society organizations where knowledge can be easily transferred (ibid). Mostly, consumers have the opportunity to hear from a direct intermediary or the producer themselves about the benefits and values belonging to a specific food item. Renting, et al., capture the essence of SFSC's by describing them as a reimagined food supply chain that allows products to reach the consumer with a significant degree of value-laden information, considerably improving transparency and communication between producer and consumer (2003).

SFSCs do not have a standard definition since a critical understanding of the concept itself is that region, culture, climate, and norms all influence the parameters of a supply chain, and therefore there is no universal equation that would make for a successful short supply chain. However, according to Galli and Brunori, two key criteria are required to establish a short food supply chain: *social* and *physical proximity* (2013). Social proximity is expressed as a metric of intermediaries between producer and consumer (ibid). In ideal circumstances, this number would be zero, but should the number of intermediaries exceed zero, the intermediaries should serve to *connect* rather than *disconnect* producers with consumers (ibid). Intermediaries can establish this connection by educating consumers on the producer's values and ethics, the food's region, and the production processes affiliated with a particular product.

As for physical proximity, there is no universal distance that would be appropriate to apply to all food systems due to geographic and cultural differences between global regions. For example, "Ontario apples" would be considered to be a local product in Toronto even though Ontario is over one million square kilometers. In France, however, Italian olives would likely not be considered "local" even though the olive might have been produced much nearer to the consumer compared to the distance that an Ontario apple might travel. Are either of these examples right or wrong? Galli and Brunori argue neither are wrong; specialty and locality are subjective and

relative, hence the reluctance to attach specific metric boundaries to physical proximity in short food supply chains (2013).

Renting, Marsden and Banks also identify essential qualifiers of an SFSC. The authors assert that it is not necessarily *physical* proximity that qualifies consumer-producer interactions in an SFSC, but the “specific mechanisms entailed in these [interactions] that extend time and space” (2003, p. 399). Renting, et al., identify three categories of interactions that align consumer-producer networks (2003). The first category, *face-to-face*, refers to interactions that occur directly between consumer and producer. The mechanisms, or rather activities, involved in these interactions include farmers’ markets, pick-your-own and farmgate sale stands (ibid).

The second category, *proximate*, refers to an exchange of goods between a producer and consumer that shares *cultural* or *physical* proximity. These interactions typically occur through the use of intermediary actors. These actors function as guarantors of product quality to consumers and broaden producer access to consumers (ibid). Examples of this type of interaction include food co-ops and community-supported agriculture programs.

The last category is *extended* interactions. These interactions typically occur between a consumer and a producer that do not share regional or even cultural commonalities. It is the regional significance embedded within the products that make for a “shortened” supply chain. An example of this type of interaction would be purchasing an item like champagne or Ethiopian coffee beans. In this category, there is information inherently recognized about the product by virtue of its name.

Renting, Marsden and Banks also discuss a secondary qualifier of an SFSC: specific quality definitions and conventions (2003). These qualifiers refer to the place of production and bioprocesses involved with food production. Though both of these qualifiers are important in contributing to a sustainable food system, I don’t believe they are relevant determinants of a *short* supply chain. For example, organics would be considered a product of a short food supply chain as per the “quality conventions” component of Renting, et al’s, understanding. Though, in reality, conventional grocery stores are responsible for the most substantial volume of organic food sales. In Canada, the largest organic retailer is one of the largest Canadian food conglomerates: Loblaw’s (Johnston, 2017).

For this research, a short food supply chain will specifically refer to Renting, Marsden and Banks’ types of *interactions* as the exchange of goods to the consumer, whether face-to-face, proximate or extended, is a tangible and easily identifiable occurrence.

This understanding of SFSCs comfortably envelops Galli and Brunori's SFSC qualifiers of social and physical proximity as well since they also consider the number of intermediaries involved in an interaction.

As Renting, Marsden and Banks' secondary qualifiers do not relate to interactions, but to processes that occur *prior* to any interaction will not be incorporated into the understanding of SFSCs in this paper.

Galli and Brunori and Renting, Marsden and Banks' understanding of SFSCs are also valid contributions to the overarching structure of the alternative food system. Shortening food supply chains enhance the sustainability of a food system but are not the complete answer to solving the conventional food system's plights. Short food supply chains are only a string, albeit one of significant consequence, in the larger web of the alternative food system, spun by consumer demand. This web is continually reinforced by the growing consumer distrust of the conventional system (Morgan, et al., 2008). This distrust, initially born out of concerns for food safety as the industrial system allowed food quality and therefore safety to slip between the cracks, has led to consumer edification on the virtues of place, provenance, and production methods of food provisioning. The growing concern for food production practices is largely experienced amongst educated middle, class consumers (ibid) and is undoubtedly reinforced by commodity fetishization. These matters do not diminish the credibility of this movement as it was the same demographic that sought convenience and affordability that fortified the industrial revolution of the food system in the 1950s. In fact, the purchasing power of this demographic is now leading players of the conventional food system to dip their toes in the alternative stream, as exemplified by the organic sales at Loblaws mentioned previously.

The lines between the alternative system and the conventional food system are blurring as consumer demands change. Much of the literature on alternative food systems from previous decades portray conventional and alternative as two distinct and separate streams (Hamm, Baron, 1999; Pothukuchi, Kaufman, 1999; Marsden, et al., 1999; Marsden, et al., 2000). Today's literature hesitates to draw such a divide. Johnston (2017) cautions against establishing a dichotomy between the two, and she describes the term "alternative" as "opaque" as the retailing platforms for such types of food are becoming increasingly corporatized. The division between these two systems becomes increasingly porous as corporations recognize the potential to profit from catering to the growing demand for alternative food items (Morgan, et al., 2008; Johnston, 2017).

The former desire of the alternative food movement to disenfranchise the globalized, industrial food system and replace it with an alternative food system may not be the most

effective solution in creating a more sustainable food system after all. Dynamically evolving the dominant industrial system to incorporate the alternative values appears to be a more probable approach and the approach most likely to create real, sustainable change. With this approach, perhaps corporate capital can be harnessed to make “alternative foods” or “slow foods” (those that prioritize flavours, provenance, seasonability, and tradition [Petrini, 2003]) accessible to all demographics on a significant scale.

SFSCs can be seen as part of the solution and, more importantly, a pathway to achieving a complete overhaul of the more extensive system at play.

Food System Planning

Based on the large number of players involved in the long food supply chains that provide for the majority of Canadians, one might ask *how* this supply chain could be effectively organized and *who* can orchestrate billions of moving food items. As the system stands now, there is no one force or entity directing supply chain flows. One umbrella organization that effectively manages global food production, transport, distribution, retail, and waste is nearly unimaginable.

There exist global organizations involved in some facets of the global food supply chain, such as the World Trade Organization (WTO) which oversees the rules of global exchange; and the United Nations’ Food and Agriculture Organization (FAO) which looks to align international efforts in regards to food security. To expect organizations like this to create policies and regulations that foster healthy food systems on an international scale is unrealistic, given the societal, political, cultural, and ecological differences between countries.

In lieu of coordinated global oversight, professional planners play an essential role in coordinating policies and controls involved directly with their regional or national food systems. This coordination may transcend regional boundaries and have more significant international implications for the global food system. Essential food system functions that fall within the scope of planners include land use designations, resource distribution, facility design, and administration of services. Planners aim to coordinate these functions in an attempt to secure physical, economic and social efficiency, and the health and well-being of all urban and rural communities (Canadian Institute of Planners, n.d.).

Food system planning, a particular discipline of planning, though yet to be formally recognized in Canada, aims to integrate a just and sustainable food system into the core planning areas of focus (such as housing, transit, infrastructure, etc.). Food system planning attempts to support broader societal goals of public health, ecological integrity, and social justice through each

stage of the food supply chain (Morgan, 2013). This blossoming branch of planning is an attempt to rectify the longstanding omission of food in general planning practice, research, and education (Pothukuchi, Kaufman, 2000; Morgan, 2009).

Though it is accepted that food has been strikingly absent from modern planning practice and research, the timeline of food's disappearance from the planning profession is somewhat debated within the literature. Many authors who have contributed to the growth of food system planning recognize that food has not *always* been absent from planning practice (Kaufman, 2009; Vitiello, Brinkley, 2013; Morgan, 2013). Food was the original driving force behind city and community planning. If we look back to the agricultural revolution, taking place around twelve thousand years ago, it was food domestication and production that allowed people to cooperate and organize into fixed, permanent groups or communities of more than 100 people (Harari, 2014). From that point on, intentional communities were developed in areas suited for agriculture (Cabannes, Marocchino, 2018). Communities centred around arable and fertile lands and eventually around waterways that could act as transport corridors for food trade systems (Vitiello, Brinkley, 2013). Canada, specifically, can trace the development of every major city back to the compatibility of its land to both trade and agricultural activity (Patel, 2012; and see Toews [2018] for the history of western Canada's agricultural expansion).

Of course, these periods of development took place much before the formalization of planning as a profession. In the early 20th century, as the planning profession found its footing, there were ulterior forces driving city planning. According to Marxists, the original barometer for success regarding city design was the effective coordination of capitalistic modes of production (Harvey, 1973; Dear, Scott, 2018). Though eventually, (and some argue that since the beginning [Brooks, 1988; Hodge, Gordon, 2014]) issues of public health and safety, efficient mobility and landscape beautification asserted their way into conventional planning theory and practice.

Food was pushed down the list of priorities of the burgeoning planning profession due to changes in food production practices in the late 19th century that made them incompatible with key planning objectives. This transformation was part of the second industrial revolution, where food production and processing became inherently loud, pungent, messy, and even toxic (Patel, 2012). These traits made most food practices undesirable in dense, urban settings (ibid). Following the second industrial revolution, agriculture and food production became almost strictly *rural* activities. Urban planning practice, research, and education surged forward with urban food production to be left as a distant memory.

Vitiello and Brinkley agree that food retreated from the planning agenda, however, they argue that food played a critical role in modern planning (2014). They suggest that *rural* planners developed farming settlements and cooperatives that challenged suburbanization and the industrial food system while *urban* planners considered food supply chains in regional plans, infrastructure proposals, zoning regulations, and foodshed studies (ibid). They provide examples of conspicuous food planning activities carried out by reputable planning pioneers. Examples include Frederick Law Olmstead's dairy in the middle of New York City's Central Park, George Warring's agricultural irrigation system that was the backbone for modern sewage systems, and Ebenezer Howard's grand vision of the Garden City that covered the entire food cycle (ibid).

Reps underscores that these professionals would never have articulated their projects or designs as "food planning" ventures (2005). They were simply methods, perhaps unorthodox or even intrepid in nature, meant to optimize the land use to meet the needs of a modern and developing urban civilization.

Vitiello and Brinkley estimate that the disappearance of food from common planning practice was solidified following economic globalization in the mid-twentieth century (2014). Globalization intensely ramped up production outputs in most sectors to fulfill global markets - Patel argues this was experienced most evidently in the food and agricultural sector (2012). Globalization significantly expanded the spatial parameters of the food system, eclipsing the typical local or regional boundaries that had previously served as parameters for planner jurisdiction. This broadening of the food system functionally removed many proponents of the food supply chain from local planner responsibility and, eventually, from planner expertise (Vitiello, Brinkley, 2014). As globalization progressed, food fell further from the minds, strategies, and skillsets of professional planners.

Globalization intensified market forces' ability to shape the design and management of the food supply chain, stretching it and altering it into a commodity trade channel. The more the food system fell into the control of the free market, the less it belonged to planners' jurisdiction (Magdoff et al., 2000). As a capitalistic society and as a nation that is "open for business" (Government of Canada, 2018), Canadian state forces, such as municipal, regional or provincial planning departments are not meant to interfere with the free market. Therefore, the responsibility of planning for sustainable or equitable food systems was expunged from a planners' repertoire.

This effect was emphasized due to the accepted understanding of food production as a *rural* activity that served an *urban* market. This myopic and dichotomic perception of food planning

fragmented the planners' scope of responsibility in the food system. By creating spatial boundaries to which particular segments of the food supply chain were tied (i.e., rural or urban), the scope of accountability for those involved in the food chain turned starkly insular (Morgan, 2009). Spatialization of the food system abdicated everyone - from producer to consumer - from their responsibility to foster a holistic, sustainable and equitable food system (ibid).

Though much of the literature can agree that despite the fragmentation and widespread neglect of the global food system, food has made its way back into the minds and agendas of planners (Hammer, 2004; Kaufman, 2009; Morgan, Sonnino, 2010; Vitiello, Brinkley, 2014; Morgan, 2013; Cabannes, Marocchino, 2018; Weissman, Pottleiger, 2020).

Morgan and Sonnino believe the *new food equation* is responsible for the emergence of food in contemporary planning and policy (2010). The new food equation refers to global developments that have significantly affected the global food system. These developments include a food price surge resulting from the 2008 global recession, food security hitting a level of crisis, climate change effects, land conflicts fuelling a new surge of colonialism, and the rapid expansion of urbanization (ibid).

These issues have propelled planners and governments to recognize the food supply chain as a broad, interconnected system with many facets fundamental in maintaining quality of life (Cabannes, Marocchino, 2018). The implications of the many processes involved in the food system are understood to transcend the boundaries of the system itself and therefore require broader coordination (ibid). For example, inadequate access to healthy food supplies implicates public health; access to grocery stores and food supplies is dependent on efficient transportation; residential and commercial developments can provide the opportunity for urban food production through green roof systems or vertical farms. Whether rural, suburban, periurban, or urban, there are almost no planning decisions that do not implicate the food system.

Though the self-proclaimed "food system planners" may not yet have secured recognition within professional planning institutions, the branch of planning is finding its way into contemporary planning theory and education (Nasr, Komisar, 2012; Hammer, 2004). Planners increasingly recognize that healthy communities require healthy food systems.

Agrihoods

A particular tool making waves in food system planning is one that looks to create healthy communities by orienting all activities towards sustainable, healthful, and equitable food practices. *Agrihoods* - organized communities that integrate agriculture into residential

neighbourhoods (Hauser, 2019) - have cropped up across the United States over the past three decades.

Much of the literature depicts the development of agrihoods as the modern replacement for golf course communities (Runyon, 2013; Birkby, 2016; Loundenback, 2017; Hauser, 2019; Brenner, 2020). Well-manicured, spatially confined golf communities were a popular trend that enticed baby boomers in the 1990s (Loundenback, 2017). Golf course communities afforded residents the luxury of space, aesthetic beauty, and a sense of community, which appealed to boomers' ideals surrounding "the American dream" (ibid).

As markets change, developers need to adapt plans to cater to prospective buyers' needs and values. Millennials make up the largest contingency of homebuyers in the USA (Guion, 2017; National Association of Realtors, 2017) and first-time homebuyers in Canada (Canada Housing and Mortgage Corporation, 2018), making their needs relevant for modern developments.

Millennials are known to shape their lifestyle choices around "clean-living" and farm-to-table eating (Loundenback, 2017; Kumar, Smith, 2018). They prioritize local food in their diet, for health reasons, concern for the environment, and concern for local economies, more than any other living generation (Kumar, Smith, 2018). Millennials are two times more likely than boomers to prioritize healthy eating and physical activity into their daily priorities (Gardow, 2017). These preferences have allowed Millennials to be a driving force behind the local food movement through consumer demand (Loundenback, 2017; Kumar, Smith, 2018).

As interest in golf communities declines, new developments have looked to change direction to cater to how consumers or residents spend their time rather than their money (Hauser, 2019). For Millennials, a generation chastised for spending exorbitant amounts of time waiting in line for brunch and wasting money on overpriced avocado toast and craft beer, a food-centric community design makes sense.

Agrihoods can emulate the benefits of the golf course communities while removing the aspect that potential buyers are most indifferent to: golf. This substitution may even appeal to current golf community residents as research finds that residents in these golf-centered communities play golf on an average of only two times per year (Olsen, Sept 30, 2019).

Replacing the golf course with a farm brings other benefits beyond recreational interests. The average farm requires less land than most golf courses, lowering costs and allowing for versatility when selecting the land to develop (Brass, 2019). Plotting a farm rather than a golf course would also reduce construction costs for developers and lessen maintenance and operational fees for residents (Loundenback, 2017).

Farms also carry a reduced environmental footprint compared to golf courses due to a significant reduction in toxic sprays that are typically utilized to maintain the golf course (Campbell, 2018). Though some toxic sprays are used in farming, most agrihoods appear to employ organic farming methods, which significantly restrict the use of synthetic sprays (Guion, 2017). Farms use less water than most golf courses though the volume of water used is dependent on farm size, crop type, climate, and other factors (Campbell, 2018). There are also the many environmental benefits associated with eating local and participating in short food supply chains discussed previously.

Agrihoods are designed to entice young, active families that enjoy eating healthily and spending time outdoors while not off the grid (Loudenback, 2017). Though, in reality, the target markets seem to vary depending on the community. Some communities appear to target low-income residents or retirees, while others (and likely most) target affluent populations that can afford luxury homes with plenty of space (Birkby, 2016).

According to Birkby, agrihoods appeal to most generations of home buyers, not just Millennials. They help to fill a desire exhibited by Millennials, Generation X, Boomers, and retirees to connect more closely with their communities, with nature, and with their food supply (Birkby, 2016). Though less so with the Boomer and retiree population, all of these groups exhibit a concern with growing climate crises (Watson, B., 2016; Guion, 2017).

In recent years, there has been a shift in consumer demand for the housing market to support environmentally sustainable developments (Loudenback, 2017). Agrihoods appear to be a response to this burgeoning market shift. In fact, Hauser states that promotion of sustainability in the built and natural environments is one of agrihoods three core objectives, the other two being the facilitation of food production and the offering of substantial recreational opportunities for residents (2019).

Agrihood Designs

There are an estimated two hundred agrihoods in America, of varying shape, size, and design (Birkby, 2016). Agrihoods typically include a central working farm, which usually specializes in livestock, orchards, vineyards, or row crops. (ibid). Many of the farms found in agrihoods are long standing family farms that have been passed down through generations (ibid). These farmers are typically keen to gain close spatial access to a (somewhat) captive market. Though in some of the larger agrihoods, those with thousands of homes and hundreds to thousands of acres of land,

farm space is used as an agricultural incubator that provides access to farmland, equipment, and training for aspiring farmers and agriculturalists (ibid).

Agrihoods are often developed as an alternative to existing land-uses. Some agrihoods are infill developments, meaning they repurpose commercial land within an urban boundary (Birkby, 2016). Many are developed on existing but depleted or abandoned agricultural land with aims to rejuvenate the more promising agricultural lands while repurposing the most destitute for housing (ibid). Some are developed over brownfields, or previously contaminated sites as these spaces are characteristically large areas of open land ideal for plotting a farm once contamination is properly addressed (ibid).

There are some agrihoods built on small swaths of wetlands, forested areas, or other natural landforms as a strategy to protect these natural environments (Guion, 2017). These agrihoods are proposed as a compromise: some natural land will experience development in order for a percentage of land to be granted protection from development (Watson, J., 2016). These instances of repurposing various land uses for agrihoods are seen as a practical tool in redirecting suburban sprawl towards more sustainable and productive uses (Guion, 2017). As understood by writer David Guion “if development will happen anyway, why not try to direct its course?” (2017).

Agrihoods can vary dramatically in total acreage, in the number of homes, and farm size (Birkby, 2016). As they are somewhat of a new concept, the qualifying parameters of agrihoods are not yet fixed. As the name suggests, *neighbourhoods* comprising just a handful of acres and less than one hundred homes engaging with a nearby farm would qualify as an agrihood (ibid). The same is true of an entire town or municipality of hundreds of acres of land with hundreds or thousands of homes also supporting or engaging in nearby farm activity (ibid).

Agrihoods display various models of farm management with the responsibility of maintaining the farm falling to either the residents, hired farmers, farmers leasing the space, or a combination of residential and professional management may occur (Birkby, 2016).

Advantages and Disadvantages of the Agrihood Model

Acknowledged benefits of agrihoods are the model’s ability to foster a sense of community, allow for food security, provide various sustainability impacts, offer employment or space to local farmers, educate community members on farming and sustainability, encourage healthy lifestyles and create significant profits for developers that potentially extend onto residents (Hauser, 2019).

However, there are some shortcomings of the agrihood model expressed in the literature. There are specific circumstances that must exist in order for the agrihood to be successful. For instance, the land must be arable and capable of growing crops (Hauser, 2019), and given the aggressive rate of agricultural land loss in North America, finding areas with arable land, open natural space, and room for residential development can be a challenge. Climates also need to be conducive to growing. However, greenhouses or livestock farms could replace conventional outdoor crop farms, though both of these options possess their issues such as increased cost, smell, and elaborate waste management systems, all of which could pose as deterrents for potential residents (ibid).

In most cases, access to the farm, natural spaces, and recreational services are amenities that can burden residents with additional costs, making the agrihood lifestyle unattainable for some markets (Hauser, 2019). Additionally, the properties typically found in agrihoods are large and come at a premium, making housing prices and property taxes much higher than the average American home (ibid). These financial barriers tend to exclude lower-income residents and create a homogenized constituency of community residents.

Many agrihoods are developed in rural settings, so it's possible that essential services such as plumbing, electrical, and roadways may not be adequate to serve the influx of dependent residents. This point can be negative or positive for the existing and neighbouring communities, as they may also be able to benefit from the addition or enhancement of certain services, but their current ways of life may be disrupted with the addition of roads or buildings. The addition of these services may also offset the environmental good that comes from within the community and may strengthen the potential for future urban sprawl in the area.

The *rural character* of the area may be at risk with added development. Rural character has come to be understood in North American culture as the aesthetic setting of "fields, farms and woods" (Ryan, 2006, p.6). There is a significant cultural and psychological attachment to this form of landscape and Canada and America (ibid). Governments have distinctly prioritized rural character preservation through legislation and planning practices (Ryan, 2006; Sandberg, et al., 2013). Though agrihoods look to protect farmland and the surrounding natural ecology, there are always some natural landscapes that will be disturbed for housing needs.

Which brings up a slightly contentious topic surrounding agrihoods: what, really, makes these communities so different from suburban sprawl? Do the developers simply use the guise of agricultural land or natural land preservation as a prevarication to develop luxury homes on valuable land? The literature brings up the issue that some agrihoods might be guilty of

“greenwashing” the community to turn tidy profits (Birkby, 2016; Guion, 2017). “Greenwashing” is a marketing technique where corporations spend more amounts of time and money convincing consumers of sustainable practices than on actually minimizing their environmental impact (Watson, B., 2016). Agrihood developments could quite easily masquerade the luxury of their communities, such as beautiful vistas and large property lots, as incidental benefits accompanying the environmental objectives of the development. The opportunity to do so is made even more possible due to the reputation of sustainability that agrihoods have gained through popular media outlets, including the New York Times (Murphy, 2014), the Washington Post (Hoffman, 2017), and Forbes Magazine (Brenner, 2020).

Methodology

Research Question:

Based on the promising information found in the literature regarding agrihoods potential to influence the future of sustainable development while implementing core values of the alternative food system, there were three objectives outlined for this research:

1. Discovering whether or not agrihoods meet the objectives that Hauser (2019) outlines as the three key objectives of the agrihood model: food production, recreation, and sustainability.
2. Assessing whether agrihood models are successful in shortening their respective food chains, as per;
 - a. Galli and Brunori’s (2013) requirements for shortened social and physical proximity between consumer and producer and;
 - b. Renting, Marsden and Banks’ (2003) classifications of consumer-producer networks and interactions
3. Determining if the reality of built agrihoods match the objectives and motivations outlined in academic literature in an attempt to bring academia up to speed on the lived experience of agrihoods in place today.

Research Method:

A comparative case study analysis was performed based on two selected agrihood communities. According to Robert Yin, the purpose of case study research is to derive an up-close or in-depth understanding of relevant instances or “cases” in real-world contexts, which should result in learnings about real-world behaviours (2012). Yin’s stated purpose matches all research

objectives which seek applicability of academic understandings regarding agrihoods and short food supply chains in the context of real, on-the-ground agrihood models.

The comparative case study analysis technique requires that the researcher approach multiple real-life situations or “cases” as individual experiments, not as multiple subjects across a unified experiment (Campbell, 2012). This research method allows the researcher to utilize multiple sites as platforms for extending or surfacing a theory (ibid). Most research designs attempt to control the contextual factors out of their studies, while case studies embrace context to saturate the learnings with a fuller and complete understanding (Yin, 1981). To properly conduct a comparative case study analysis, the comparative component of the research method *must* be conducted post-hoc (Campbell, 2012). This approach was meticulously applied throughout this research to ensure that accurate and unbiased results were recorded.

Yin decrees that “case studies allow one to examine the knowledge utilization process, and ultimately to recommend and design appropriate policy interventions” (1981, p.100). Though specific policy recommendations are not made following the comparative case study analysis, recommendations regarding planning guidelines and the future scope of agrihood-specific research are made.

Case Selection

The agrihood communities selected for this research were Prairie Crossing in Grayslake, Illinois, and Serenbe in Chattahoochee Hills, Georgia. The selection of the case study communities was based on a handful of factors.

First, both communities were to be cited as “agrihoods” by reliable sources, including academic journals, published books, and reputable secondary source publications.

Second, both communities were selected based on their establishment dates. Both communities are considered pioneers of the agrihood community movement and therefore have well-established procedures and practices regarding their respective food activities. It was assumed that a snapshot of the current food attitudes, behaviors, and practices in these pioneer communities would reflect standard community operations more accurately than a newer agrihood that is still developing norms and standard practices.

Third, the case study communities were considered for their proximity to large urban centres. This measure was simply to assure the relevance and importance of the research. As the UN expects 70% of the population to live in cities by 2050 (Musa, 2016), selecting communities

that interact in significant ways to major cities was pertinent for conducting research that will be relevant to future urban planning development.

Fourth, the climate was also a consideration in the selection process. A northern city was intentionally selected in an effort to conduct research relevant to future Canadian urban planning and development as it is likely a northern city would share agricultural challenges and opportunities with many Canadian regions. The second agrihood was chosen for its contrasting climate. As the research methodology is a *comparative* case study analysis, choosing two communities with varying climate considerations was considered useful in highlighting different obstacles and opportunities faced by each community.

The qualifying characteristics of each case are shown in **Figure 1.0**

Figure 1.0

Case	Sources	Established	Urban Centres	Climate
Prairie Crossing, IL	academic journals ✓ published books reputable ✓ secondary publications ✓	1992	Approx. 45mi from Chicago (Cook County). PC is in Lake County, one county north of Cook County.	Continental
Serenbe, GA	academic journals ✓ published books reputable ✓ secondary publications ✓	2004	Approx. 30mi from Atlanta (Fulton County) Serenbe is also in Fulton County	Temperate Humid Subtropical

Data Collection

The data was collected through interviews with distinct leaders in each community, through email communication with community leaders, and through a digital questionnaire passed onto residents by community leaders.

Initially, the interviews were scheduled to take place in-person and paired with community tours and site visits in both case communities. These plans were altered due to travel restrictions in place on account of the COVID-19 pandemic. The site visits were cancelled, and the interviews were scheduled over Zoom (an online video-conferencing application) instead. Each interview was recorded, as consented by participants.

For Prairie Crossing, a 60 minute interview was conducted with Nathan Aaberg, the Director of Conservation & Working Lands for the Liberty Prairie Foundation: a not-for-profit responsible for community operations in Prairie Crossing. Initially, an additional interview was scheduled with community founders, George and Vicky Ranney, but they were inaccessible by Zoom. The interview with Nathan lasted approximately one hour. Follow up emails were sent to resident farmers, Jen and Jeff Miller, to gather statistical data regarding farm operations. Nathan Aaberg distributed the resident questionnaire to local Prairie Crossing residents.

Interviews were conducted with Serenbe founder Steve Nygren and Serenbe's original architect and planner, Dr. Phill Tabb. Mr. Nygren's interview lasted approximately 40 minutes, while Dr. Tabb's last about 90 minutes. Emails were exchanged with Monica Olsen, Serenbe's VP of Marketing, and she distributed the resident questionnaire through Serenbe's homeowner association.

The resident questionnaire was created on Google Forms, which is a live document that can be filled out by residents from their computers, and the responses are collected and stored virtually. The questionnaire had eleven questions. Nine questions focused on food purchasing behaviour, one focused on motivations behind residency in the agrihood community, and one addressed recreational opportunities in the communities. Residents of both communities were afforded two weeks to fill in the resident questionnaire. Homeowners associations in both communities were the primary distributor of the survey. There were 58 respondents from Prairie Crossing (approximately 5% of residents), and there were 35 from Serenbe (also around 5% of residents, or it could be considered slightly higher if the calculation were based on full-time residency). Plans to distribute a second round of questionnaires in person at various public locations in each respective community were withdrawn due to pandemic travel restrictions.

Many of the statistics regarding food production, community demographics, and farm operations were available on the community websites and through published works. Prairie Crossing's data and statistics were found on their website at <http://prairiecrossing.com> or in John Scott Watson's book *Prairie Crossing: Creating an American conservation community* published in 2016. Serenbe's data and statistics were found on their community website at <https://serenbe.com/>, in Dr. Phill Tabb's book *Serene Urbanism: A Biophilic Theory and Practice of Sustainable Placemaking* published in 2016 and via Serenbe's podcast *Serenbe Stories* found through the streaming application Spotify at <https://open.spotify.com/show/2YxFgEcgv46WsOkxcvoqrm>.

Data Analysis

In analyzing data for research objective one, data regarding food production (in weight) for each community was tracked down. This information was found in Phill Tabb's book: *Serene Urbanism: A Biophilic Theory and Practice of Sustainable Placemaking* and revealed through an email exchange with the farmers at Prairie Crossing, the Millers. These numbers were then compared to residents' food needs, as determined by the U.S. Department of Agriculture (cited in Aubrey, 2011), in each community to determine the percent of food the community farms supply.

To establish the recreational component of Hauser's agrihood qualifications, both community websites were examined for mention of recreational services, and all services were catalogued. Residents were asked in the questionnaire if recreation was a motivating factor in their move to the agrihood communities and how frequently they made use of the available recreational services to quantify the importance of recreation in the lived experience in agrihoods.

Building and conservation standards are listed on both of the communities' websites, which were catalogued and corroborated by both John Watson's book *Prairie Crossing: Creating an American conservation community* and Tabb's *Serene Urbanism: A Biophilic Theory and Practice of Sustainable Placemaking*.

To determine Hauser's qualifications in the reality of the two case studies, each interviewee was asked if they thought Hauser's three agrihood qualifications were accurate in describing their respective communities. Their responses were heavily considered in assessing the importance of Hauser's qualifications.

The resident questionnaire was vital in exploring the second research objective. As seen in Appendix A, residents were asked to quantify the frequency of transactions associated with their food purchases that involve zero intermediaries, one intermediary, or more than one intermediary to determine the range of *social proximity*, according to Galli and Brunori (2013). The social proximity involved in farm food sales in each community was calculated based on the various distribution channels employed by their respective farms. These channels were discussed in Phill Tabb's interview, were found on Serenbe Farm's website at <https://serenbefarms.com/> and discussed in Tabb's *Serene Urbanism: A Biophilic Theory and Practice of Sustainable Placemaking*. Prairie Crossing's distribution channels were divulged by the Millers in an email exchange, as found in Appendix B.

The *physical proximity* associated with sales from farm produced food was reported in Phill Tabb's book by the Miller's regarding Prairie Crossing's farm's distribution. The physical proximity associated with resident food purchases was not addressed in the questionnaire as it was

improbable that residents would know how far each of their food items travels before reaching their kitchen pantry. Instead, residents were asked about the percentage of the food they believe in having originated from within their community (Appendix A). This question aimed to reveal the volume of transactions that occur across short physical proximities. This measure was considered to shed light on the community model's ability to perpetuate short distance exchanges of food when data regarding hard measurements on distance were unlikely to be available.

The same questions in the resident questionnaire were used to determine the number of intermediaries involved in food purchase transactions as per Renting, Marsden and Banks (2003) categories of interactions involved in a food supply chain (Appendix A). This data was examined to determine the most prevalent types of interactions taking place by residents in their food purchases.

Interaction types experienced by the farms in each community were surmised based on the distribution channels in which they participate.

To achieve the third research objective, common themes were written down when surveying each community website, when reviewing published literature on each community and when analyzing interview responses. The lists of common themes were then cross-compared between the two communities to determine obvious overlap. Overlapping themes were searched on the websites of ten other agrihood communities to determine if the themes were considered a significant aspect of *most* agrihoods or perhaps unique to the two case studies.

Case Studies

Serenbe, GA

History

Serenbe is located in Chattahoochee Hills, a city in Fulton County, Georgia's most populous county. Serenbe is about a 45-minute drive outside Atlanta (also in Fulton County), which is considered rural countryside (Olsen, Feb 10, 2020).

Chattahoochee Hills was the original territory of the Indigenous Creek tribe but was ceded to the United States by way of treaty in 1821 and 1825 (Sullivan, Landavier, 2007). The 19th and 20th centuries saw agriculture as the dominant land use in the area (ibid), which only began to change as the 20th century neared its end and suburban sprawl began to overwhelm the county (Olsen, Sept 30, 2019).

Serenbe developed as somewhat of a pet project, albeit a multimillion-dollar one, of the Nygren family. In the late 1990s, the Nygrens had relocated from their home in Atlanta to their

“country home” in Chattahoochee Hills (Kirk, 2018). When Steve Nygren caught wind of potential development in the area, which, at the time, was a mixture of unused agricultural lands and natural landscape, he set about putting together a plan to protect some of the surrounding landscape.

The Nygrens decided to save the land by developing part of it. Steve, a successful restaurateur responsible for the opening of a series of high-end restaurants in Atlanta, did his research on land conservation developments. He visited existing agrihoods such as Prairie Crossing in Illinois and Seaside in Florida (Olsen, Sept 30, 2019). Nygren was also privy to research that the Urban Land Institute had recently published on golf course communities, which revealed that the residents of these communities golfed less than two times a year (Olsen, Sept 30, 2019). Nygren put his learning together to develop his vision for a master-planned community that appealed to those seeking spacious homes while prioritizing land conservation and sustainability.

In 2000, Nygren got to work pitching the local landowners on utilizing their land to contribute to the development. He started first with the landowners that possessed the largest pieces of land (ibid). Nygren was able to determine the 36 largest landowners (owning 180 acres or more) based on public tax records (ibid). His pitch to this group detailed that any land they contributed would stay in their name, they could preserve the beauty and rural character of the countryside, and they could all expect to turn a profit due to the premium prices he had discovered homebuyers were willing to pay for a scenic, spacious community like an agrihood or golf course community (ibid).

For the landowners of 179 acres or less, the Nygrens and a hired strategic planning group that led public consultations with the primary objectives of “educat[ing] [the public] on the threat of what could happen” if they did not participate and left land-use decisions up to “developers” (Olsen, Sept 30, 2019). This warning is slightly misplaced, as the Nygrens, at this juncture, were developers themselves. However, they conducted an exercise that involved landowners circling features (natural or built) on a local map that they might hope to see conserved during the development process (ibid). Based on the development patterns of Fulton County over the last two decades, the strategic planning group projected that thirty thousand homes would eventually be erected in the space in question (ibid). Following the initial exercise, they asked the landowners to create configurations of these thirty thousand homes amongst the features they had encircled for protection (ibid). The planning group took these suggested configurations and consolidated them into three potential designs that incorporated professional design principles and presented them back to the small landowner groups. From there, a design was selected (ibid).

Meanwhile, the Nyrgrens, the developers, and architect Phill Tabb were conducting similar meetings with the large landowners. Nygren separated the meetings as he understood there to be a severe lack of trust between the large and small landowner groups (Olsen, Sept 30, 2019). He believed that any idea or suggestion coming from one side would be provocative and polarizing to the other (ibid). Nygren worried that emotional, political, and social divides between the groups might derail a meeting's productivity, so he strategically kept them separate (ibid). The outcome of the meetings with the large landowners was a community blueprint that looked nearly identical to the one put forward by the small landowners (ibid).

Together, the Nyrgrens and the majority of local landowners created the Chattahoochee Hills Country Alliance (Olsen, Sept 30, 2019). The Alliance became the entity that carried out Serenbe's development. Each landowner in the Alliance had to "buy-in" at the price of \$2/acre based on their land contribution (ibid). Eventually, the Alliance secured grants from the Fulton County Economic Development Corporation in partnership with the local chapter of the Nature Conservancy (ibid). The Alliance also acquired additional investors and obtained the approval of Public Works regarding the community design (ibid).

The Nyrgrens were capable of developing on the lands while landowners retained ownership through the transfer of development rights (TDRs) (Olsen, Sept 30, 2019). TDRs involve purchasing the rights to develop on a landowner's property by an external party (ibid). It is essentially a legally binding process that allows one party to prevent another from further developing their property through the exchange of money or other currency (ibid). TDRs are typically used in rural settings in the United States to preserve land with agricultural or ecological value (Greenaway, Good, 2008). This is precisely the approach the Chattahoochee Hills Country Alliance took to conserve the desired land from future development (Olsen, Sept 30, 2019). The rationale behind this approach stemmed from research found by Steve Nygren which indicated that 7% *more* land is conserved for every dollar put into a TDR program compared to other land preservation programs such as land trusts (ibid).

Purchasing the TDRs was important as maximizing land preservation was *the* key objective in Serenbe's development. When Nygren initially visited other agrihoods he saw that many of them were subject to leapfrogging suburban developments. These surrounding developments snuggled tightly to the borders of the agrihoods in order to enjoy the benefits of their land conservation efforts without dedicating space or funds to preserving land themselves (ibid). He saw the mass purchase of TDRs as a strategy to avoid the leapfrogging issue from arising in the future (ibid).

In some states, TDR rates are determined by the state, but in Georgia, TDR rates are determined by the free market (ibid). The Chattahoochee Hills Country Alliance purchased the TDRs from the local landowners at 50% of the total land value (ibid). This served to protect the land, but it also appeased the many landowners: many of whom were expecting a massive payday when suburban sprawl encroached on Fulton County. The landowners that gave up their development rights are still capable of developing on their land *as long as* the function of the development is considered an agricultural activity. Agricultural activities include farmland, barns, processing plants, and even breweries (ibid).

With land acquired, development rights purchased, state approval received, investors secured, and community plan finalized, the next step was finding builders. Builders were not interested in coming to South Fulton (where Serenbe is located; Atlanta is in the North) (Olsen, Oct 28, 2019). Suburban sprawl had not quite reached South Fulton at that point, so there were concerns amongst builders that developments in that area would not sell. The builders were skeptical about the likelihood of getting paid for the work required to erect Serenbe (ibid).

The Nygrens and their development team were able to secure forty presale units, which, in turn, secured builders. In 2004, the first twenty homes were built, the Nygrens turned their original farmhouse into an inn on community land, and small commercial establishments popped up, creating the core of the community as it is still considered today (Tabb, 2016).

The Community

Serenbe is around 1000 acres and houses about 600 people in 350 homes (Kirk, 2018). The houses are a mix of single-family homes, townhouses, and apartment buildings (ibid). The architectural styles of the structures vary broadly from modern bungalows to Victorian-style homes. Variety in architectural styles was always a priority in Nygren's vision for Serenbe (Olsen, Oct 21, 2019) as he believes this characteristic is what distinguishes a "town" from a "development" (Kirk, 2018).

The community is split into five subdivisions, or Hamlets as they call them, each of which has a unique theme:

- *Selborne* has a focus on the arts.
- *Coweta* focuses on family and play.
- *Mado* has a health and wellness theme.
- *Grange* focuses on food and agriculture.
- *Phase V*, which is forthcoming, will have education as the central theme (Grawe, 2020).

Each subdivision has its own “downtown” area that includes commercially zones lots where the themes of the respective hamlets are most apparent. The commercial businesses that operate within these areas include: [*these numbers are an estimate based on details located on Serenbe’s website*]

- three food retailers
- six foodservice establishments
- eight retailer shops with varying products from bike equipment to beauty supplies to one of a kind art pieces
- three fitness studios
- approximately ten service providers, including doctors, physiotherapists, tutors, hair dresses, and nutritionists

The overarching design concept that shapes the layout of Serenbe is a conjuncture of numerous design tenets including *new urbanism*: an alternative to low-density, auto-dependent designs that prioritize walkability, mixed-use development and public green spaces (Ellis, 2002); *sacred geometry*: the symbolic and intentional utilization of the “immeasurable qualities” of geometry that resonates with the geometry inside the human body, creating a visceral sense of placemaking (Tabb quoted in Olsen, Feb 10, 2020); *Thorburn’s Transects*: spatial organization of building and landscape distributions typically found in English villages where building density increases towards village centers and nature overwhelms the landscape as one moves away from the village centre (Tabb, 2016); *classic English village arrangements*: which refers to the diversity in structure types and architecture paired with high density and abundant natural landscape (Olsen, Feb 10, 2020); and *Constellation Urbanism*: community growth through multiplication rather than addition, essentially meaning that the interdependent placemaking features of the community work in combination to support a growing constellation of relationships (Tabb, 2016).

The community’s conservation mandate is to develop 30% of the land while preserving 70% (Olsen, Oct 28, 2019). This breakdown of land use was chosen to emulate that of Prairie Crossing (ibid). The preserved land is made up of forested areas, and disused agricultural land harvested previously for commodity cotton (Tabb, 2016).

The Farm

The organic farm that is part of the Serenbe community is 25 acres and exists within the Grange hamlet (Tabb, 2016). A produce market was planned in the downtown of the Grange hamlet for easy distribution (ibid). Of the 25 acres, approximately 2 acres are being harvested today (ibid). The farm is operated by a professional farmer hired by the community (ibid).

The farm produces over 350 types of vegetables, flowers, herbs, and mushrooms, distributed within a 64km radius through a CSA program (ibid). The farm produce is also distributed through the local farmers' markets that take place in the summer months and through local restaurants all year round (ibid). The farm is made up of both open crop fields and greenhouses. More details regarding the farm will be discussed below as they fit into both the agrihood and short food supply chain models.

Fitting the Agrihood Model

As discussed previously, aspects of Serenbe were evaluated under the parameters that Hauser (2019) outlined in qualifying a community as an agrihood:

- I. Does the community facilitate food production?
- II. Does the community provide recreation opportunities for the residents?
- III. Does the community support sustainability in the built and natural environments?

i. Food Production

Food production is undoubtedly a principal activity at Serenbe with around 60 000lbs or 27 272kg of food produced on only 2 acres of harvested land each year (Tabb, 2016).

The community also houses a "food forest" where native plants grow and are harvested by residents (ibid). The objectives of the food forest, aside from providing fresh, organic food to residents, is to inform residents of when to pick the food items, how to use them, and how to forage for them in surrounding landscapes (Green, 2017). The amount of food harvested from the food forest is not documented.

Serenbe also features a community garden where residents plant and harvest their own crops (Tabb, 2016). There are edible landscape features like blueberry bushes and fig trees surrounding public features, such as pathways and roads, within the community (ibid). The amount of food harvested from these sources is also not documented.

Beyond the various growing platforms, Serenbe also has six foodservice establishments that "produce" meals for residents and visitors alike daily. Perhaps this activity does not fit into traditional understandings of food production, but upon speaking with Steve Nygren, he identified

foodservice to be a core activity of the community that lends itself to the food-based identity of Serenbe. He believes that the restaurants in Serenbe, many of which have reputable status amongst “foodies” - likely due to Nygrens experience as a high-end restaurateur - provide a platform to educate and engage consumers on the many benefits of eating local, clean, good food (Olsen, Feb 17, 2020). He believes the values that the food businesses put forward create a ripple effect that augments the local agrarian market demand and therefore increases local food production in surrounding areas (ibid).

Beyond fostering the county’s agro-market, these restaurants utilize the food produced on the farm in their dishes. For example, the Farmhouse’s chefs visit the farm weekly to collect produce harvested that week (ibid). They then find creative ways to incorporate these items into their menus. This type of arrangement is not seen typically in the foodservice industry - aside from some upscale restaurants - as most businesses rely on consistent, planned ingredient procurement to plan a menu effectively and minimize food waste. This arrangement allows for freedom and creativity for farmers in their planting choices and the head chefs in their menu development.

ii. Recreation

Serenbe appears to have a significant focus on recreation, though Steve Nygren, when asked about recreation as a core objective of Serenbe, was hesitant to acknowledge this piece as a central component of the community. He said, “I wouldn’t word it quite that way” in reference to Hauser’s incorporation of recreation as a key objective of “agrihoods.” However, Steve admits that much of the natural landscape is designed to provide recreational opportunities to residents. There are physical recreation opportunities provided with 21km of nature trails available to residents to walk, run, hike, bike, or ride horseback. There are also tennis, basketball and bocce courts, a swim club, parks, playgrounds, and many indoor fitness facilities.

There are community gardens for residents, though most of the community’s properties provide the space for private gardening as well - something that many of the residents partake in, according to architect Phill Tabb, who lives in the community.

Art is a chief focus of Serenbe as one of the Hamlets (*Selbourn*) dedicates non-residential spaces to develop and promote arts in the community. Within Serenbe, there are visual arts programming and workshops available for all ages. There are also theatre, film, dance and art events available for residents to attend regularly.

Of the 34 households that responded to the resident questionnaire, about 28% indicated recreational opportunities as the *main* draw that led to their move to Serenbe. Additionally, 50%

of respondents said they make use of Serenbe's recreational programs or services at least once a day; 33% of residents use recreational services once a week; 0% of residents *never* take advantage of recreational opportunities in the community.

These numbers indicate that Serenbe attracted residents that consider recreation to be of importance in the community, and Serenbe appears to have delivered on this feature with 100% of the responding residents indicating they make use of the recreational features offered.

iii. Sustainability in Built and Natural Environments

Discussions with community architect and planner Phill Tabb indicated that sustainability in both the natural and the built environments were critical priorities in the development of Serenbe, and still are today. Tabb's guiding principles, those of sacred geometry and biophilia, both look to construct the built environment around the natural physical features of the landscape to minimize disturbances of the natural surroundings (Tabb, 2016).

Serenbe is an Earthcraft Certified Community (Wilson, 2013). Earthcraft is an American green building certification program with building standards in lighting, plumbing, ventilation, energy, and water management categories (Earthcraft, 2017). Though Earthcraft's standards are more lenient than say those of Passivhaus (the global eco-housing certification body) (Wilson, 2013), homes with Earthcraft certification show significantly improved energy performance compared to those that are not (ibid). Many of Serenbe's homes host geothermal (or solar-electric) energy systems that render some homes net-zero on energy usage, and many others close to (ibid). On average, these systems make homes approximately 35% more energy-efficient than homes without these systems (Kirk, 2018). According to Phill Tabb, Serenbe's building standards of today *require* that all new-builds include geothermal energy systems. Phill boasted of his geothermal system, as he was one of the early adopters who elected to have this type of system and shared that he saves hundreds of dollars each year on his hydro bill.

Serenbe also has LEED Certified buildings on-site - namely, the Blue Eyed Daisy, which upon its construction in 2005, was the smallest LEED Certified building in America (Olsen, Oct 21, 2019).

Serenbe is an intentionally walkable community, significantly reducing the need for automobility. Steve and Phill both acknowledged in their interviews that walkability was fundamental in the community design. To them, walkability is essential in creating a profound sense of community and heightened quality of life for residents of Serenbe. Walkability, defined by Nygren, is a distance of no longer than one kilometer between the home and community

amenities. Walkability is evident in the masterplan for Serenbe (**Figure 2.0**). There is a serpentine layout of residential and commercial structures transected with walking paths, allowing for overlap in the built environment and reducing walking distances between structures.

Figure 2.0



Serenbe Master Plan Map (Sourced from <https://serenbe.com/about>)

Other design features have been implemented to enhance the sustainability of the community. For instance, grass lawns are a rarity in Serenbe due to their abundant use of water and the opportunity they provide for synthetic fertilizer. Instead of front lawns are a variety of gardens or stone arrangements that improve biodiversity and reduce water needs (Kirk, 2018). Stormwater is managed with rain gardens that direct excess water to retention ponds that serve as water features in the community (Grawe, 2020).

As for the natural environment, a quest to preserve natural lands in the area was what initiated the development of Serenbe. In Steve's interview, he was clear that land preservation remains at the heart of the Serenbe community. Action was taken early on (through the purchase of TDRs) to ensure the preserved natural land's longevity, which makes up 70% of Serenbe's forty-thousand acres. The development rights reside with the Chattahoochee Hills Country Alliance, though Steve did not mention what measures are in place to prevent future members of the Alliance from disregarding the 70% rule of land preservation once Nygren moves on from the Alliance.

Serenbe's Food Supply Chain

Serenbe is evaluated against both Galli and Brunori's and Renting, Marsden and Banks' understandings of the short food supply chain. Galli and Brunori qualify such a food chain by the number of intermediaries in food distribution, the distance food travels between producer and consumer, and the food chain's ability to support small-scale family farms. Renting, Marsden and Banks' qualify a SFSC by the types of interactions that occur when the consumer obtains the food. Serenbe is compared against these SFSC qualifiers to determine if the community, as an agrihood, successfully shortens the food supply chain.

Distance

According to Phill Tabb in his book *Serene Urbanism: A biophilic theory and practice of sustainable placemaking* (2016), most of the food from Serenbe's farm travels no further than a 64km radius through a community-supported agriculture (CSA) program. The farm's website confirms this and details that the rest of the food is distributed to restaurants within the community, to restaurants in Atlanta, to some Serenbe's retailers, or at Serenbe's local farmers market.

Phill Tabb, however, says this is not entirely accurate. He says that food selection in the local retail shops is minimal and believes none of the offerings to have been produced on Serenbe's

farm. Tabb believes that the high price tags of food items deter residents from purchasing food at the local retail shops, which creates a feedback loop discouraging the retailers from stocking local perishable items as they will likely not be bought and instead put to waste. Tabb also mentions that he believes very little of the food grown at Serenbe Farms actually makes it onto the plates of the dishes sold at the local restaurants. Phill believes that most of the farm's produce is likely sold through the CSA programs and at the local farmers market.

Regardless of whether Phill's speculation regarding the true distribution paths of Serenbe Farm's food is accurate, the *distance* travelled by the farm's products is relatively short. The furthest the food travels is likely the estimated 64km radius of the CSA program.

Atlanta is only about 50km away from Chattahoochee Hills, so any food distributed to Atlanta is travelling even shorter distances than some of the CSA program food. If these numbers are accurate, it appears that all of the food produced on Serenbe's farm is distributed well within the means of Fulton County, which is about 1400 km².

However, there are some local artisanal food producers: *Serenbe Foods* that create preserves and jams, and *Bamboo*, a cold-pressed juice company, both of which offer to ship across the country. Though their products may make their way across the United States, it would be unlikely that many of their products make it out of the state or even out of the county, particularly for Bamboo Juice, as their products are perishable. Neither business responded to inquiries regarding their furthest shipping distances.

Intermediaries

The number of intermediaries that interact with food grown on Serenbe's farm ranges between zero to two. This number is exceptionally low as an apple grown in Ontario and sold in an Ontario Loblaws grocery store can have 7 or 8 intermediaries before finding its way into a consumer's hand (Pompa, Queirolo, 2019).

The most extended transaction is likely the sale of products through the aforementioned artisanal food producers. The producers themselves are intermediaries that source some of their ingredients directly from Serenbe Farm, which are then passed onto a transport carrier before meeting the consumer. These food items would be considered to have passed through two intermediaries before meeting with consumers. The same could be said for the restaurants that the farms supply in Atlanta, though the farm's website suggests that it is employees of the farm that transport the products to the restaurants. This arrangement nullifies the transport processes as an additional intermediary as the products stay within the farm's ownership until passed to the

restaurant. In this scenario, the restaurant would be the only intermediary that handles the food before serving it to the consumer.

The transactions with zero intermediaries are the farmer's markets where the farmers sell the produce themselves. Also, the farm box pick-up (aka. The CSA program) operation, which entails consumers picking up the produce boxes themselves at the farm, would be considered a transaction with zero intermediaries. Farm box pick-up has become the most common transaction experienced by the farm during the recent COVID-19 pandemic (Tabb, *personal communication*, Apr 22, 2020).

As the "ideal" number of intermediaries is zero in a short food supply chain (Galli, Brunori, 2013), Serenbe Farms could be considered to have successfully achieved this particular standard of SFSCs with their "short" distribution patterns.

The residents identified in the resident questionnaire that the majority of their food purchases involve two or more intermediaries. This is unsurprising as the only products available locally are fruits and vegetables. Residents would need to source all other food products outside the community, which would have a higher probability of passing through intermediaries.

Given these constraints, it is worth mentioning that 30% of Serenbe residents indicated that more than half of their total food purchases involve zero intermediaries. As fruits and vegetables tend to make up less than 50% of American diets (Aubrey, 2011), this likely means that many residents actively seek out local items in other food categories. The significance of this will be discussed further in the *Comparative Case Study Analysis* section.

Supporting Family Farms

Steve Nygren believes that Serenbe and Serenbe Farms play an influential role in supporting small farms, organic agriculture, and the local agrarian market. First, Serenbe's restaurants source the majority of their ingredients from the nearby farms in Chattahoochee Hills or else in Fulton County (Olsen, Feb 17, 2020). Second, the Rodale Institute, a non-profit that looks to expand organic agriculture by supporting farmers, conducting research and educating consumers (Rodale Institute, 2020), is opening their first research facility on organic agriculture in Chattahoochee Hills that is to be named the South Eastern Organic Research Centre (Olsen, 17, 2020). The goal of the research centre is to foster and support southern organic farmers while researching with the intention of opening more doors for future organic and regenerative agriculture (ibid).

Steve said the location of this research facility is no coincidence. He said that Serenbe is “ground zero” for a lot of organic agricultural programs, and the Rodale Institute visited Serenbe to “take a look at what [Serenbe is] doing” and consequently made their decision to expand their research in Chattahoochee Hills.

Steve believes that Serenbe not only propagates organic agriculture in the area by leading by example with their farming operations but also through the entire food culture that lives within Serenbe. Through the restaurants and artisanal food businesses in Serenbe, Steve says they are “developing a market for people that appreciate fresh, good food” (Olsen, Feb 17, 2020). He believes Serenbe to be contributing to the revival of local food and the abandonment of “big ag” from consumers in the area.

Beyond fostering a market for organic food, the community’s farm also contributes to developing skills of new farmers in the organic sector. Serenbe Farms takes on apprentices every year to educate young, potential farmers on organic farming methods. The farm also takes on weekly volunteers for the same purposes.

Serenbe hires a resident farmer and allows them the responsibility and freedom to plant and manage their farm in whichever way they see fit provided they follow organic methods. The farm management model employed at Serenbe Farms typically helps in developing the skillsets of young farmers before they venture on their own to start up an organic enterprise or share their knowledge with a different farm looking to employ organic methods.

Serenbe Farms also extends educational opportunities to those interested in organic farming through private or school farm tours.

Interactions

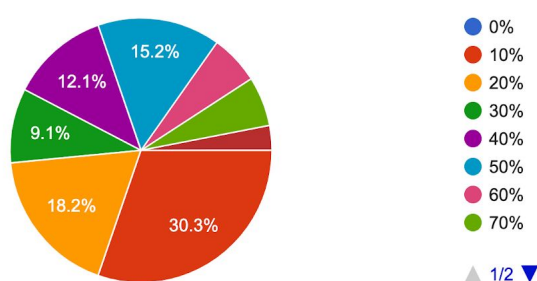
i. Face -to-Face

Many of the *farm’s* interactions appear to be face-to-face. Most of the products from Serenbe farms are passed directly into the hands of the consumers through the CSA program, which is delivered by farm apprentices or picked up on the farm by consumers through the farmers market or via farm side pick up.

As for the *residents*, just over 30% of survey respondents believe that only 10% of their food purchases involve face-to-face interactions with the producer. As **Figure 2.1** demonstrates, this was the most significant voting contingency.

Figure 2.1

To your knowledge, what percentage of your groceries do you purchase directly from producer?
(eg. at the farmers market or from a stand directly on the farm, etc)
33 responses



ii. Proximate

The remainder of the farm's interactions that occur in its distribution channels is proximate. The restaurants and small artisanal food producers act as guarantors of the quality of Serenbe's foods - a vital understanding of the intermediary in these transactions, according to Renting, Marsden and Banks (2003). The restaurants that source from Serenbe Farms are considered upscale, which creates an inherent trust in the quality of a product based on the price tag attached to it as consumers associate cost with both health (Haws, et al., 2017) and quality (Zeithaml, 1988). The artisanal businesses also act as guarantors and create a similar trust with the consumer through price point, language that identifies the quality and provenance of the ingredients, and qualifying labels such as Bamboo Juice's "Certified Organic" label found on every bottle.

The majority of residents (75.8%) estimate that any food purchases stemming from proximate interaction make up between zero and thirty percent of their food purchases. In reality, this number might, in fact, be lower, while face-to-face interactions might be higher than previously suggested. This disparity is due to incorrect phrasing in the survey which suggested

that CSA boxes were a *proximate* interaction (as indicated in Renting, Marsden and Banks work [2003]); however, Serenbe's particular CSA box model involves *face-to-face* interactions. Should residents have selected the frequency of interaction types based on examples provided, they may have expressed proximate interactions to take place more frequently than they do in reality.

iii. Extended

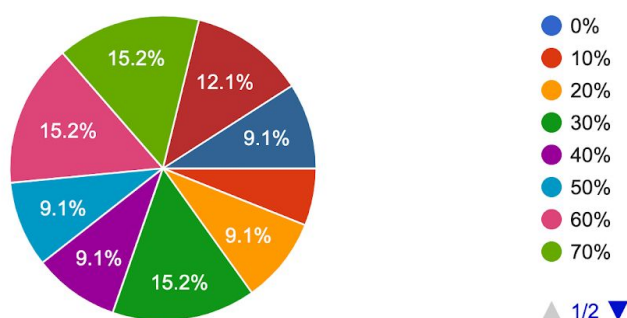
There are no extended interactions that occur in the distribution of farm food. There are potentially a handful of extended interactions between artisanal food product businesses and their final consumer. Both Bamboo Juice and Serenbe Foods offer transnational shipping, though it is unconfirmed whether this happens regularly or at all as neither venture responded to an inquiry on the subject.

As for the residents, the percentage of food acquired through extended transactions varies dramatically amongst households. As shown in **Figure 2.2**, respondents indicated that anywhere between 10% and 100% of household groceries come from extended interactions. The likely reality is that the majority of these purchases are from big box grocery stores as Walmart is the largest food retailer in the United States, while online food purchases, predominantly from Amazon, are taking American households by storm as online grocery shoppers tripled between 2018 and 2019 with almost 100 million customers today (Redman, 2019).

Figure 2.2

To your knowledge, what percentage of your groceries were likely exchanged between many intermediaries prior to your purchase – such as a...ged hands MULTIPLE TIMES prior to your purchase).

33 responses



Prairie Crossing, IL

History:

The land where Grayslake, Illinois sits today was the territory of the Indigenous peoples of the Potawatomi tribe for about four centuries (Village of Grayslake, n.d). The Potawatomi were driven from the land through flimsy treaty deals signed in 1804 and reinforced through the Black Hawk War in 1832 (Village of Grayslake, n.d.; Lewis, 2013). Illinois, and Chicago in particular due to its promising location wedged between prominent water features, was marketed as a frontier town (Lewinnek, 2014). A vast and “vacant” area prime for land speculators provided the opportunity for land ownership, self-determination, and the ability to improve class standing, which equated to the “American Dream” that drove so much of America’s expansion in the 19th and 20th centuries (ibid).

Early settlers took up farming in the area, mostly in soybean and sweet corn (Prairie Crossing, n.d.). By the late 1800s, a village formed in the area that featured residential and commercial space, and a railroad that spurred growth and development in the town (Village of Grayslake, n.d.). In May 1895, the village was officially incorporated as the Village of Grayslake (ibid).

The area remained mostly agricultural throughout the twentieth century (Watson, J., 2016). It was difficult to convert the area’s natural grasslands to arable land due to the dense, complex root systems of the native tallgrass species (ibid). Once the land was plowed and crops were planted, adequate irrigation was also a fickle practice in the area as the summers were hot and dry, and with each spring water inundated the area due to its proximity to the Great Lakes and the Mississippi River (ibid). These issues prevented farmland from developing quickly. However, the first of these issues changed in 1837, when John Deere, an Illinois local, developed the first cast-steel plow that broke ground, literally, for large scale farming by tackling the deep, vigorous root grass systems (ibid)

A second wave of agricultural expansion was made possible with the invention of a tile drainage system that solved the irrigation issue by cutting off the land from its hydrological linkages in the early twentieth century (ibid). Eventually and a third massive agricultural expansion was experienced with the post-WWII petrochemical revolution that introduced pesticides and herbicides to the area (ibid)

While farming was expanding in Grayslake and surrounding areas, Chicago was rapidly developing as it continued to promise land and home ownership for newcomers. To accommodate for the continual influx of Chicagoans, the city steadily built outwards. Chicago pioneered the classic American model for suburban sprawl (Lewinnek, 2014). Chicago was one of the first major American cities to advocate for continual outward residential expansion that featured spacious,

single-family homes in settings where urban and rural advantages “agreeably combine” (Runnion, 1869).

Extensive sprawl was seen across the entire state of Illinois by the twentieth century, which resulted in significant ecological loss and degradation. Chicago itself has lost 90% of its wetlands to agriculture and urban development since the mid-nineteenth century, while the state only hangs onto about one square mile of native grassland of the 22 million acres of grassland that existed before settlers arrived (Watson, J., 2016).

In continual efforts to expand the Chicago area, an extensive residential development was proposed for Grayslake in 1972. The proposal, called the *Heartland Development*, consisted of three thousand conventional housing units along with commercial and industrial components on 2200 acres of land in Lake County, Illinois (Prairie Crossing, n.d.; Watson, J., 2016). As a reaction to the Heartland Development proposal, a group of neighbouring landowners that feared “such suburban sprawl would destroy the rural landscape they loved in the heart of Lake County” (Prairie Crossing, n.d.) initiated a legal crusade against the developers of the proposed housing units (ibid). The legal battles lasted fifteen years before eventually ending with the *Heartland Settlement* and a public-private partnership between the residents’ group and various local governments (Watson, J., 2016).

The Heartland Settlement parcelled the land in question into three distinct divisions with respective zoning regulations (Enstad, 1987). The first two parcels were rezoned and permitted the developers to construct about 1500 dwellings (ibid). The third parcel was withdrawn from the developer’s proposal to satisfy the resident group’s preservation campaign (ibid). This third parcel of land would eventually be purchased by the resident’s group and become what is known today as Prairie Crossing.

Gaylord Donnelley, the heir of the fortune 500 printing company R.R. Donnelley and Sons, and his wife Dorothy Donnelley championed and funded the legal battle against the developers, settled the litigations and purchased the 625-acre parcel that would become Prairie Crossing (Watson, J., 2016). The Donnelley’s had an audacious idea, a precursor to Nygren’s idea in Atlanta, to save the land by developing it.

The Donnelley’s assembled a planning team to create an “alternative to the prevailing pattern of suburban sprawl,” which included George (the Donnelley’s nephew) and Vicky Ranney (Prairie Crossing, n.d.). This planning team eventually founded the Prairie Crossing development plan that prioritizes natural land conservation and reinvigoration of local agriculture (Prairie Crossing, n.d.).

The idea for Prairie Crossing and its conservation efforts were supported by each local government that had land involved in this proposal area, though there is no mention of community consultation found in the program's history (Buntin, et al., 2013). Once approved, the project moved from development to permitting, to construction, to the first sale of residential and agricultural properties within two years (ibid).

Following the development of Prairie Crossing, the Donnelleys created the Liberty Prairies Holding Corporation with seven other local families to purchase additional land for conservation (Watson, J., 2016). A partnership between this corporation and three municipalities in Lake County formed to create the Liberty Prairie Foundation. Together, the Foundation created a vision for the Liberty Prairie Reserve, an area of nearly 6000 acres of land owned publicly and privately, for land conservation on the outskirts of Prairie Crossing's borders (ibid).

The Community

Prairie Crossing's community is clustered within 677 acres of land, 30% is developed, while 70% is conservation land (Watson, J., 2016). The population of Prairie Crossing hovers around 1200 residents (Aaberg, *personal communication*, June 2020). There are 369 single-family detached homes of Midwestern-style architecture that occupy about 70% of the designated developed land (Watson, J., 2016). The other 30% is made up of small clusters of high to medium density housing units, mostly condominiums accounting for 36 individual units, around a central town square and railway station (ibid). These dwellings all vary in price, with a portion meant to fall "within the range of families needing affordable housing in Lake County" (Prairie Crossing, n.d.), however, Aaberg is not sure that Prairie Crossing has been successful in fulfilling this claim.

Vicky Ranney was responsible for a significant portion of the community's design. She drew much of her inspiration from Fredrick Law Olmstead: a professional champion of natural design. Vicky dedicated much of her studies and published writings to Olmstead during her days as a student at the University of Chicago (Watson, J., 2016). Olmstead's community model of *Riverside*, a suburb southwest of Chicago, was of significant influence on Prairie Crossing's final design. *Riverside*, built in 1869, is a 1600 square mile stretch of land situated along three miles of the Des Plaines River (ibid). *Riverside* is considered America's first master-planned community and first American modern suburb (ibid), though unfortunately, the American suburbs that were to follow would stray from the vision employed by Olmstead. Olmstead prioritized the natural features of the area in the community design and sought to create a "delicate synthesis of town and wilderness" (Jackson, 1987, p.79).

The Ranneys also drew inspiration from a more modern master-planned community that shared the values that they were hoping to instill in their community. *Seaside*, a planned community with New Urbanism undertones on Florida's Gulf Coast, imparted the Ranneys with lessons on environmentally conscious community design that consider modern planning details such as density, automobility, and natural land conservation. Beyond particular design features, Seaside inspired one of Prairie Crossing's more unique features: the Liberty Prairie Foundation. This private foundation supports the values expressed by Prairie Crossing's community design, including the development of local food systems and the protection and enhancement of natural landscapes (Watson, J., 2016).

Prairie Crossing also utilized core values of New Urbanism in its community design, not unlike Serenbe. Specifically, the designers strove for walkability but also focused on transit accessibility (Watson, J., 2016). Prairie Crossing capitalized on Chicago's extensive railway system and incorporated this popular transit method into their community design, which appealed to a working market looking for commuting access to downtown Chicago (ibid).

The Ranneys looked to create a community that applied the lessons they gleaned from both Seaside and Riverside while applying their unique sustainability priorities to the final design. What separated the Ranney's plan from those of the other master-planned communities was the twenty-one percent of land designated to organic farming, equating to 100 acres (Ladner, 2009). This feature, along with the wild habitat preservation, marked Prairie Crossing the first of its kind in community design (ibid). **Figure 3.0** depicts Prairie Crossing's master plan.

Figure 3.0



Prairie Crossing Master Plan (Sourced from

https://hereinvannuys.files.wordpress.com/2010/07/new_siteplan.jpg)

The Farm

Prairie Crossing's farm has been in operation since 1993 (Prairie Crossing, n.d.). The farm is owned by the non-profit Liberty Prairie Foundation, though it receives some funding through the Prairie Crossing Homeowners Association (ibid). The farmland is leased to multiple small farm businesses that grow and provide a diverse selection of organic products. These products are made available mostly through CSA programs, farmstand operations or at various farmers' markets (Watson, J., 2016). According to Nathan Aaberg, depending on the business, some of the farmers are also able to sell their products wholesale to other small businesses such as nearby restaurants.

These farmers are typically provided with short term leases lasting approximately five years, on small plots of 5 acres, at cost-effective rates, to allow them to establish their businesses and potentially move on and expand in a more permanent location (Watson, J., 2016). There is a plot of about 40 acres reserved for a larger and longer-term farm operator. This farm typically produces the bulk of the CSA products provided to Prairie Crossing residents (Watson, J., 2016; Prairie Wind Family Farm, n.d.).

Given the nature of this model, the farmers and their types of products change over time, but currently, the Prairie Crossing farm hosts six distinct farm businesses that produce a variety of vegetables, grains, cut flowers, fruit, and pasture-raised hens for eggs (Liberty Prairie, n.d.).

The Liberty Prairie Foundation also provides equipment rentals to the community's farmers and financial advising services.

Fitting the Agrihood Model

Like Serenbe, Prairie Crossing was evaluated under Hauser's (2019) agrihood qualifications.

i. Food Production

The majority of food production stems from Prairie Wind Family Farm, as it covers the most significant portion of farmland in the community at 40 acres. The Millers, the family that operates Prairie Wind Family Farm full time, said that of the 40 acres, 15 acres grow certified organic vegetables. They also raise 400 hens for organic egg production and harvest six additional acres of food from a permaculture food forest.

The Millers do not calculate the exact weight of their total harvest each year. Instead, they pride themselves in the many distribution channels that enable them to provide local food to various recipients.

These distribution channels include: 200 CSA boxes sent out weekly; a farm stand where they also distribute local goods from 15+ nearby farms; wholesale distribution to nearby restaurants; monthly farm-to-table meals the local charter school; local community events like *Pizza Night on the Farm* where Prairie Crossing residents can taste the seasonal harvest; farmers markets that residents of the greater Chicago area attend; and lastly they provide any excess food that does not make it through these channels - thousands of pounds on an annual basis - to a variety of local food pantries.

The types of vegetables they grow are innumerable as they change throughout the seasons and year to year. Some of the varieties include zucchini, tomatoes, leeks, potatoes, kale and summer squash.

Due to the climate in Chicago, the Prairie Wind Family Farm has greenhouses to keep food production activities viable throughout the year (Watson, J., 2016).

Prairie Crossing boasts edible landscape features throughout the community and a community orchard of eighty trees and bushes of nearly twenty varieties of fruits and nuts (ibid). The orchard is open for residents to harvest whenever they like. There is no data on the amount of food produced from these sources, but based on the number of residential units, assuming all are

lived in, and all households participate in harvesting the orchard, there is about one tree available for every five households.

In contrast to Serenbe, there are no local restaurants that use locally grown or produced goods. According to Nathan Aaberg, there is one bakery in the town square of Prairie Crossing, though they do not source their ingredients from any of Prairie Crossing's farms.

ii. Recreation

Prairie Crossing's website lists the existing "resident amenities" that provide residents with recreational opportunities. These amenities include natural recreation sites such as Leopold Lake, a site for recreational swimming, paddle boarding, fishing, canoeing, kayaking, sailing, and skating. There are ten miles of trails that connect to a greater network of trails that transect through the Liberty Prairie Reserve that surrounds Prairie Crossing's borders. These trails are equipped for hikers, runners, skiers, and horseback riders.

The community also provides an abundance of parks and greenspace - 14 parks, to be exact. These parks provide recreational activities for all ages and include playgrounds, sandboxes, basketball and tennis courts, soccer fields, and baseball diamonds.

For additional fitness recreation, there is a 24/7 fitness centre in the community that is maintained and financed by the homeowners association, so it is accessible to all residents.

There is a reasonably busy social event calendar also found on the community's website. The calendar is filled with activities such as weekly pizza and movie nights, art shows, film screenings, festivals, farm gleaning sessions, etc.

A large proponent of the recreational culture at Prairie Crossing is the Colby Barn. According to John Watson's research, more than one in five residents identified the barn as either the first, second, or third reason they decided to move to Prairie Crossing (2016). The barn hosts many community events such as film screening, farmers' markets, and even weddings.

The farm itself provides recreational opportunities through volunteer farming programs and volunteer gleaning - where unharvested crops are picked by volunteers and sent to local food banks. Over a quarter of residents reported having volunteered at the farm (ibid). A community garden is plotted next to the farm, where residents can spend time planting and harvesting their own crops as well.

Another popular recreational activity within Prairie Crossing is bird watching. About half of the residents identified this activity as one of their recreational outlets (Watson, J., 2016).

Unique wildlife is an important aspect of the community critical in the conservation efforts that initiated the development.

Overall, about 35% of respondents to the resident questionnaire identified recreation as the primary motivator that inspired their move to Prairie Crossing. Over half of the residents acknowledged that they utilize recreational amenities, programs, or services *at least* once a day, with the majority of remaining residents estimating that they participate in recreational activities once or a couple of times a week. Zero respondents reported *never* having participated in recreation within the community.

Sustainability in Built and Natural Environments

The developers of Prairie Crossing created a list of 10 guiding principles to help align the community design with the community spirit (Watson, J., 2016). The number one principle is “environmental protection and enhancement,” which, at Prairie Crossing, entails supporting biodiversity, emphasizing native landscapes, and managing stormwater effectively (ibid).

Prairie Crossing is able to protect much more than the natural lands within community borders, where the 70:30 ratio of protection to development is already significant compared to other conservation communities. The Liberty Prairie Foundation also protects 5770 acres surrounding Prairie Crossing, dubbed the Liberty Prairie Reserve (Watson, J., 2016).

Prairie Crossing has preserved a significant amount of natural land and has managed to *enhance* the area by creating healthy environmental conditions that welcomed back previously deserting species of wildlife (Watson, J., 2016). For example, there are approximately 130 species of birds today within the community boundary, which is about 115 more than before development (ibid). Various reptiles, including snakes and turtles, have also returned to the area (Prairie Crossing, n.d.). The surge in natural wildlife, which also includes fish, native grass species, and other flora and fauna, is due to the deliberate *restoration* program in the community. The restoration program is an effort that appears to be somewhat unique to Prairie Crossing, as many agrihoods will preserve the existing landscape once they acquire the lands, but conceded restorative practices are not mentioned in development plans of other agrihoods.

The restorative efforts of the Prairie Crossings area include planting flora native previously lost to the area due to agriculture or industrialization. Wetland restoration is a core restorative practice of Prairie Crossing which replenishes the health of the 35 acres of lake, pond, and wetland in the area (ibid). Developers and conservationists were careful to connect the restored and preserved lands through natural corridors in hopes that their efforts could

successfully pass genetic materials between populations and bring back the wildlife of all surrounding areas (ibid).

In terms of the built environment, the developers used particular design principles to allow residential units to use approximately 50% less energy for heating, cooling, and hot water heating than conventionally built new homes in the Chicago region (Prairie Crossing, n.d.). These design features include increased insulation, extensive sealing, strategic placement of heat ducts in the building's interior, airtight electrical outlets to reduce drafts, and high-efficiency furnaces and water heaters (ibid). Because of these features, Prairie Crossing was the first community-scale *Building America* demonstration project in the United States - an initiative of the U.S. Department of Energy that promotes energy conservation in partnership with the homebuilding industry (ibid).

Additionally, through the construction process, construction waste was reduced by 20% due to more efficient framing and structural systems engineering (ibid).

Later, when the structures were built in the town square, including condo buildings and office buildings, they were all LEED/ND certified.

Prairie Crossing's Food Supply Chain

Prairie Crossing was also evaluated against Galli and Brunori's and with Renting, Marsden and Banks' understandings of SFSCs to determine whether the community, as an agrihood, is successful in shortening the food supply chain for residents.

Distance

The Millers of Prairie Wind Family Farm do not believe their products travel any further than Oak Park, Illinois, which is about 45 miles away from the farm. Depending on which businesses are participating in the Business Development Centre at Prairie Crossing (i.e. the short term lease, 5-acre farms), distribution patterns may vary throughout the years. Some likely distribute to Chicago as there is a larger market there for specialty items. Though Chicago is essentially the same distance as Oak Park at 44.6 miles from Prairie Crossing Farm, so these items would not increase the range at which Prairie Crossing produced items travel. Nathan Aaberg believes that any products produced in Prairie Crossing likely do not make it further than Chicago.

Intermediaries

It appears unlikely that any of the food purchased on the Prairie Crossing Farm passed through more than one intermediary, with most products being exchanged directly between

producer and consumer. The only intermediaries that appear to exist between the farm businesses and consumers are the restaurants that purchase items wholesale and the food pantries that receive the farm-fresh foods and distribute them to families in need. All other interactions require zero intermediaries and take place directly between the farmers and the consumers through the farm stand, farmers' markets, events, or the CSA programs.

The Millers pointed out that even though there are a handful of transactions requiring intermediaries, the majority of their interactions do not. They sell 80% of their products through their CSA program and of the 20% that remains, only a small fraction of sales would pass through intermediaries as most sales occur through farmers markets and their farm stand operations (Miller, personal communication, June 10, 2020; Watson, J., 2016).

However, the residents themselves identified transactions involving two or more intermediaries being the most common amongst their typical food purchases. This number is not overwhelmingly surprising as similarly to Serenbe, given the scope of products available within the community, it is understandable that residents would need to look elsewhere for the items on their grocery list that fall outside of vegetables and eggs.

Supporting Family Farms

Prairie Crossing, or more specifically the Liberty Prairie Foundation, is responsible for farm operations and management and has a novel model that serves to support and foster small family farms. The Liberty Prairie Foundation operates the Farm Business Development Centre (FBDC). The FBDC is essentially a farm incubator that props up small farm businesses looking to get off the ground by offering land, equipment rentals, and financial advising and mentorship services (Prairie Crossing, n.d.)

Each farm in the program operates independently and as an organic, for-profit venture (ibid). The businesses are expected to "graduate" after five years with the hope that they transition into a full scale, permanent operation in a different location (ibid).

Prairie Crossing's website lists thirteen farm ventures that moved on and created permanent farming ventures within the Chicago foodshed after their experiences as part of the FBDC. Although not all graduating farmers remained directly involved in agriculture, the website details that many have continued their career paths in the food sector and are utilizing their knowledge and skillsets obtained at the FBDC to promote local and sustainable food cultures in various other capacities (ibid).

Another program found at Prairie Crossing, the Prairie Farm Corps, is one of the community's most significant influences on the future of sustainable agriculture. This program hires about 14 youth (15-18 years of age) to farm a plot of Prairie Crossing's farmland each year (Prairie Crossing, n.d.). The program aims to educate youth on the connection between the land and living systems while providing them with the skills and experience to carry on a career in agriculture or the wider food system (ibid). The students gain skills in transitioning the food from the farm to the table through a cooking program that is part of the internship (ibid). The cooking program is meant to provide an understanding of the uses and preparation methods appropriate for the foods they grow. All the harvested food not used in the cooking program is either sold at the nearby Libertyville Farmer's Market or donated to two separate programs that distribute healthy food to under-resourced families in Waukegan, IL (ibid).

Prairie Crossing also houses a Learning Farm of about three acres, including a children's garden, an orchard, a hen house, and greenhouses. The Learning Farm is meant to provide hands-on experience to all in organic agriculture practices, while it also serves as a classroom for the Prairie Crossing charter school (ibid).

Alongside these programs, there are farm tours available to educate interested visitors on organic agriculture run regularly (Watson, J., 2016). There are also community garden plots where organic practices are "strongly recommended" (Liberty Prairie Foundation, n.d.).

The community hosts many events that look to inspire and educate attendees in regards to sustainable agriculture. These events tend to include festivals, conferences, film screenings, workshops, gleaning sessions, and open houses on the farms. The events support family farms as they educate consumers on the value of supporting small scale, sustainable agriculture, which boosts the local market demand, creating opportunities for family farms to thrive.

Interactions

i. Face to Face

As discussed previously, many of the *farm's* interactions involve no intermediaries and therefore take place face-to-face. Of course, there are a multitude of farm ventures, and each has its own unique distribution patterns. Not all these sources have recorded data of where the resulting food items end up, but for those that do (Prairie Winds and Prairie Farm Corps), most of these products are distributed through face-to-face interactions.

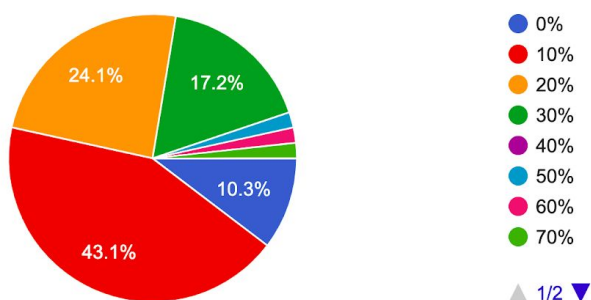
As for the community residents, most indicated that face-to-face interactions make up only a small percentage of their food purchases, with 10% of the respondents revealing that *none*

of their food purchases are directly from the producer. Only 5.4% of respondents believed that 50-70% of their food purchases took place through face-to-face interactions with 0% identifying any amount higher than 70% as seen in **Figure 3.1**.

Figure 3.1

To your knowledge, what percentage of your groceries do you purchase directly from producer?
(eg. at the farmers market or from a stand directly on the farm, UPick, etc)

58 responses



However, an overwhelming majority of residents, 84.2%, believe face-to-face interactions are involved with only 10-30% of their food purchases, with the majority (43.1%) suggesting that only 10% of theirs are face-to-face. Similar to Serenbe's survey, it is possible that, in reality, the number of face-to-face interactions is higher if residents responded to the question based on examples of the interactions listed. Again, the Prairie Crossing CSA program is actually an example of a face-to-face interaction and not a proximate interaction, as was listed on the survey.

ii. Proximate

The farm ventures in the community deal in a handful of *proximate* interactions. Examples include wholesale partnerships with local restaurants, distribution through local food pantries, and distribution through local organizations providing food to under-resourced families. There may be additional proximate channels for some of the FBDCs ventures. However, there was no evidence of any additional channels *currently* being utilized by any of these farm ventures. Prairie Winds Family Farm, the largest food producer in the community, indicated that it distributes a maximum of 10% of its products through proximate channels.

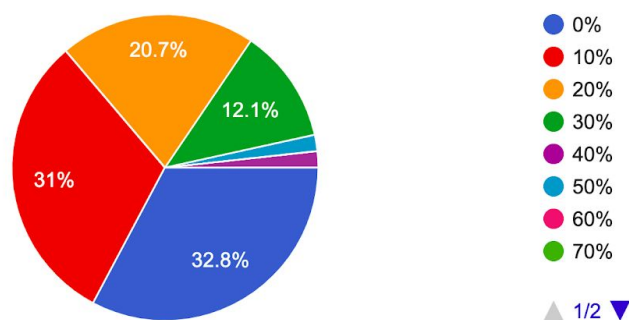
The greatest constituency of residents, at 33.3%, believe that *none* of their food purchases result from proximate interactions. Almost all other respondents to the resident questionnaire

(63.2%) identified proximate interactions as only 10-30% of their food purchases, as seen in **Figure 3.2**.

Figure 3.2

To your knowledge, what percentage of your groceries were brought directly from the farm to the retailer where you purchased the item - such as a...only changed hands ONCE prior to your purchase).

58 responses



iii. Extended

There does not appear to be any extended interactions that occur between food producers in the community and their final consumers. Again, this may be the case right now, though the statistics could change depending on the business model of the FBDC ventures.

The largest constituency of respondents to the resident questionnaire, at 22.8%, identified that 90% of their food comes from extended interactions. Nearly all respondents, 82.4%, believe that anywhere between half and all of their food purchases are through extended interactions.

Comparative Case Study Analysis

Both communities were born as a response to impending urban sprawl in their respective areas. Both were developed as pet projects of wealthy residents in the area that responded to a strong sense of place attachment.

Place attachment is a sense of belonging or emotional connection between a person and a place (Sandberg, et al., 2013). Place attachment is a constructed, acquired process unique to each individual and place (ibid). It varies in degree of intensity depending on several factors, including

homeownership, length of residence, stage of the lifecycle, economic investment, and social connections tied to a particular space (ibid).

Place attachment leads to a particular vision of rurality that is attempted to be preserved (ibid). In the cases of Prairie Crossing and Serenbe, these visions of rurality are somewhat different. Prairie Crossing looks to preserve and even restore the land towards the natural, historical land type; Serenbe looks to create their preferred version of rurality, which they associate with the English countryside.

These visions are captured and represented using different design approaches. While both attempted to prioritize a symbiotic, non-invasive melding of both the natural and built environment under a New Urbanist motif, both communities have their merits and missed opportunities regarding the sustainability of the built and natural environments.

Fitting the Agrihood Model

Food Production

Both communities have quite different approaches, spaces, attitudes, and priorities in terms of food production and distribution. As far as qualifying as agrihoods according to Hauser's checklist, both communities certainly *do* produce food. However, perhaps a crucial qualifier is missed in Hauser's evaluation of the role food production plays in an agrihood. Food production should be qualified by how *much* food is being produced within the community, and *by whom*?

If all residential plots were equipped with micro gardens where residents could grow their own vegetables, would that make a community an agrihood? What about if the community school had a learning garden for students to grow to produce?

The case studies reveal that it is the *whom* that sets them apart from any other master-planned communities that may host food activities. In both case communities, there are professional farmers that sell the products of their labour. Similar to golf course communities, residents contribute through funding and participation to support a shared "amenity" that generates revenue in the community from outside sources.

Understanding *how much* food is produced in these communities helps identify the validity of commercial farm operations as the community's core amenities. If, for example, the golf course in a golf community could only operate at a capacity of 20 golfers per day in a community of 1000 residents, it would be a questionable investment for residents who only have a 2% chance of using the central amenity each day. The same question is worth asking about the farms of agrihoods - can they supply enough food for residents?

Serenbe has "100 acres of designated organic farmland" (Tabb, 2016), but it is only actually harvesting two (ibid). From those two acres, 60 000lb of food is collected, which, for an individual, sounds like a lot, but in a community of between 600-850 residents (varies based on the season as not all residents are full time), it really is not that much. The average American eats about 1996 pounds of food each year (U.S. Department of Agriculture cited in Aubrey, 2011). Even if all the food produced on Serenbe Farms remained within the households of the community members, which is known not to be the case, the farms would only be able to supply about 3.5-5% of the food required to sustain the community on a yearly basis.

The farms on Prairie Crossing collectively harvest about ten times the amount of farmland compared to Serenbe Farms. Prairie Crossing has just less than two times the population of Serenbe, with an estimated 1179 residents (an estimation based on the average number of residents per single-detached house [3] and per condo [2] as provided by Nathan Aaberg, though he believes these to be conservative estimates).

Unfortunately, no data reveals the exact weight of the food produced within Prairie Crossing, but as the farms produce similar items to Serenbe (mostly vegetables), and they utilize the same organic methods, it might be reasonable to expect that Prairie Crossing produces approximately the same weight in food per acre as Serenbe. Under this assumption, Prairie Crossing would produce approximately 765 000 pounds of food per year within the 25.5 acres of harvested farmland. The 25.5 acres includes all harvested land of Prairie Winds Family Farm, the permaculture food forest, the learning farm, Prairie Farm Corps, and a combination of some of the food growing businesses involved in the FBDC. If all of the food produced in Prairie Crossing remained within the community, the farms would be able to supply around 33% of the required 2.4 million pounds the residents consume yearly.

However, both the 3.5-5% and 33% of food requirements that Serenbe and Prairie Crossing are respectively able to supply to their community are slightly unfair indications of the communities' self-sufficiency. Both communities predominantly produce fruits and vegetables, which tend to make up about 34% of an American's diet, with Americans eating approximately 273 pounds of fruit and 415 pounds of vegetables per year (U.S. Department of Agriculture cited in Aubrey, 2011).

With these numbers in mind, Serenbe and Prairie Crossing are much closer to meeting the community needs. Serenbe residents likely consume between 400 000 to 600 000 pounds of fruits and vegetables each year, and therefore Serenbe Farms supplies between 10-15% of their fruit and vegetable requirements. Again, this calculation assumes that *all* food is distributed amongst

residents, which is known to be inaccurate, so the real percentage likely falls slightly below 10-15%.

The farms at Prairie Crossing produce 94% of the fruit and vegetables required by residents who likely eat just over 800 000 pounds each year.

However, the total weight of food produced may actually be slightly higher in both communities as the food produced from the edible landscapes, community gardens, and private gardens were not included.

Though these numbers are only estimates, it would appear that Prairie Crossing is significantly more successful at supplying local food to its residents through its particular farm community model. However, the residents' responses to the questionnaires regarding their food purchasing behaviours are notably inconsistent with this result. The largest contingencies of respondents in both communities (between 45% and 50% of respondents) believed that only between 1-10% of their food was produced within the community, while the remaining responses differed quite drastically between communities. About 40% of the remaining Serenbe residents believed between 20-30% of their food purchases to have been produced within Serenbe. All remaining respondents from Serenbe (a total of 12%) believed they source somewhere between 50-70% of their food directly from Serenbe.

Prairie Crossing had a stark 22% of residents indicating that *zero* percent of their food is sourced from within the community. Of the Prairie Crossing respondents, about 30% believe 20-30% of their food originates from within the community. Less than 2% believe 60% of their food to have been produced within Prairie Crossing, while no residents indicated any percentage higher than 60% to have originated from within the community.

The cause of the inconsistencies between the *amount* of food produced in the community and the amount that appears to *stay* in the community could be a function of accessibility, awareness, or desire. To elaborate: residents may find accessing the food produced on-site inconvenient; they may not be aware of how, when, or where they can access the food; or they may simply have no desire to. Though a lack of desire is somewhat incongruous with other Prairie Crossing resident responses in the questionnaire as around 10% of respondents identified "access to local food" as the *primary* motivation behind their move to Prairie Crossing and over 70% of residents say they now prioritize buying local food since moving to Prairie Crossing.

Then why is it that 22% of residents believe that *none* of their food originated from within the community? This statistic is supported by another 10% of residents that do not purchase *any*

food directly from the producer. This likely means they are not purchasing any food that originated from Prairie Crossing, as the transaction involved would most likely be face-to-face.

No concrete connections can be drawn between why Serenbe, a community that produces a significantly smaller percentage of the food required to sustain community members than Prairie Crossing, appears to be more successful in getting that food into the hands of community members. There are, however, several possible explanations that would need further investigation to be substantiated.

First, it appears that the food produced on Serenbe Farms is *more* accessible and more *conveniently* accessible to residents in the community compared to Prairie Crossing. Serenbe simply has more distribution channels available than Prairie Crossing. There is a small food retailer that is designed to distribute some Serenbe-produced foods, which is an amenity that Prairie Crossing does not offer.

There are also the local restaurants that serve up local fare. This, again, is an option that Prairie Crossing residents do not have. Serenbe residents may have considered their food purchased at these local eateries in their overall local food purchases, which could account for why Serenbe's numbers of community-produced food purchases were higher than Prairie Crossings. Additionally, the food processors in the community (Bamboo Juice and Serenbe Foods) are another platform for accessing local food that Prairie Crossing does not have.

Second, while those additional platforms make local food *more* accessible to Serenbe residents, there are also factors at play that make Serenbe foods more *conveniently* accessible to Serenbe residents when compared to Prairie Crossing. First, there is likely a larger population of Prairie Crossing residents that commute into the greater Chicago area for work regularly than there is in Serenbe. Prairie Crossing had 15% of questionnaire respondents identify access to transit, highways, and the proximity to the city as essential factors in their move to Prairie Crossing while only 9% of Serenbe residents identified similar motivations. The residents that commute, whether by train or by car, are more frequently outside the community boundaries and potentially have more regular access to large food retailers where they will pick up all of their food purchases. This assumption is supported by research that finds the average weekly trips Americans take to purchase groceries have been declining for the last decade, suggesting Americans attempt to buy all of their groceries in a minimal amount of trips (Statistica, 2020).

It is also possible that CSA program purchases are made more conveniently accessible by Serenbe Farms than by Prairie Winds Family Farm. According to their websites, Serenbe Farms

offers drive-through pick-up and delivery options, while Prairie Winds appears to only offer on-farm pick-up options for Prairie Crossing residents.

Thirdly, it appears that there may be a more significant food culture within Serenbe than at Prairie Crossing. Though both communities support programming and events that bolster the education and sharing of local, organic foods, Serenbe also has a "foodie" culture established by the Nygrens and upheld by the foodservice establishments on site. The local restaurants are all higher-end: even the coffee shop has artisanal baked goods, specialty coffees, and full breakfast, lunch, and dinner menus. These establishments are visited frequently by residents as all except one respondent to the resident questionnaire acknowledged that they visit the restaurants at least once a month, with the largest contingency identifying "a few times a week" as the most accurate description of their habits. These dining experiences allow residents to taste and experiment with local and unique food items. The restaurants essentially act as guarantors of the local food, while providing learning opportunities for residents regarding local products, their uses, and their seasonality. Each of these experiences immerses residents into a shared experience and culture with their neighbours which could serve to build and maintain a profound sense of pride and passion in Serenbe's local food scene.

Recreation

As per Hauser's recreation objective of an agrihood, both communities are paralleled in their recreational offerings. The available recreational opportunities are nearly identical in each community, with trails being the most abundant and popularly used. The results of the resident questionnaire that inquired about usage rates of recreational services in each community are also nearly identical: 42.4% Serenbe residents identified that they participate in recreation every day, with 9.1% saying they do multiple times per day; 43.9% Prairie Crossing residents use recreational services every day with 8.8% using them multiple times per day.

Sustainability in Built and Natural Environments

Prairie Crossing appears to place more significance on the natural environment as grounds for nurturing wildlife and performing critical ecological functions. Serenbe looks to enhance the surrounding natural environment to create the desired aesthetic that compliments the built environment. This is not to say that Prairie Crossing is nobler in their design practices as Prairie

Crossing's design is also curated to create a desirable landscape that maximizes real estate profits. The observation is to highlight Prairie Crossing's unique orientation to land *restoration* beyond conservation that Serenbe, and other agrihoods, do not appear to consider in their missions.

Both communities play significant roles in the landscapes immediately surrounding community borders such as Prairie Crossing's Liberty Prairie Foundation's 5770 acre Liberty Prairie Reserve. Unfortunately, this reserve is an immensely desirable asset to developers in the area. Developers have snuggled their communities as tightly as possible to the Liberty Prairie Reserve. These developments can provide their customers with the benefits and beauty of the land reserve without having to participate in or fund conservation efforts themselves. Steve Nygren of Serenbe admits he was able to learn from Prairie Crossing's mistake, having taken on the planning processes about 20 years after Prairie Crossing's Ranneys. Nygren's tactic of purchasing the TDR's allowed the Chattahoochee Hills Country Alliance to preserve some 40 000 acres and avoid the leapfrogging developments to establish themselves in the area (Tabb, 2016).

Revising the Defining Concepts of an Agrihood

Hauser's understanding that an agrihood centralizes around food production, recreation, and sustainable built and natural environments proved to be accurate. A thorough examination of these communities provided insights to additional shared features and priorities between the two communities that may be worth considering in the overall agrihood model.

i. Conservation

An overwhelming desire to conserve local land and prevent urban sprawl is an essential core value of both communities. Without an initial passion for preserving the surrounding landscape held by local landowners, and of course, the resources to support the mobilization of this passion, neither community would have been developed. Through brief cataloging of other agrihoods in America, this statement appears to be valid for a handful of others including Rancho Mission Viejo in California, Skokomish Valley Farms in Washington, Willowsford in Virginia, Hidden Springs in Idaho and South Village in Vermont (that shares the 70/30 ratio of conservation to development as Serenbe and Prairie Crossing).

A handful of other agrihoods also focus on agricultural land conservation as a defence to urban sprawl. Skokomish Valley Farms in Washington, for example, places importance on both natural land and agricultural land conservation as they believe both of these activities enable conscious stewardship of the land (Skokomish Valley Farms, n.d.).

Land conservation is not mentioned in Hauser's (2019) defining qualities of an agrihood and is only mentioned briefly by Birbky (2016) and Guion (2017) as selling features adding to the desirability of agrihoods for potential homebuyers. Through speaking with community leaders, land conservation was identified as the foundation for the entire development, and it lends itself heavily to the culture of sustainability and stewardship that is prevalent in both communities.

ii. A Sense of Community

Nearly every agrihood views its ability to foster a "sense of community" amongst residents as critical in making these types of communities desirable. This concept may not have played an instigating role in the creation of agrihood communities like land conservation, but it certainly appears to have become a driving factor in shaping these communities today.

In the resident questionnaire, between 15-22% of residents identified a desire for a "sense of community " as the main motivation in moving into an agrihood. To follow-up on this question, Steve Nygren was asked what it is that he believes *keeps* residents in Serenbe once they move in. Without hesitation, he said, "the sense of community." He believes that Serenbe creates a palpable connection between people and nature. He believes much of this stems from Serenbe's design tenets, such as sacred geometry, which evokes a connection between people and the landscape. Nygren says this sense of community may be tied back to the shared experience with the farm or the art in the community.

Prairie Crossing is equally community-oriented. Nearly one-quarter of residents that filled in the questionnaire identified a desire to be part of a close-knit community as the primary factor in their move to the agrihood. Supporting community members was also ranked highly by Prairie Crossing residents in their rationale behind purchasing local food. Many of the resident testimonials on the community's website identify the "sense of community" perpetrated by the agrihood design as the most influential factor in their community satisfaction rates.

iii. Exclusion

A stark similarity between the two communities is the lack of representation of people of diverse ethnicities or socio-economic standings. Both communities appear to be accessible almost exclusively to white, affluent residents.

There are no explicit records that identify the demographics of each community. Phill Tabb believes these forms of data are deliberately omitted to hide the lack of diversity that he says is evident by simple observation. Tabb, who owns two properties in Serenbe, one of which costs him

\$6M, said that this community model leaves behind those who cannot afford to pay for the luxury of green space. It is an exclusive model that unfortunately creates a homogenous community makeup.

Nathan Aaberg mentioned similar issues with Prairie Crossing. He believes that of Prairie Crossing's guiding principles, number five - "economic and racial diversity" - is where the community has failed most significantly. One issue that exacerbates the lack of diversity in Prairie Crossing is that there is no longer space to pursue solutions to this problem. The agrihood has already fulfilled the 30% of land designated for development. If, for example, the agrihood decided they wanted to develop affordable housing units, they would have to dig into the 70% of the land designated for conservation, which goes against the founding principles of the community.

Aaberg, when asked what he might do differently if he could go back in time and recreate Prairie Crossing with the lessons learned today, divulged that he would hold some of the development-designated land vacant from the start and only develop it to address the needs of the community as they change over time. He believes that this approach may have allowed the community to achieve its fifth guiding principle better.

Serenbe, on the other hand, has *not* developed the entirety of the 30% of the land designated for building. They could still approach the next design stages with racial, social, and economic diversity in mind. However, community growth is certainly still dictated by the parameters of the free market as housing and land are one of America's most profitable commodities. Serenbe, after all, was developed as a more sustainable substitute to a golf course community, which at its heart is a vehicle for financial profit.

Some of the other agrihoods in America happily boast that they are designed as luxury communities. "Luxury" is a descriptive word that appears on the websites of the Willowsford community in Virginia, Kukui'ula in Hawaii, Range Mission Viejo in California, and on countless real estate listings in many other agrihood communities.

iv. Connections Beyond Food Production

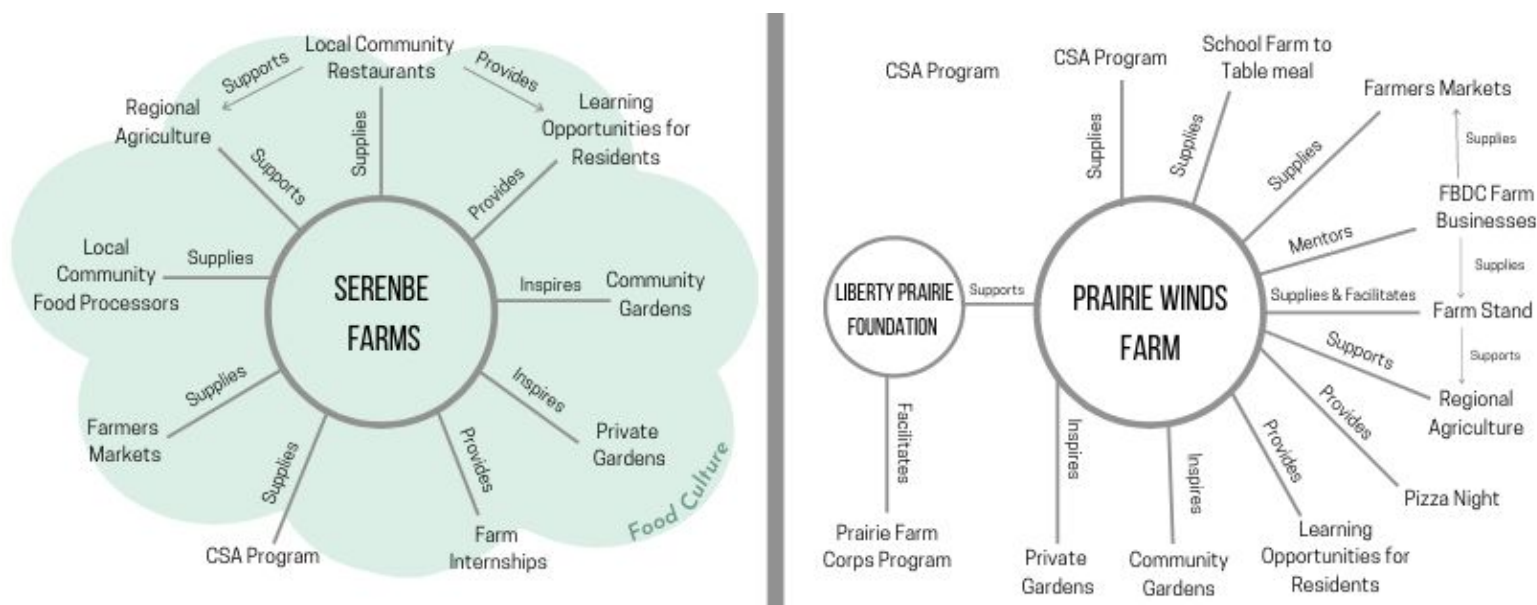
Hauser's "food production" qualifier of an agrihood does not quite capture the unique contribution that food makes in distinguishing agrihoods from other types of communities. Many communities around the world create food in a multitude of sustainable fashions in just a few small blocks. For example, in one neighbourhood of downtown Toronto, there is an extensive community garden available at the large central park; there are multiple teaching gardens in the many neighbourhood schools; there are elaborate private gardens adorning the single-family

homes that fill the majority of the neighbourhood; there are rooftop gardens on a handful of midrise apartment building; there is a farmers' market that takes place weekly on one of the residential streets; many specialty grocery stores offering local and organic products; and innumerable small foodservice businesses serving unique international cuisine. Does this make this neighbourhood an agrihood? Besides missing other vital elements outlined by Hauser, there is also a *lack of connectivity* between these food activities that prevent food production from being a defining characteristic of the community. Each activity listed is an independent entity, organized and operated by many different organizations, whether public, private, grassroots, or not-for-profit. As a resident of this neighbourhood, one does not feel connected to each one of these activities, one is likely aware of them through observation rather than participation.

In both Serenbe and Prairie Crossing central commercial farm operations play a central role in facilitating other food activities in the community. **Figure 4.0** illustrates how the central working farm sustains other food activities.

This concept of a central structure organizing all food activities in the community appears to be essential in the agrihood model, particularly in orchestrating a short food supply chain within the community.

Figure 4.0



Food activities in the case study communities

As depicted in **Figure 4.0**, Prairie Crossing has an additional overarching structure, the Liberty Prairie Foundation, responsible for facilitating the food activities in the community, including funding and general operations of programs such as the Prairie Crossing Farm Corps and the FBDC.

The unique food culture within Serenbe is also responsible for driving a lot of the interactions between the farm and the additional activities. This food culture, though not an official, tangible structure like the Liberty Prairie Foundation in Prairie Crossing, is an influential factor in all food activities in Serenbe, which seems to stem from the top down. This unique culture effectually aligns all food activities in the community, as depicted by the green cloud-like structure that encases Serenbe's activities in **Figure 4.0**.

Short Food Supply Chains

Distance

The distribution paths stemming from the food producers in both communities is impressively low. Neither farm has products travelling further than 64 miles with the vast majority of products staying within less than about 45 miles or 74 kilometers radius. Given that the majority of produce found in any of the large grocery retailers in Ontario is produced in California

- about 2500 miles or 4000 kilometers away - the agrihood distribution distances certainly fall within the "short" end of the spectrum.

Intermediaries

The numbers of intermediaries involved in the farms' transactions are also considerably low. The vast majority of interactions involved in farm sales required zero intermediaries. The maximum number of intermediaries involved in farm transactions in both communities is two, though these interactions appear to make up a small percentage of sales.

The number of intermediaries involved in resident transactions showed more variation between communities, as discussed above in *Food Production in Fitting the Agrihood Model*. Serenbe appears to have a more significant resident contingency sourcing their food through channels requiring zero intermediaries than Prairie Crossing residents. Nearly a quarter of Prairie Crossing residents identified that 90% of their groceries pass through two or more intermediaries prior to their purchase compared to only 9% of Serenbe residents who identified the same statistic. It is possible that increased accessibility, heightened convenience and pervasive cultural norms in Serenbe have contributed to a reduced number of intermediaries in resident food purchasing experiences.

Supporting Family Farms

Both communities appear effective in supporting family farms in their distinct capacities. Prairie Crossing's model of the Farm Business Development Centre offering land and equipment leasing and mentorship for burgeoning new farmers appears to be successful in supporting the small farm industry. The list of program alumni that have managed to set up permanent operations following program graduation is a beacon of success of this particle program.

The farm stand at Prairie Wind's family farm that markets the products of other nearby farms shows that Prairie Farms has a supportive atmosphere towards local, sustainable farming, rather than one of competitiveness. Many of Prairie Crossing's events also look to engage and educate attendees on the many benefits of sustainable agriculture with the goals of developing a greater community to advocate for and support the sector. The learning farm and the Prairie Farm Corps program are also excellent tools to engage youth in agriculture and allow them to envision their careers in the agricultural sector and develop pertinent skills. The testimonials found on the website paint a picture of a successful and competitive program.

Serenbe also engages youth in small scale, sustainable farming with their apprenticeship program. Serenbe looks to prop up the sustainable agriculture industry as a whole rather than attempt to corner the market. This attitude is evident in their affiliation with the incoming Rodale Institute research facility. Based on the interview conducted with Steve Nygren, he is eager for other communities or farms to emulate their model. Serenbe further supports the sustainable agriculture community as its restaurants source many from organic farms found in Chattahoochee Hills (Olsen, Feb 17, 2020). Again this alludes to a supportive climate as opposed to one of rivalry between farm businesses.

Contributions to the Food Supply Chain

In these communities, there exists one overarching food system, but both the producers and the consumers play very different roles. By analyzing both the qualitative and quantitative data collected, the answer to the research question of "do agrihoods shorten the food supply chains within their communities" remains slightly ambiguous: sort of.

The food producers in both communities actively contribute to *strictly* short food supply chains. The farms in both communities experience a maximum of only two intermediaries while managing to participate in a multitude of distribution channels. The farms appear to take conscientious care to distribute only through channels that they consider sustainable. These farms truly appear to practice what they preach in the realm of sustainable agriculture; they are sedulous in upholding high sustainability standards through the entirety of their products' life cycles.

However, do the residents participate in short food supply chains? Sometimes. There was no particularly overwhelming supply of food stemming from face-to-face interactions entering the community based on the results of the resident questionnaire. Both communities exhibited that the bulk of food items consumed by residents were the products of extended interactions.

There are two possible caveats to these results that would require further investigation. First, it is entirely possible that even though the minority of food purchases in both communities are stemming from face-to-face and proximate interactions (which are the ideal interactions of a short food supply chain) that these types of interactions are, in fact, much more prevalent in the agrihoods than in non-agrihood communities. In order to establish this comparison, it might be useful to poll neighbouring communities on their food purchasing behaviour as they would share similar access to highways, transit, grocery stores while also having access to similar local foods due to a corresponding climate and comparable proximity to local farms.

Second, though it was not discussed in length in this paper, there are qualitative attributes considered in the constitution of an SFSC. The qualitative features involve consumer knowledge of sustainable food sourcing and quality conventions utilized in food production, such as organic or pasture-raised or low-spray farming (Renting, Marsden, Banks, 2003). Consumer knowledge is improved through repeated interaction with experts or advocates in the sector, occurring with face-to-face or proximate interactions (ibid).

The resident survey results suggested that the residents of both communities are more knowledgeable about the various approaches to shopping more sustainably even when shopping for food outside the community. According to the resident survey results, 86% of Prairie Crossing residents indicated that they buy *more* local food than before their move into the agrihood, while 81% of Serenbe residents indicated the same thing. Additionally, 50% of residents in both communities say they now look to specifically purchase organic items regularly since moving to an agrihood community. Residents of both communities identified easier access to organic foods and a developed understanding of the health benefits of organic products as the reasons behind their purchasing behaviour changes.

To determine if residents of agrihoods have a deepened understanding of sustainable agriculture and food processing practices, polling non-agrihood communities on their related knowledge as a baseline standard could be a practical approach.

Conclusion

As food system planning gains notoriety as a branch of professional planning, a trend that will hopefully gain traction in Canada, the desire for design models that centralize around food sustainability and food access will likely be expanding. Agrihoods appear to share many of the designated objectives of food system planning, most evidently, ecological integrity and perhaps public health (Morgan, 2013).

As evidenced by the history and attitudes surrounding agrihoods, the agrihood community model has the ability to entice planners, politicians, activists, and civilians alike to contemplate the wider implications of food in their daily lives and decisions.

Agrihoods carry a strong potential to satisfy the growing demand to develop smarter, more sustainable communities in the growing inevitability of a climate crisis. To fulfill this potential, a fuller and universal understanding of what precisely an "agrihood" is and what it entails is necessary. Currently, agrihood developments can be found in many different forms and sizes with significant differences in specifications and priorities. Unifying the definition of an

agrihood should prove to organize and align the community model's overarching mission and effectively enhance its broader global impact.

Today's literature on agrihoods is downplaying or missing the importance of ecological land conservation in the community model entirely. Conservation was the catalyst for the development of both Serenbe and Prairie Crossing and a very prominent feature in both communities' identities and cultures. Both Serenbe and Prairie Crossing are working continuously to protect land that falls within their community boundaries and outside them. Though financial profit is a critical objective of both communities, the organizations behind the agrihood developments continually make decisions that prioritize ecological conservation over financial gain by resisting encroachment on the 30:70 ratio of development to land conservation. Land conservation can be seen as a prevalent concept in other American agrihoods which substantiates the need to incorporate land conservation practices in the greater understanding of agrihoods as a design concept.

The strong conviction displayed towards land conservation lends itself to another core function of the agrihood model that was somewhat absent from the literature: a sense of community. Both Serenbe and Prairie Crossing are touted by residents and planners alike in their proficient abilities to foster a tight-knit sense of community that generates a remarkable level of resident satisfaction. Land conservation plays a role in this vital function of an agrihood as it initially attracts like-minded residents with shared interests and also unifies residents towards a common objective. To a degree, a passion for sustainable food plays a role in creating a unique community identity that serves to enhance the overall "sense of community" these agrihoods brandish proudly. Though food appears to have a more significant influence on culture in Serenbe than Prairie Crossing, which is possibly a function of the culinary background of Serenbe's founder. Further inquiry regarding other food's contribution to community identity is necessary to understand its significance fully.

Developing a more explicit definition of an agrihood will be critical in the future success of the community design in regards to sustainability. A common theme throughout the research is the prevalence of "greenwashing" - a marketing tactic to promote misleading or invalid sustainability standards. According to Birkby, objectors to the agrihood model argue that agrihoods developers are often guilty of greenwashing (2016). Skeptics of agrihoods, which are typically rural residents near the proposed agrihood site, believe that an insignificant portion of land is dedicated to conservation or restoration efforts, while most of the land is dedicated to development (Birkby, 2016). Nygren also believes that some of the newer agrihood models are

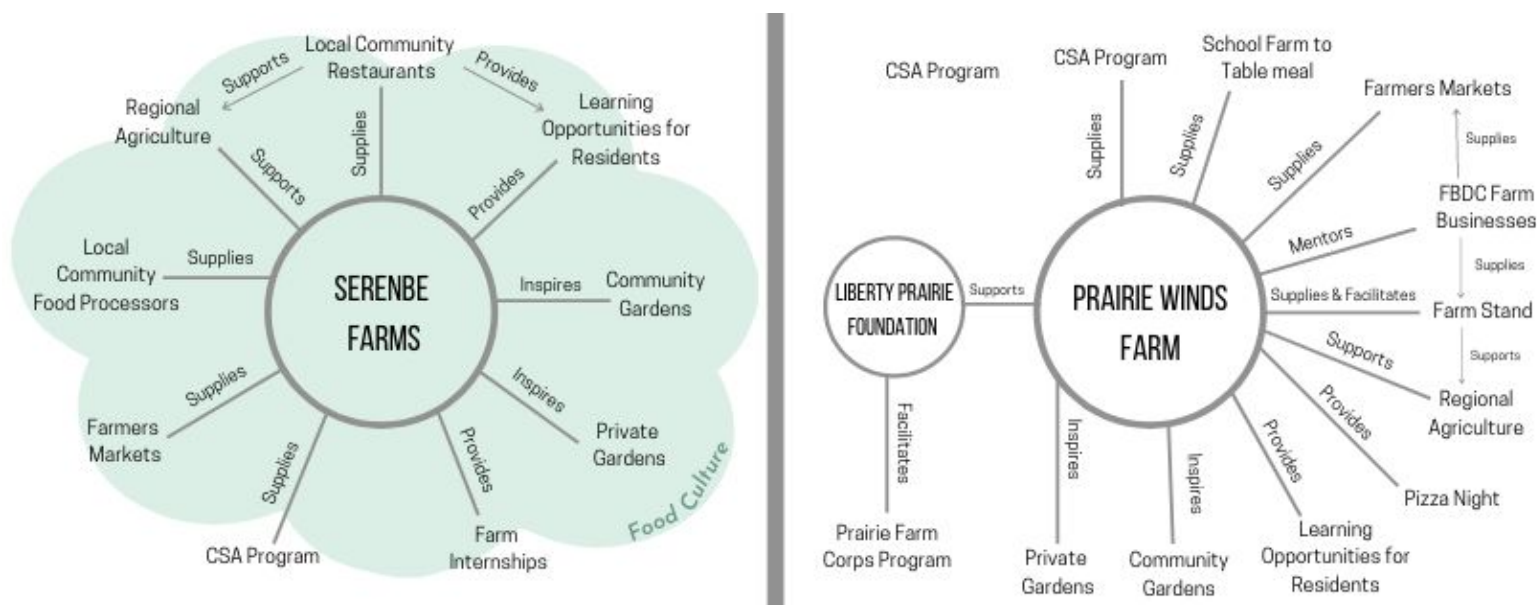
guilty of greenwashing. Through a basic scan of other agrihood communities, there appears to be a number that do not share the overt dedication to land conservation exhibited by Serenbe and Prairie Crossing. It appears that only one other agrihood shares the 70:30 conservation to development ratio: South Village in Vermont. Some of the more recently developed agrihood appear to prioritize "luxury" or "privacy" over sustainability or conservation, which also draws to question the accessibility of these types of communities to populations outside the upper class. Many communities cite environmental protection and high sustainability standards as the rationale behind hefty property values, though, in reality, it is privacy, exclusivity, and luxury provided to homeowners that can afford to purchase in some of these communities.

To conserve the high sustainability standards associated with the earlier agrihood models and prevent overt greenwashing, it could be beneficial to set universal conservation standards that must be implemented by all future developments that make use of the word "agrihood." Not only will this serve to increase the overall impact of the agrihood model in future generations, but it will likely subside the criticisms of agrihood skeptics and legitimize the integrity of the design concept for future sustainable development.

On this note, a step that could be considered to align future agrihood communities and reorient the priorities of existing agrihoods would be to create standards within food production and distribution. For a term that indicates agriculture to be a core theme, some agrihoods appear to essentially "foodwash" their communities. They use the term agrihood, they designate *some* land for agricultural activities - some only offer small community garden plots - and market these activities as amenities to draw in potential buyers. However, in reality, the foodwashing communities dedicate little time, space, and capital to operating sustainable food activities in the community.

After analyzing the food activities in both Serenbe and Prairie Crossing, it appears that commercial farm operations are essential in driving a healthy and sustainable food system in agrihood communities. These farm operations allow residents to get involved in sustainable agriculture from the most basic participatory level - buying produce from the farm - to the most active participatory level - volunteering or working on the farm. Providing opportunities for participation in the local food system, no matter how significant, is essential for embedding food into the collective community identity and for sustaining a robust food system. **Figure 4.0** depicts the influence that commercial farm operations and community food cultures have over sustaining food activities.

Figure 4.0



Food activities in the case study communities

Shortening the food supply chain within these communities would significantly enhance agrihoods' ability to contend as a viable community model in sustainable development. It would be a missed opportunity not to maximize the communities' potential to lessen its environmental footprint through sustainable food strategies. As exemplified through both Serenbe and Prairie Crossing, both communities are making efforts to foster sustainable food systems. However, their efforts are only rendering results on the supply side while the consumer side appears significantly less influenced. The agrihood models seem to be designed around the assumption that as long as local and sustainably produced food is available to residents, they will buy it. The resident questionnaire results revealed that general food availability did not necessarily result in local food purchases, so this assumption surrounding residents' food purchasing behaviour is most likely incorrect.

Three possible solutions came to light throughout the research process that may prove to elevate the rates at which residents purchase local food offerings:

1. *Improving overall accessibility of food items* (i.e. offering local food through increased distribution channels). Some residents suggested that improved accessibility may increase their likelihood of purchase. For example, the most popular distribution channel in both

Serenbe and Prairie Crossing is the CSA program. If a family does not feel they can commit to subscription-style food delivery, they will be much less likely to purchase the same volume of local food as a family that could. More distribution channels that meet residents' varying needs could potentially increase local food purchases.

2. *Prioritizing convenience in distribution channels* (i.e. making all food groups accessible for purchase within close proximity). This strategy could be accomplished through the addition of food co-ops, food buying clubs or specifically the addition or improvement of local grocery marts - an amenity identified by residents in both case study communities to be strongly desired (Watson, J., 2016; Tabb, *personal communication*, April 22, 2020). Food District Models could also provide a convenience factor in food accessibility. Food Districts are planned areas where food elements, facilities, resources, and activities are tightly clustered (Guerrero, 2019). The Food District Model could be worth exploring and integrating with the agrihood model to create "advantageous conditions for synergism and networking between different initiatives, activities, and stakeholders" (Guerrero, 2019, p.21).
3. Lastly, *fostering a holistic food culture*. This culture should inspire knowledge-sharing and create a collective identity that supports sustainable food systems amongst residents. The top-down food culture within Serenbe appears to contribute to the higher rates of local food purchases. Both Serenbe and Prairie Crossing have also created healthy identity attachment to land conservation, which appears to foster community participation and therefore improve success in conservation efforts. Emulating this culture and identity building with food sustainability could render similar results.

Research regarding purchasing behaviour differences between agrihood communities and non-agrihood communities with similar societal contexts could help substantiate these theories. While measuring resident knowledge of sustainable food practices in a comparative analysis with non-agrihood communities would develop a fuller understanding of the qualitative components of an agrihoods food supply chain.

Overall, agrihood community design appears to effectively reduce the environmental impact by way of concerted conservation efforts, sustainable building standards, and community participation through identity building. However, there is some room for improvement in the model to capitalize on sustainable food assets to reduce the communities' environmental footprint.

Agrihoods appear to be gaining popularity as sustainable development makes bigger waves in the planning industry. With small modifications and further standardization of this specific community design, agrihoods may prove to be a valuable model in connecting the objectives of urban planning and the global food system.

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Appendices

Appendix A - Resident Questionnaire

Prairie Crossing Resident Questionnaire

RESEARCH:

As a student in the Faculty of Environmental Studies at York University (Toronto, Canada), I am looking to examine whether or not "agrihoods," as a form of community design, are effective in shortening a community's food supply chain.

This research should provide community founders/planners/organizers with insights into where community-produced food that is typically ending up. From this research, it is possible that they will be able to make changes to the community to allow for a shortened and more local food supply chain. Additionally, this research will help the planning profession consider food supply chains in future agrihood designs.

SURVEY:

Throughout the questionnaire, "locally" refers to grown within the state and "in your community" or "in Prairie Crossing" refers to food grown on Prairie Crossing's farm. For all questions relating to your purchasing choices/behaviours, please respond as you would during peak harvesting seasons in your community (likely summer and early fall).

CONSENT:

By filling in this survey, as an anonymous community member of Prairie Crossing, you consent to have your responses documented, analyzed, stored and potentially published in this research. As an anonymous respondent to the survey, your privacy is protected and will not be associated with any of your contact information. Should you agree to participate in this survey, the results obtained will be shared with community founders/planners/organizers in the form of a completed research paper.

Risks to you as a participant in this survey, as defined by the Canadian Panel on Research Ethics, are "minimal" and do not exceed those that you, the participant, could be exposed to in everyday life.

If you have any further questions regarding your participation or the overall research objectives, please do not hesitate to reach out to the researcher Kaelan at kaelan4@yorku.ca.

7/31/2020

Prairie Crossing Resident Questionnaire

1. What was the MAIN motivator behind your move to Prairie Crossing?

Check all that apply.

- ☐ Thought it was a good place to raise children
- ☐ Want to spend retirement there
- ☐ Want easy access to green space and recreation
- ☐ Want easy access to local food
- ☐ Want sense of close community
- ☐ Want to live more sustainably
- ☐ Want "suburban" lifestyle with easy access to urban centre

Other: ☐ _____

2. Are you the primary food purchaser in your household?

Mark only one oval.

- ☐ Yes
- ☐ No
- ☐ Other: _____

7/31/2020

Prairie Crossing Resident Questionnaire

3. Of the food that you purchase, roughly what percent is grown/produced in Prairie Crossing?

Mark only one oval.

- ☐ 0%
- ☐ 10%
- ☐ 20%
- ☐ 30%
- ☐ 40%
- ☐ 50%
- ☐ 60%
- ☐ 70%
- ☐ 80%
- ☐ 90%
- ☐ 100%

4. Do you purchase a higher percentage of local food now compared to before you moved to Prairie Crossing?

Mark only one oval.

- ☐ Yes
- ☐ No
- ☐ Other: _____

7/31/2020

Prairie Crossing Resident Questionnaire

5. Since moving to Prairie Crossing, how have your purchasing habits changed regarding food that is produced outside the community?

Check all that apply.

- ☐ I now look for food produced organically
☐ I now look for food produced locally
☐ I now look for animal products that are free from hormones/antibiotics
☐ I now look for animal products that are free range or grass fed
☐ My purchasing habits regarding food produced outside the community have not changed

Other: ☐ _____

6. If any of your food purchasing habits (regarding food produced inside or outside the community) have changed since moving to Prairie Crossing, what would you say is the MAIN motivator behind these changes?

Mark only one oval.

- ☐ Easier access to local food
☐ Expectations of fellow community members
☐ Appreciation of the flavour of the food produced in the community
☐ Appreciation of health benefits of the (organic) food produced in the community
☐ Improved understanding of various benefits of different growing practices
☐ Ambition to support members of the community
☐ Other: _____

7/31/2020

Prairie Crossing Resident Questionnaire

7. To your knowledge, what percentage of your groceries do you purchase directly from producer? (eg. at the farmers market or from a stand directly on the farm, UPick, etc)

Mark only one oval.

- ☐ 0%
- ☐ 10%
- ☐ 20%
- ☐ 30%
- ☐ 40%
- ☐ 50%
- ☐ 60%
- ☐ 70%
- ☐ 80%
- ☐ 90%
- ☐ 100%

7/31/2020

Prairie Crossing Resident Questionnaire

8. To your knowledge, what percentage of your groceries were brought directly from the farm to the retailer where you purchased the item – such as a food box program or food co-op? (i.e. the item only changed hands ONCE prior to your purchase).

Mark only one oval.

☐ 0%

☐ 10%

☐ 20%

☐ 30%

☐ 40%

☐ 50%

☐ 60%

☐ 70%

☐ 80%

☐ 90%

☐ 100%

7/31/2020

Prairie Crossing Resident Questionnaire

9. To your knowledge, what percentage of your groceries were likely exchanged between many intermediaries prior to your purchase - such as a box of pasta from Italy that was passed to a processor, then a packager, then a distributor, then a retailer, etc? (i.e. the item changed hands MULTIPLE TIMES prior to your purchase).

Mark only one oval.

- ☐ 0%
- ☐ 10%
- ☐ 20%
- ☐ 30%
- ☐ 40%
- ☐ 50%
- ☐ 60%
- ☐ 70%
- ☐ 80%
- ☐ 90%
- ☐ 100%

10. Of the items you purchase that were grown within the community (for example carrots), where would you have obtained them prior to moving to Prairie Crossing?

Mark only one oval.

- ☐ I would have grown it/them myself
- ☐ I would have sought out a locally produced version of the item
- ☐ I would have bought it from my grocery store, not really caring about it's origin
- ☐ I don't buy any items grown within my community.

7/31/2020

Prairie Crossing Resident Questionnaire

11. Last question! (not-food related) How often do you/your family utilize recreational programs/services offered within your community?

Mark only one oval.

- ☐ Multiple times per day
- ☐ Everyday
- ☐ A few times per week
- ☐ Once a week
- ☐ Once a month
- ☐ Never
- ☐ Other: _____

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Google Forms

Appendix B - Emails with Millers (farmers at Prairie Winds Farm)

1. Roughly how much food do you produce each year (in lbs or any other metric you make have)?

We grow 15 acres of certified organic vegetables for 200 families, we raise 400 hens for eggs and were working with 15+ farms to aggregate and sell local food to our community within our farm store. We grow an additional 6 acres in a food forest (permaculture), and the balance of the 40 acres we manage is in rotation. We host events (eg Pizza Night on the Farm), we attend the Oak Park Farmers' market and we provide food to local schools, most notably towards the Prairie Crossing Charter School's monthly farm to table lunch. In previous years, we've donated thousands of pounds of produce to local food pantries.

2. Is this understanding accurate: the two of you started farming at Prairie Crossing as Sandhill Farm to contribute to Sandhill Family Farms' (who was operating out of Brodhead, WI) CSA program. Eventually, you became your own entity called Prairie Wind Family Farm.

Not exactly. We started farming within the Farm Business Development Center at Prairie Crossing in 2006 as Dea Dia Organics. In 2012, we partnered with the family who started Sandhill Organics to create a new business together called Sandhill Family Farms. In 2016, we amicably parted ways and started our current business, Prairie Wind Family Farm. Throughout we farmed at Prairie Crossing.

3. Where is the furthest your products are sold (in miles or location)?

Oak Park, IL

4. How many families/buyers purchase your CSA boxes? (I saw 550 somewhere and wondering whether this is still accurate).

See above.

5. Could you estimate the percentage of the food you produce that stays within Prairie Crossing's borders?

Unsure. We serve our community through our CSA, farm stand and events (eg our Pizza Nights on the Farm) so it may be safe to assume that a large percentage of the community interacts with us in one of these ways!

6. What is the distribution (roughly) of sales between CSA, Farmers Market, Farm Stand and Wholesale to restaurants (in % - ie. 50% through CSA, 15% through markets, etc)

In previous years, we were about 80% CSA and 20% farmers market/restaurants/schools. 2020 changed everything, so it's too soon to tell!
