[redacted]

Agriburbs in Colorado's Front Range: Evaluating Sustainability and Social Reconfiguration
A Research Prospectus

[redacted]

1. Introduction and Research Questions

The developments in agriculture and logistics networks over the past half century have arguably had the greatest impact on society since the industrial revolution in terms of human lifestyle and nutrition. With factory-style farms, lightning speed logistics network and massive supermarkets that serve up produce and processed foods from around the world, the industrial food chain has brought an incredible range of products to people from all around the world for very low prices. However, as with any technological development, there are those who dissent, who feel that there are problems underlying the new development. The dissenters to the industrial foods chain call themselves the 'local foods movement', and they advocate a return to a simpler and healthier way of life (Pietrykowski 2004).

One of the more recent developments in local food has been the phenomenon known as the 'agriburb'. The agriburb is a type of residential development: a neighborhood that is centered around not a pool, tennis court or park, but a working farm, complete with a professional farmer. Families work a couple of hours at the farm every week and on Saturday they purchase fresh produce directly from a farmer who lives a few doors down. Many families also have their own small scale gardens or food projects in their own backyard that they consume themselves or sell to their neighbors. The idea is, according to Treehugger.com, who ran a feature article on the agriburb, "to allow residents to be more in touch with the land and the food that comes from it" (Agriburbia: Truly Sustainable Suburbs). But despite the rhetoric, the agriburb is a housing development that is accessible only to people of a certain income bracket. This begs the question as to whether the

agriburb is a truly sustainable development, and whether it truly falls in line with the values of the local foods movement. Thomas Lyson establishes the concept of civic agriculture as a set of goals and standards towards which local foods communities should strive, including sustainable environmental development, and restructuring of social relationships. A community that is engaged in civic agriculture should be healthy for both its residents and its surrounding environment, and should foster greater social cohesion, locally structured business, and agriculture as the center of the economy (Lyson 2004). The goal of this study is to evaluate whether or not the agriburb communities stand up to the values that they are intended to embody.

Perhaps the largest player in the agriburbs development is a company known as TSR, who owns a development firm known as 'Agriburbia'. TSR, located in Denver, Colorado, has designed and implemented agriburbs throughout Colorado, North Carolina and a few other states. They have 14 currently active agriburb developments, with many others in the planning process throughout the United States, Canada, Mexico and Australia. TSR outlines the principles of their agriburbs as:

1. Fostering agricultural production, or ensure that the development results in no loss of land productivity.
2. Supporting local foods by becoming involved in production and partnering with other local producers – residents will obtain a minimum of 30% of their nutritional needs from the agriburb community.
3. Conserving natural resources by reducing land impacts of the agriburb through runoff and erosion mitigation, planting of native ground covers, etc.

4. Promoting self-sufficient lifestyles for its residents
5. Promoting sustainable energy practices in its developments, such as switching to solar or geothermal energy.

This study seeks to answer two questions: Are agriburbs effective and sustainable communities based on the principles laid out by TSR and Lyson's *Civic Agriculture*? And what effect does geography have on the effectiveness and sustainability of each agriburb community (i.e. how does an agriburb's location and demographics affect its level of sustainability)?

2. Study Area

While agriburbs are a growing form of development gaining popularity in both the western and eastern portions of the United States, the greatest density of the developments lies in Colorado's Front Range region, stretching from Colorado Springs up to Fort Collins (Fig. 1). The physical and cultural geography of the Front Range region is conducive to the development of agriburbs. It sits on the plains just east of the Rocky Mountains, so it has a fairly constant water supply of snowmelt that flows through the area. As well, these plains have historically been the best-situated area in Colorado for agricultural production. The Front Range also contains several large metropolitan areas, all of which have fairly affluent and politically liberal populations who are open to the idea of social reconfiguration, and have the capital to invest into typically more expensive local food. This area contains, all within a few hours driving distance, a mixture of both older and well-established agriburbs, and newer developments that only opened in the past year. TSR is also located in the

Denver metropolitan area, so utilizing this area would facilitate any cooperation with the TSR firm.

This area currently contains six active agriburbs, but there are eight other developments that are under construction (Fig. 1) and should be active within a year's time, before the beginning of this study. This will afford the opportunity to survey fourteen agriburbs, all within varying stages of operation (from newly established to several years old). Agriburbs are highly variable in their size and density, but for this region, each agriburbs contains an average of 100 households, giving me an approximate sampling frame of 1,400 households to draw from for surveys and interviews. While agriburbs exist in other regions of the U.S. currently, the Front Range area seems to be the most reasonable in terms of accessibility and diversity of agriburbs within.

3. Literature Review

a. The local foods movement

Understanding the development of the agriburbs requires an understanding of the history of the local foods movement and the development of the set of ideas known as 'civic agriculture'. It was from these social movements and calls for environmental and social reform that the interest arose to pioneer new ways of living within the suburban environment.

While local production of food has been around for millennia, the *local foods movement* is a more recent development in light of increasing industrialization of the

agricultural economy (Coit 2008). This movement began as the *alternative foods movement* in the 1960s, as a piece of the larger counter-cultural movement surrounding the Vietnam War and globalization, and had environmental issues as its primary focus. Today, it has grown into the local foods movement that has been embraced by a larger population, including the affluent as well as marginalized populations. Instead of exclusively focusing on environmental issues, the movement focuses on taste, freshness, quality, sustainability, and regionalism in addition to the environmental characteristics (Starr 2010). The local foods movement may also consist of firm attachments to a sense of place or a community (Feagan 2007). All of these factor together when considering the development of the agriburbs out of the local foods movement, that underlying the discourse on locality, freshness and sustainability is a desire for social reconfiguration and a shift towards a communal structure of food production and consumption.

b. Civic agriculture

Thomas Lyson conceived of the principles of civic agriculture in his book titled *Civic Agriculture* (2004). His goal was to design a way in which the local foods movement could progress beyond a social movement and embed itself into the very fabric of society. Rather than local food simply being consumed within present social relationships, entire economies would be structured around food production with government and policies becoming more embedded in the regions and localities in which food production occurs (Lyson 2004). Doing so would shift the focus of the economy and social life away from national and global scale policies towards very localized, community-based economies that defy the present relations of neoliberal agriculture and trade

agreements. Trauger et al. (2009) expands on this notion and argues that farmers' markets do much to reassert the sense of the community and the local in an age of globalization. Cone and Kakaliouras (1995) assert that the newer communities created around food production can take on a moral and spiritual aspect as people become more embedded into a community of like-minded individuals. DeLind (2001) expounds on the *civic* nature of civic agriculture and argues that such systems produce involved citizens who have a stake in the fate of their communities, both socially and environmentally.

Overall, the principles of civic agriculture are useful in their application to an analysis of agriburbia, and they second TSR's principles for the developments, that agriburbs should not only be consumers of locally and morally produced food, but active citizens who are involved in environmental and social issues surrounding their place of habitation. These principles were not without critique, however. Nonini (2013) found that the principles of civic agriculture inherently created class inequality as those who would prosper the most under a civic agriculture system would be landowners or those with the capital and influence to support operations. These critiques can be echoed in the context of agriburbs developments, which are typically priced so that only middle class and up would be able to afford a home and/or land in the development. As the agriburbs continue to expand to other areas of the U.S. with less of an affluent population, issues of inequality and pricing will need to be addressed in order to comply with the principles of civic agriculture.

c. Measuring local foods

While no previous studies have examined the agriburbian developments (as they are so recent), there are other studies that have used both qualitative and quantitative

methods to evaluate the environmental sustainability and social embeddedness of local food systems. Brown and Miller (2008) examine the social impacts of farmers markets and CSAs on the surrounding community and argue that these institutions serve to create community cohesion. Coley et al. (2009) uses food-miles as a method to compare local and mass produced foods (e.g. how far each type travels on average to reach the consumer's plate) and concedes that conventionally produced food may in fact use less fossil fuels in transit if consumers travel more than six kilometers to pick up their locally produced foods. Peters et al. (2009) use the foodsheds method to examine the physical space required to sustain certain populations of people. This method may be particularly useful in the context of agriburbs due to the fact that an agriburb community must provide the majority of a small population's nutritional needs from within a fixed land area. Similarly, Norberg-Hodge (2002) evaluates local food production based on the global economy and social justice around the world, arguing that consuming locally may improve the quality of life globally, as less externalities arise from local food systems than a global agro-industrial supply chain. Agriburbs may be evaluated in this manner as well, in that the principles of civic agriculture demand global sustainability as well as local. Mirosa and Lawson (2012) evaluate local food systems based on consumer preferences and how consumers perceive qualities such as taste and freshness. This is important for agriburb communities, as many residents move there with the expectations of high quality food that is produced in the community. Born and Purcell (2006) indicate that localism and ideas of civic agriculture can take on a sort of nostalgic romanticism that ignores negative externalities. In this regard, agriburbs must be viewed critically to avoid missing externalities such as fertilizer

runoff, class divisions and consumerism that would violate the principles laid out by Lyson and the TSR firm.

d. Community Sustainability

Feenstra (1997) discusses the concept of community sustainability and identifies different tracks communities can take to reach the goal of 'sustainability'. The way in which a community procures its food, Feenstra argues, is highly indicative of its level of sustainability. Innes and Booher (2000) establish a methodology for creating indicators of community sustainability. It is crucial, when creating these indicators, to obtain input from the communities being evaluated and those who will be conducting the evaluations. Furthermore, several measures of sustainability are needed to address the many forms of impacts communities have on people and the environment (energy usage, carbon footprint, waste management, water usage, soil health, food production, social equality, democracy, etc.) (Innes and Booher 2000). These indicators are all linked together as well, argues Gentry (2011), sustainability is not the result of one technology or policy, but of a certain mindset and social energy – it is a choice to be made by a society. Nevertheless, indicators are useful to break down the concept of sustainability into measurable areas for improvement (Innes and Booher 2000). Cities and population centers have become the focal point for sustainability policy initiatives and research, due to their central location in human geography (Rees and Roseland 1998). Therefore, the agriburbs are a good entry point for sustainable policies and lifestyles, as they represent a transformation of the peripheral areas of cities.

e. Spatial transformation and foodsheds

One of the key points outlined by TSR is that the agriburbs will give residents the ability to provide a minimum of 30% of their nutritional needs from the development. Variations in land area and soil type will clearly play a factor in determining exactly how much productivity residents can obtain from their plots of land. The foodshed may be a useful concept for examining an agriburb's ability to feed itself. The foodshed is a tool used by geographers and other local food activists to delineate a physical space in which some kind of food production occurs (Kloppenburg et al 1996; Peters et al 2009). Foodsheds are often used for community and local food systems planning purposes (i.e. how much land it would take to grow food for a certain city, how many farmers it will take to supply a farmers' market with produce). The foodshed provides a concrete map of where food is produced, giving consumers a precise knowledge of where their food originates, situating a local food system so that "consumers can become aware of where they and their communities fit into the foodshed... Foodsheds embed the system in a moral economy attached to a particular community and place, just as watersheds reattach water systems to a natural ecology" (Starr et al. 2003, 3). The foodshed also provides another method of measuring community sustainability (Peters et al. 2008) through its emphasis on food production, one of the areas outlined by Innes and Booher (2000). Conducting a foodshed analysis for each agriburb, based on land area, soil type, water availability and the amount of land per household can serve to quantify an agriburb's long term sustainability and ability to feed its residents.

4. Methods and Materials

a. Preliminary data collection

As this study concerns private housing developments that are fairly new (established after the 2010 Census), it will be necessary to collaborate with the TSR firm in order to obtain information about the developments and gain access to key knowledge holders within the agriburbs. I will attempt to secure support and funding from the TSR firm to conduct this study. I plan to present this prospectus to TSR with the goal of evaluating their developments and suggesting further ways in which to make the agriburbs 'sustainable'.

In order to characterize the 'agriburb' on the national scale, data from a wide variety of communities must be collected. I have already selected the fourteen agriburbs in the Colorado Front Range area for this study. To begin with, all available demographic information will be collected on these housing developments. Location, size, average family income and neighborhood demographics will be obtained from available census data. As some of the agriburbs were established after the 2010 Census, some information will have to be manually collected from the TSR Firm or from neighborhood associations. Each agriburb employs a farmer that runs the community farm (and in some communities the farmers' market). I will establish primary contact with the farmer in each community and obtain his/her guidance as to the best methods to sample the community. All further steps will be facilitated with the help of the community farmer. Before beginning sampling, a database will be constructed that includes all of the households per development, the number of people living in each, physical addresses and contact information.

b. Surveys

Once contact has been established with the neighborhood farmer, I will begin the process of surveying neighborhood residents. The surveys will attempt to address the questions of sustainability within the agriburb development by prompting residents to supply the weekly percentage of their food they obtain from the agriburb and their household's weekly participation in community events. All residents in the Front Range neighborhoods will be asked to participate in an online survey that will detail what percentage of their weekly food they receive from the neighborhood farm, divided into types of food: vegetables, fruits, grains, dairy, meats and other products (such as bread and processed goods). The survey will span the course of a year with eight separate weekly entries that will attempt to identify how different households obtain their nutritional requirements throughout the year. The survey will be broken into eight weeks, as follows: the first week of January, the first week of March, the first week of June, the first week of July, the last week of July, the last week of August, the first week of September, the first week of October. The goal in dividing the surveys up over eight months is to understand how the percentage of a household's food that comes from the agriburb changes over the year, with increased density of surveys conducted during Colorado's growing season. Participants will make one entry at the end of each specified week, listing their estimated percentage of food acquired from the neighborhood farm for that week. Participants will also be asked to identify the various community events their household has attended at the end of each specified week (see Figure 2). The survey will be administered online through an online survey website. Households will be contacted via a flyer in the mail and announcements through community forums where they will be prompted to visit the

website to take the survey. As the survey covers a substantial amount of time, participants will receive reminders in the mail and via email to continue with the completion of the survey. I intend to obtain 30% participation overall (n=450). I expect some attrition from households who begin the survey but do not complete it, so I hope to achieve 50% participation to begin with and 30% by the end of the survey. Once completed, results of the survey will be compiled to obtain an average percentage of local food consumed per season per agriburb and an index of community involvement (Innes and Booher 2000). A One Way Analysis of Variance (ANOVA) will be run to determine if differences in food percentage per agriburb can be attributed to seasonal differences or some other factor. Descriptive statistics will also be run on the data from each neighborhood in order to determine seasonal and yearly averages.

c. Interviews

In addition to the survey, semi-structured interviews will be conducted at each of the fourteen agriburbs, the goal of the interviews being to gather qualitative data on community cohesion and sustainability. One will be conducted with the resident farmer in each neighborhood, and then an additional four interviews with households from the same agriburb. Two of the household interviews will be selected via snowball sampling: the farmer will be asked to recommend two community leaders with whom to conduct interviews. The other two interviews will be selected randomly from the population of each agriburb. This will produce a total of 70 interviews for the fourteen communities. The interviews will be conducted in this manner in order to obtain several different viewpoints on the community: three from people who are active leaders and can speak to the nature of

the community, and another two from random people who may or may not be very active in the community. The interviews will be semi-structured and will ask a number of questions intended to understand community life, sustainability and food production (Figs. 3 and 4). Each interview will be audio recorded, transcribed, and uploaded into Atlas.ti software where the interviews can be coded and analyzed to examine qualitative themes throughout the communities.

e. Foodsheds

In order to evaluate TSR's principle of "no agricultural productivity loss", a foodshed analysis must be completed for each agriburb neighborhood. Due to the breadth of the study, it will be difficult to complete the in depth kind of foodshed that looks at factors of localized soil health, moisture content, etc. (Peters et al. 2009), however, simpler foodsheds can be constructed to give a coarse evaluation of the agricultural integrity of each neighborhood. Soil types and qualities can be obtained from the land grant universities in Colorado (Colorado State University in Fort Collins) and from the USGS. These can be combined with crop productivity data from the USDA to generalize base-line agricultural productivity. After the surveys are completed for each agriburb, the annual and seasonal percentages of household food supplied by the agriburb will be used to establish current land productivity, based on caloric content of the food consumed per household, multiplied by known productivity rates from the USDA. If the contemporary productivity rates match or exceed baseline rates per neighborhood, then TSR's principles will be met and the agriburbs will be a successful use of land.

f. Analysis

The survey, interview, and foodshed data will serve to create a profile for each agriburb development of both quantitative and qualitative data. The profile will include the baseline and contemporary land productivity rates for each community, seasonal and annual percentages of resident diets that come from the agriburb, an index of community involvement, and quotations from the interviews describing community life, agricultural production, sustainability measures, and efforts towards cleaner energy. Two final analyses will be completed. The first will serve to evaluate each agriburb based on TSR's stated principles and the principles of civic agriculture. Each agriburb must meet a certain baseline agricultural productivity level, provide >30% of its residents' caloric needs, support environmental mitigation of neighborhood impacts on water and soil quality, must seek sustainability in other ways of life, including energy consumption and will foster self-sufficiency in terms of the environmental and social lives of its residents. The profile will be compared to the principles outlined to see if each agriburb is meeting its intended purpose as stated by TSR.

The second analysis of the data will associate each agriburb's profile with its unique geography. I will examine how close agriburbs are to city centers, to centers of wealth, and other landscape features. In addition, I will look at the social structure of each agriburb by associating the demographic data collected at the beginning of the study with the level of sustainability exhibited by each agriburb. I am interested to see if relationships can be drawn between wealth, distance from city centers and political affiliations of the residents and the level of sustainability of an agriburb. Much of the literature on local foods systems

suggests that there is a link between wealth and interest in sustainability and local food consumption (Pietrykowski 2004; Nonini 2013; Mirosa and Lawson 2012). I would like to evaluate the agriburb as a new development against traditional assumptions concerning wealth and local foods systems. If the sustainability of an agriburb can be associated with higher incomes in a particular neighborhood, then these assumptions will be upheld. If not, then further studies may be needed to understand if the agriburb is truly a social reconfiguration that shifts the local foods movement towards a less privileged population.

5. Conclusion

Agriburbs are an important new phenomenon arising as a part of the local foods movement in the United States, and they are looking to spread to other nations in the near future. It is important that they be understood from a sustainability perspective and evaluated based on their ability to produce social change as they represent a dramatic shift in the way Americans live in and consume the environment. They are important from the traditional local foods perspective in that they dramatically reduce the 'food-miles' of produce from regional transit to a short walk up the street to pick up produce from the neighborhood farmer. And they are an important objective in that they have not been the focus of any previous scholarly study, and so stand to expand the literature on local foods and sustainable communities. This study will also provide important feedback to the TSR firm and the agriburb communities as to how they are performing based on their self-assigned standards. Agriburbs present a different way of living for urban and suburban dwellers in today's rapidly urbanizing world. Through the study of and promotion of future

agriburbian developments, we can hope to make our urban environments places of sustainability and community.

Figure 1. Locations of Agriburbs in Colorado's Front Range Area (Blue are active, red are under construction)

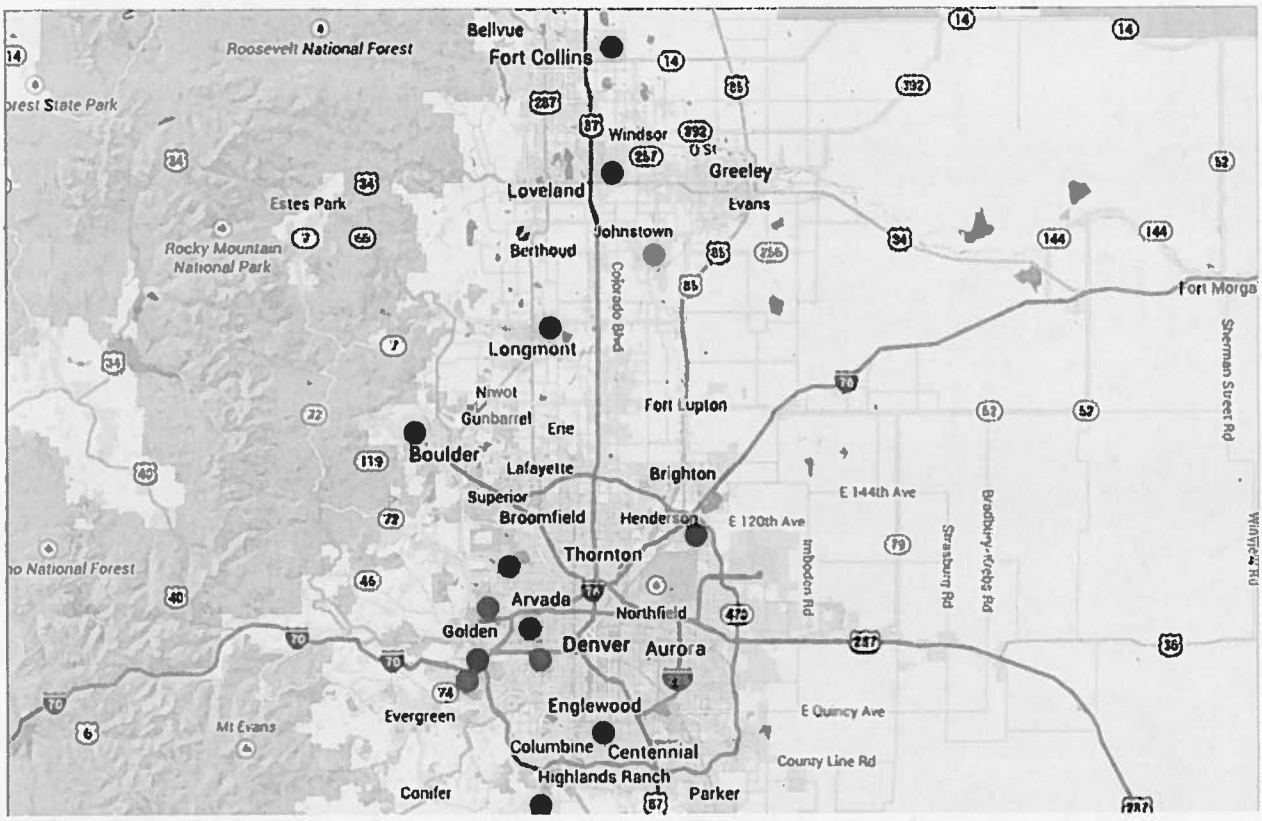

Figure 2. Sample Survey Format

Please list the estimated percentage of the following foods you obtained from your neighborhood farm/gardens this week:

-Produce (Fruits and Vegetables)

-Meat and Dairy (including eggs)

-Grains (Cereal grains, bread)

-Other goods (Baked goods, jam, honey)

Please list the number of community events your household attended this week.

Figure 3. Sample Interview Format for Agriburb Farmers.

-Give basic background information (farming credentials, age, education, family, how long in this neighborhood, etc.

-Please describe your duties as a farmer in this agriburb (how much land are you responsible for, how do you help the residents?)

-Please describe your growing methods?

-How would you best describe the residents who live in this community?

-Please estimate how much of the average household's food comes from the agriburb each week?

-Please describe the leadership structure within this community?

-How would you describe the community life of the agriburb?

-Do you feel that this is a sustainable community? Give examples.

-What is this community's relationship with the TSR group?

-Please describe this community's primary sources of energy.

Figure 4. Sample Interview Format for Agriburb Residents.

-Give basic background information (Household size, age, education, how long in this neighborhood, career, role in agriburb community)

-Please describe your involvement in the agriburb's food production system.

-How would you best describe the residents who live in this community?

-Please estimate how much of your household's food comes from the agriburb each week? What are your other sources of food?

-Please describe the leadership structure within this community?

-How would you describe the community life of the agriburb?

-Do you feel that this is a sustainable community? Give examples.

-Please describe this community's primary sources of energy.

Bibliography

"Agriburbia: Truly Sustainable Suburbs?" Grover, S. Treehugger.com, 9 August 2009. <http://treehugger.com>

Born, B. and Purcell, M. 2006. Avoiding the Local Trap: Scale and Food Systems in Planning Research. *Journal of Planning Education and Research*, 26: 195-207.

Brown, C. and Miller, S. 2008. The Impacts of Local Markets: A Review of Research on Farmers markets and Community Supported Agriculture (CSA). *American Journal of Agricultural Economics*, 90(5): 1296-1302.

Coit, M. 2008. Jumping on the Next Bandwagon: An Overview of the Policy and Legal Aspects of the Local Food Movement. *Journal of Food Law & Policy*, 45(4): 45-70.

Cone, C.A. and Kakaliouras, A. 1995. Community Supported Agriculture: Building Moral Community or an Alternative Consumer Choice. *Culture, Agriculture, Food and Environment*, 15(51-52): 28-31.

Coley, D., Howard, M. and Winter, M. 2009. Local food, food miles and carbon emissions: A comparison of farm shop and mass distribution approaches. *Food Policy*, 34(2): 150-155.

Feagan, R. 2007. The place of food: mapping out the 'local' in local food systems. *Progress in Human Geography*, 31(1): 23-42.

Feenstra, G. 1997. Local food systems and sustainable communities. *American Journal of Alternative Agriculture*, 12(1): 38-26.

Gentry, T. 2011. Agrarian Urban Architecture. *Transactions on Ecology and the Environment*, 152.

Innes, J.E. and Booher, D.E. 2000. Indicators for Sustainable Communities: A Strategy Building on Complexity Theory and Distributed Intelligence. *Planning Theory and Practice*, 1(2): 173-186.

Kloppenburg, J. Jr., Hendrickson, J. and Stevenson, G.W. 1996. Coming in to the Foodshed. *Agriculture and Human Values*, 13(3): 33-42.

Lyson, Thomas A. 2004. *Civic Agriculture: reconnecting farm, food and community.* Medford: Tufts University Press.

Mirosa, M. and Lawson, R. 2012. Revealing the lifestyles of local food consumers. *British Food Journal*, 114(6): 816-825.

Nonini, D.M. 2013. The local-food movement and the anthropology of global systems. *American Ethnologist*, 40(2): 267-275.

Norberg-Hodge, H. 2002. Think global...eat local. *The Ecologist*, 32(7): 28-31.

Peters, C.J., Bills, N.L., Wilkins, J.L. and Fick, G.W. 2008. Foodshed analysis and its relevance to sustainability. *Renewable Agriculture and Food Systems*, 24(1): 1-7.

Peters, C.J., Bills, N.L., Lembo, A.J., Wilkins, J.L. and Fick, G.W. 2009. Mapping potential foodsheds in New York State: A spatial model for evaluating the capacity to localize food production. *Renewable Agriculture and Food Systems,* 24(1): 72-84.

Rees, W.E. and Roseland, M. 1998. Sustainable Communities: Planning for the 21st Century. Transportation Research Board of the National Academies.

Starr, A., Card, A., Benepe, C., Auld, G., Lamm, D., Smith, K. and Wilken, K. 2003. Sustaining local agriculture: Barriers and opportunities to direct marketing between farms and restaurants in Colorado. *Agriculture and Human Values*, 20: 301-321.

Starr, A. 2010. Local Food: A Social Movement? *Cultural Studies ←→ Critical Methodologies,* 10(6): 479-490.

Trauger, A., Sachs, C., Barbercheck, M., Brasier, K. and Kiernan, N.E. 2010. "Our market is our community": women farmers and civic agriculture in Pennsylvania, USA. *Agriculture and Human Values*, 27: 43-55.