

The Value of Urban Agriculture in Urban Design and Development: Literature Review and Case Study in Detroit

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INTRODUCTION

Despite the positive benefits of urban agriculture, the literature about urban design and planning has not paid enough attention to its effect on urban environment. Arguably, this is partly because there is a perception that urban agriculture is somehow considered a third world activity. Although the subject of urban farming is nothing new, empirical research on it is scant. This may be another reason why urban practitioners have neglected the application of urban agriculture to urban design and development.

The contribution of this paper lies in bridging a gap between urban agriculture and urban design and development by addressing the diverse benefits that urban agriculture has on the city's physical, social, economic, and cultural environments. With a literature review, this paper discusses several benefits of urban agriculture in the placemaking of the urban environment. Additionally, through a case study in Detroit, the paper illustrates the application of urban agriculture to urban design and development.

Urban agriculture is the growing of plants and the raising of animals for food, and the related processing and marketing activities, in and around cities and towns. (Hempstead, 2007). The practice of urban agriculture goes back thousands of years. However, in the past thirty years there has been a resurgence in urban agriculture, especially in Western societies such as England and North America. Urban agriculture is the program of choice because it is low capital but labor intensive and thus is well suited to low-income families in underserved com-

munities (Smit and Nasr, 1992). Therefore the need for urban agriculture is more strongly felt in poor urban regions than anywhere else because the distressed urban regions lack access to fresh food, but they have an abundance of vacant or abandoned properties. For these reasons, most urban agriculture is performed by grassroots community groups in underserved areas. While the implementation of urban agriculture by lower income urban residents is often viewed as a positive intervention on the urban environment, the nature of the grassroots origins leads to many of these projects going undocumented.

Despite the small amount of literature on urban farming, there is an area of interest that is being addressed in the literature. Part 1 of this paper will explore this interest and explore the benefits that urban agriculture has on the planning of our cities according to the four themes that emerge from the literature. Part 2 of the paper is a case study illustrating an example of an urban agriculture development proposal in Detroit and it supports the outcomes of the literature review by describing some of the benefits of urban agriculture development. The four themes uncovered in the literature are these:

- Urban Agriculture as new facet of the urban environment
- Empowering underserved communities by reclaiming the land
- Promoting community development and community building
- Addressing environmental sustainability and biodiversity

PART 1: LITERATURE REVIEW

Urban Agriculture as a New Facet of the Urban Environment

As urban agriculture becomes more prevalent in urban environments, it is emerging as a new area of concern for urban designers, planners, and architects. For instance, urban agriculture has many functions that allow it to play an important role in urban poverty alleviation, social inclusion, urban food security, urban waste management, and urban greening (Hempstead, 2007). These are extremely important factors when looking at the design of cities and buildings. Many of the planning projects that include agriculture are located outside the United States. This is due in part to a lack of urban agriculture tradition in American cities and to the perception of American designers and planners that urban agriculture is messy and incompatible with modern cities (Girardet, 2004). In fact, a city like Detroit, despite suffering from a glut of vacant properties, has zoning regulations that do not allow urban agriculture. Third world cities, however, often welcome urban agriculture. Sometimes this is a result of a long-standing tradition of including agriculture in the urban fabric. Other times it is a remnant of rapid industrialization, which quickly sites factories and high rises in what used to be farmland. Whether out of necessity or tradition there are several examples of urban agriculture in third-world countries that illustrate how urban agriculture can influence the planning of cities and how lessons can be learned from this symbiotic relationship.

One example is the city of Al-Alkhalaf, which is located in the Asir region of southwestern Saudi Arabia. This traditional Arabic city is often cited as an example of outstanding land management and urban agriculture in a traditional society from which modern planners can learn much (Eben and Abdullah, 1999). In Al-Alkhalaf, the city's planners recognized that traditional Arabic communities emulated nature in their architecture (Eben and Abdullah, 1999). Furthermore, the historic buildings within the city were rooted in tradition that referenced nature and cultivation. Eben and Abdullah (1999) argue that instead of relying only on modern sensibilities, planners and architects should respond to the changes within the city through replication of tradition by reproducing a style that coincides closely with people's expectations. In fact, the ex-

amination of Al-Alkhalaf challenges professional architects, urban designers, and planners to extract tangible meanings from concepts such as cultivation adopted in traditional urban forms (Eben and Abdullah, 1999).

In Brazil, the nutritional and environmental benefits of urban agriculture are being addressed through urban farming initiatives. For example, in Belem, which is located in the Amazon region, urban farming is being integrated into municipal projects with some success in terms of providing better nutrition to the urban poor (Madaleno, 2000). Its introduction has consolidated the space needed for urban areas and also reduced the amount of waste that the city generates.

In Africa, urban livelihood is being addressed through the acceptance of a more diverse approach to economic activities (Owusu, 2007). Many African cities need multiple labor-intensive employment programs. This has led critics to call for the indigenization of urban planning in Africa, and urban agriculture is one strategy to accomplish this (Owusu, 2007).

In Mexico City, dairy production exists within the city despite the rapid urbanization (Losada, 2000). There is, however, recognition of the need for environmental management in industrializing Mexico and other third world countries. This leads many policy makers to consider solutions based on western sensibilities. The problem with this line of thinking is that it is based on an urban model without regard for agricultural forms of production and consumption (Losada, 2000). Mexico City has shown that large animals can still be raised in an urban setting, indicating that modern approaches to urban planning and design are not always the best choices. Instead, innovation is needed to adapt urban environments to include agriculture.

The four examples above suggest that urban agriculture influences planning strategies by requiring planners and designers to incorporate traditional and indigenous methods in planning and urban development. This could have an enormous impact on the planning of cities and the urban form. Although urban farming in the United States can be seen in a different form, the implications of urban agriculture are just as great, as demonstrated in this paper.

Empowering the Urban Poor by Reclaiming the Land

It has been widely reported that one of the largest concerns facing the poor in urban cities is access to nutritious food. Urban agriculture can help alleviate urban poverty by providing more access to self-produced nutritious food (Hempstead, 2007). Urban farming is growing in prominence in industrial cities like Detroit and Pittsburgh (Girardet, 2004). In 1990, the United States census attributed 40 percent of the dollar value of American agricultural production to urban farms, which are often promoted by communities that share plots of land (Girardet, 2004). Furthermore, with the rapid decline of once prosperous industrialized cities there is a decrease in density in the urban core (Kaurman and Bailkey, 2000). This has resulted in vast tracts of vacant land that urban residents can then reclaim through urban farming. In this way residents create sustainable method of production for creating local wealth in the form of food (Glover, 2006). It also creates a viable avenue for entrepreneurship for residents (Kaurman and Bailkey, 2000). Urban agriculture can therefore be a way for residents to bolster the economy of their communities (James, Lahti, and Paehlke, 2005; Girardet, 2004; Kaurman and Bailkey, 2000). This is especially true in a global economy where urban unemployment is high, forcing residents to develop survival strategies such as growing their own food (Girardet, 2004).

Promoting Community Development and Community Building

In today's culture and urban environment there is little emphasis on social interaction with neighbors. Urban farming offers spaces conducive to interaction as residents come together to produce food (Doron, 2005; Paxton, 1997; Hempstead, 2007). Many urban farms are located in public parks, which are social spaces (Paxton, 1997). Underused areas of parks can be turned over to farming projects like herb gardens, and members of the community taking on "pocket parks" are encouraged to grow their own food (Paxton, 1997) in cooperation with one another. Cultivating the land is an activity that promotes participation and collaboration between participants. Few people take the time to consider how the food they eat has been produced, but urban farming allows city residents to reconnect with the land and their food sources. In the process of cul-

tivating the land, community ties are built. In this way urban agriculture can mend not just the city's environmental fabric as well as its social fabric.

Addressing Environmental Sustainability and Biodiversity

One of the most documented themes of urban agriculture is the role it plays in producing sustainable cities. One function of urban agriculture is in urban waste management (Hempstead, 2007). The current model for providing food to cities is comprised of a vast web of farms, packaging middlemen, and transport. Supplying out-of-season produce all year requires growing produce in another region and transporting it to the consumer. This uses vast amounts of energy. Urban agriculture produces the food near the consumer, reducing the amount of energy used (Girardet, 2004; Paxton, 1997). Because of the local nature of urban farming, money is often a concern. To address this, urban farmers often reuse materials found in the urban environment. This includes tires, glass, and wood products that are used to create the farming infrastructure (Paxton, 1997). This reuse cuts down on the amount of new resources needed to operate the farm, while at the same time decreasing the amount of waste surrounding it (Paxton, 1997). Urban farms also have a greater capacity to absorb runoff and rain water, thereby reducing waste water flow and relieving the sewage systems in the city (Girardet, 2004). Related to sustainability is the topic of biodiversity, the majority of the food produced, transported, and sold to urban residents is grown on vast one-crop fields. The land is intensively farmed with little crop diversity (Girardet, 2004; Paxton, 1997). Ironically urban farmers plant a wider variety of crops than do commercial agricultural operations. Urban areas have a greater diversity of trees and flowers, and honeybees have been shown to produce more honey in urban environments than in the country (Paxton, 1997). Urban farms also aid in the greening of the city and are an important part of urban greenbelts in the city (Girardet, 2004). This has an important impact on the urban form of community.

PART 2: CASE STUDY IN DETROIT

Detroit reportedly has tens of thousands of vacant plots. If vacant buildings are included in the tally, vacant properties may total in the hundreds of thousands. Detroit's urban neighborhoods include

vast vacant areas that threaten the economic and social vitality of the region. Many vacant lots have become dump sites or are overgrown with shoulder-high weeds. The percentage of vacant tracts in some residential blocks can be as high as 40% (see Figure 1). Agencies and developers have for many years tried to remedy the situation by promoting infill housing or shops on vacant lands. Despite their efforts, the overall positive impact on the city in general is limited because often such efforts are piecemeal and are not coordinated within or between neighborhoods. Furthermore, the few successful small pockets of scattered infill developments that exist are not integrated via effective connections to coherent or systematic urban spatial structures. Moreover, an inefficient public transit system and outdated zoning ordinances (including strict parking requirements) inhibit well-orchestrated mixed-use, walkable, developments in many neighborhoods. Consequently, the overall benefit of infill developments to the community or the city at large is limited and questionable.

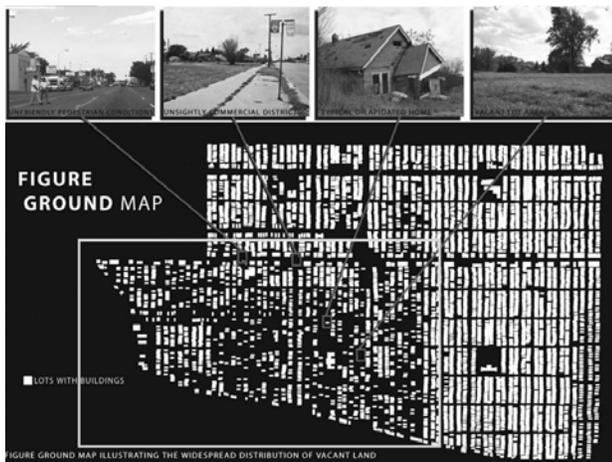


Figure 1: Existing Condition Map of East Warren Community

In response, the Christ Community Development Corporation (CCDC) and the American Coalition of Black Farmers (ACBF), two highly active non-profit community development organizations in Detroit, have recently proposed to the City of Detroit Planning Department a farming education center with a community market in Detroit as a catalyst for change to help local communities deal effectively with vacant and underutilized areas. In particular, the farming education center is proposed as a business incubator

to create locally based jobs and to provide a channel of community revitalization by teaching residents about nutritious foods. Furthermore, the center is to serve as a vehicle for supporting minority-owned farms located in Detroit's outskirts and for helping those farmers partner with local residents who are interested in selling farming-related products in Detroit's underserved neighborhoods.

This case study is based on research undertaken at our university's Detroit Studio, a community outreach program, which is located in Detroit's underserved community, and which is directed by the author. This research is funded by grants from the Boston Society of Architects and focuses on designing urban farming communities in test locations through master plans that pair farming education centers with community markets. Such proposed communities also feature high-yield micro farms, community gardens, greenhouses, and mixed-use development designed to occupy vacant tracts and fit into existing neighborhoods. The placement and spatial organization of these farming-related facilities and supporting functions are intended to promote a sense of community and sustainability, according to a well orchestrated urban plan. The research aimed to illustrate through master plans, the urban and architectural impact of the proposal for an urban farming community, on a typical dilapidated neighborhood in Detroit. By doing so, we intended to demonstrate a more comprehensive and coordinated approach to the vacant land crisis and the revitalization of blighted urban neighborhoods.

Research Method

The methodology for this research consisted of four components. The first component was to consult with the CCDC and the ACBF to understand their development goals and to identify two separate potential sites for the proposed urban farming community master plan project in Detroit's East Warren community: one near the main commercial thoroughfare and one in the middle of a residential area. These two sites were chosen because they have more vacant lots than any other locations in East Warren. After consulting with many participants and interested parties we added two more sites in East Warren, both of which had a strong potential for urban agriculture development and had varying characteristics in terms of land use and physical features.

The second component was to generate a design for each test site through master planning, to form a framework for an urban farming community that fulfills the proposed goals into urban and architectural form. To do this, we created four student design teams from our Detroit Studio to assist for a semester in the production of these separate design proposals. Student work consisted of site inventory and analysis to investigate existing land use characteristics, zoning ordinances, physical characteristics (e.g., figure ground studies, circulation patterns, block layout patterns, land ownership, traffic volume, environmental contamination), challenges and opportunities at the test site, and precedent studies. The key assignments were a community master plan for an urban farming community, as well as a design for an urban, agriculture, health, fitness (UAHF) lifestyle building based on the farming education center concept.

The third component was to conduct periodic reviews of the design research with our partnering agencies (CCDC and ACBF) to verify compliance with their development goals. In addition, this component involved soliciting feedback from other stakeholders via interviews, community design workshops, and focus groups. These stakeholders included interested parties such as area schools, the city of Detroit Planning Department, the Detroit City Council, the AIA Detroit Chapter, local design professionals, and other community anchor groups (such as block groups, churches, and the like, which play an important role in revitalization).

The fourth component was to generate exhibition boards and scale models of the design research for presentation in public gatherings. The boards and models toured selected communities where urban farming communities are proposed, and were presented to the public, the city of Detroit Planning Department, the Detroit City Council, and the AIA Detroit Chapter at the Museum of Contemporary Art in Detroit.

Research Results

Here are the final research results.

(1) Feedback from various project participants and interested parties suggests that urban farming is a viable strategy for vacant land to promote revitalization, sustainability, and public health. Literature

sources and interviews with planning officials and community agencies suggest that agriculture offers a range of opportunities for cleaning up the vacant land, putting it to productive use through gardens or micro farms, creating an income source and providing aesthetic improvement for the neighborhood. As more funding becomes available, some of these gardens could develop into larger commercial forms of agriculture like greenhouses or industrial agriculture parks. While community gardens or micro farms can act as physical design strategies to promote a visually pleasing and pedestrian-friendly environment, some of them can be easily developed into infill housing or other neighborhood service facilities in later phases.



Figure 2: UAHF Lifestyle Center Example

(2) An urban agriculture, health, fitness, and lifestyle center (UAHF Center) is proposed as the main facility of the urban farming community to promote agriculture, sustainability, and healthy lifestyle through various educational and social services. The overwhelming majority of the project participants and interested parties emphasized that successful revitalization requires public education about the importance of taking good care of the built environment and nature, and promoting nutritious food and healthy lifestyles. In response, we proposed a UAHF Lifestyle Center building to act as the educational and social service center of the urban agriculture community in East Warren. At this center, residents will learn about community gardens, urban farming businesses, a sustainable environment, nutritious food, and fitness. This center will also update people on the current research

in urban agriculture and conduct research in agriculture and revitalization (see Figure 2).

(3) East Warren has four significant areas, each of which has unique characteristics in terms of land use and physical features. Thus each area or sector (test site) requires a different type of urban agriculture development. Four models in the urban farming community design are proposed to deal effectively with the four unique sites (see Figure 3).

(A) An industrial district model is applied to the industrial section of East Warren (Sector 1), which includes numerous large scale industrial buildings, many of which are underutilized or vacant. Unfortunately, some lots may be contaminated, and this will have to be addressed. This area is situated between a major auto company facility to the east and a dilapidated residential area to the west. This model seeks to create an industrial agriculture park community with agriculture operations housed inside buildings; examples of this would be greenhouses where the growing areas are elevated to avoid direct contact with contaminated soil and light industrial agriculture facilities. In addition, this model includes mixed use garages, indoor sport facilities, and retail spaces.



Figure 3: Master Plan Example

(B) An open space model is proposed for East Warren's well known golf course area (Sector 2). This open space district is currently underutilized but has strong potential for urban farming. This model promotes high intensity urban farming with range

of agriculture operations including large farms, multiple greenhouses, and a sizeable farmers market. Additionally, this model offers water resources for the purposes of irrigation, water retention, wastewater recycling, and urban aesthetics along with meditation gardens and other farming and health-related facilities (e.g., agriculture product outlets, and health, sport, and recreation facilities).

(C) A corridor model is applied to the East Warren Street corridor (Sector 3), which has few open spaces and consists predominantly of two-story and three-story retail buildings, many of which are underutilized or vacant. The road is very wide and busy, making crossing and walking unsafe. This model seeks a balanced combination of diverse developments like agriculture research facilities near the existing hospitals or schools as well as community gardens or farms that also function as open spaces; mixed use buildings; and boulevards as traffic calming strategies along the corridor.



Figure 4: Master Plan Details Example

(D) Finally, a residential district model creates an urban farming community within a predominantly residential area in East Warren (Sector 4). This section has numerous vacant plots, making it possible to create an intensive farming-based residential community. The master plan includes two zones:

an urban agriculture zone promoting various agriculture developments, and a typical green zone that includes existing natural and man-made green spaces. Both zones are interconnected to promote a sense of community, and easy access throughout the community. This model also offers diverse housing types such as conventional urban housing and houses with micro farms (see Figure 4). The key stakeholders in East Warren can decide which test site they will use to develop a coherent urban farming community, and which proposed model they want to apply to that site for successful urban agriculture community development

CONCLUSIONS

Our literature review, design research, and field-work suggest that urban agriculture can be a catalyst for unifying the efforts of diverse groups of people in various fields in promoting revitalization, sustainability, jobs, and healthy food and lifestyle. Funding for this design research allowed us to provide a vehicle through which our design team could contribute to tackling one of the most critical issues facing Detroit: vacant properties. Our design and master plan research offers an alternative approach to piecemeal infill housing or commercial development, which alone cannot effectively respond to the vacant land crisis in a timely and holistic manner. The Christ Community Development Corporation and the American Coalition of Black Farmers have developed progressive recommendations for revitalization to address the vacant land crisis; the proposed urban farming community helps turn their recommendation into reality. Our master plan research provides a clear demonstration of the proposed urban farming community's urban and architectural implications.

Our key lesson is that successful urban farming community development will require the systematic incorporation of our present master plan research efforts into the ongoing community garden developments initiated by local community agencies. The agencies agree that our proposed master plan for the urban farming communities can help link their individual garden developments scattered around many parts of the city by integrating them throughout the larger region. Also required will be the production of a handbook of comprehensive design guidelines for urban farming community design and development. The guideline book will

also include recommendations on appropriate ordinances to ensure successful urban farming development, enabling planning administrators and other public officials to incorporate them into their development policies and regulations. This will be our next step

In summary, currently there is a proliferation of undocumented urban agriculture but at the same time there is the lack of architectural and urban design projects related to urban agriculture. This disparity offers an opportunity for urban designers and architects to move into an area of urban culture that is developing with little design direction (Doron, 2005). Urban farming today is seen as an important source of food and income generation and is therefore something that should be supported by adequate institutional frameworks (Girardet, 2004). Moreover, more research on the application of urban agriculture to the design and planning of our cities is needed because every major city has underserved populations and underutilized land that requires creative attention. Urban agriculture offers a wide range of opportunities for design innovation.

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