

Alia Shalaby

The Architecture of Urban Agriculture: How Food is produced Within the City

Thesis Research

Kieran Mahon

### Abstract

This paper is about the architecture of urban agriculture. It highlights the activities that are carried out in city gardens in London. City gardens are used for both crop and animal production. Architects have a role to play in the planning, design, and implementation of city building strategies to incorporate urban farms. The farms help in eradicating food insecurity through the provision of food and farm produce all-round the year.

### Introduction to Urban Agriculture

Urban agriculture refers to the practice of plant cultivation and the raising of animals in an urban area. It is carried out within a city to produce fruits, vegetables, and animal products mainly for life within the city. Depending on availability of land, it can be practiced on the ground, on fences or on roofs of houses. Small scale urban agriculture has been practiced in various parts of Europe and London for a long time. The only new developments in the practice are the incorporation of practice with the architectural, economic and social development within modern towns and the increase in scale of operation (Spatial Agency, 2013).

The main aim behind the development of urban agriculture was to equip people living in towns and sub-urban areas with ready solutions to combat the effects brought about by changes in oil prices. Variation in oil prices led to uncertainties in transportation of basic necessities which resulted in increased food prices (Peter H., Ian T. and Emma W., 2013). The strategy of establishing urban agriculture aimed at solving the problem of food security, health, agricultural education and a declining economy.

Urban farming includes the keeping of farm animals and the cultivation of crops. The crops provide food for animals which in return provide wastes that are used as manure for crop production. An example of the sustainability of urban agriculture can be derived from the case study of Cuba. When the Soviet Union collapsed, having been the main provider of food products, Cuba embarked on food security initiatives. This led to an increase in the total food production with the food grown and consumed in cities increasing by 50 % (André V., Katrin B. and Joe, 2008).

Urban farming has progressively become a decisive move in a bid to curb the increasing carbon footprints. It has led to diversification of production of food sources and creation of

employment to farmers. CPULs (Continuous Productive Urban Landscape) will be city-traversing open spaces running continuously through the built urban environment, thereby connecting all kinds of existing inner-city open spaces and relating, finally, to the surrounding rural area. Vegetation, air, the horizon, as well as people, will be able to flow into the city and out of it. Partially, the city will become open and wild (Andre V., Katrin B., Joe H., 2005).

Architects in London have come up with excellent plans of modelling the Cuban style of urban farming. Bohn and Viljoen are among the leading architects who are developing the London landscape model of urban farming. They proposed a continuous productive landscape in urban areas for continuous production throughout the year. They based their model on food security and self-sustenance. In their architectural plan, they advocated for appropriation of land resources so that all free spaces can be used for urban agriculture. Their aim is to lead the inhabitants of cities to change their attitudes and the environment.

The two architects came up with methods of crop production using the available limited spaces. Some of the suggested methods include 'Urban Agriculture Curtain' and 'The Continuous Picnic.' (Spacial Agency, 2013).

Emphasis on the establishment of urban agricultural zones has been made in many cities within the United Kingdom and beyond. Investors and farmers are urged to utilize available lands within cities to grow crops and rear animals. Examples of such city farms are Mudchute Park and farm that is located on the Isle of Dogs in London. The Mudchute city park and farm was established in 1977 for preservation and development of the area. The farm keeps animals and plants. It is used as a leisure place (Andre V., Katrin B., Joe H., 2005).

The farm is managed by a board of fifteen trustees who ensure that the objectives are met. The main objectives of the farm are preservation of the ordinary environment, creation of a

place of leisure, provision of economic activities and employment, provision of education and promotion of food security. The farm is not only used for agricultural production it is also used as an education reserve where children learn about animals and plants practically (Mudchite Farm and Park, 2013).

In places where the houses are congested, urban agriculture is designed so that it can allow farming to be carried out at the roofs of houses. Most gardens in the city are in the measurement range below three hectares. It is necessary to sub-divide large pieces of land into smaller gardens for easier management. Poder Popular is a government body that carries out allocation of lands for urban agriculture. They cultivate a variety of crops depending on the needs as at a particular time, the type of the soil, and location. Other(s) cultivate medicinal plants and spices (Chaplowe, 2011).

Some of the challenges facing urban agricultural farms include scarcity of free land for cultivation especially in heavily inhabited areas, insufficiency of water especially during dry spells, poor soils that do not support some of the crops, prevalence of plant pests and diseases, intrusion and theft of farm produce. Due to architectural orientations, roofs of some houses do not support urban agriculture.

In order to address the challenges facing urban farmers, the government works hand in hand with the farmers and specialists to enhance urban agriculture. Architects help in designing houses that can be adopted for crop production and animal farming. Farmers also help themselves into agricultural clubs and unions to enable them to achieve their sales targets and profits. They do this by pooling manpower and skills and through distribution of knowledge within themselves. Farmers' clubs hold regular meetings to deliberate on better methods of improving their work (Pearson C. J., Sarah Pilgrim and Jules N. P., 2010).

Through workshops, they help in educating upcoming farmers both in rural and urban areas on better methods of utilizing the available farm spaces for agriculture. Through solidarity, they act as watchdogs over each other's property and reduce theft of farm produce. The ministry of agriculture helps by promoting urban agriculture through advice, seminars and knowledge dissemination about the current agricultural principles. The ministry also provides seeds and farm-care solutions like fertilizers, pesticides, artificial insemination services and farm tools to the farmers.

The future of metropolitan agriculture depends on the agricultural specialists, architects, government and farmers. Each of the stakeholders has to work for the productivity of the urban agricultural sector. The activities carried out in an urban farm depend on the stakeholders involved, the type of location, the type of products dealt with, the scale of production and the market (RUAF Foundation, 2012).

### How Architecture facilitates farming within the city

#### 1. Planning

Planning of the structure of cities is very important in the revolutionizing of urban agriculture. All the stakeholders and managers of towns together with engineers and architects must work hand in hand in ensuring that urban agricultural developments are incorporated into initial designs. In the development of new cities, provision should be made for urban agriculture to ensure food security and self sustenance.

#### 2. Interiors

The interior of cities where the space for large city farms proves to be a challenge should be designed in such a way as to have roof farming practices. Agriculture may be done on the sides

of the houses and on rooftops as explained by Architect Vincent Callebaut. During planning and design developments, the planners and engineers must ensure that the interior of cities has sufficient spaces for city farms. Novel architectural practices can provide the best results and achieve agriculture in virtually all buildings within cities.

### 3. Public Space

Carefully selected architectural plans help in optimizing the spaces within cities. Mapping and surveying methods have revolutionized the space utility of urban spaces. Each public space available in the city is used for planting trees or flowers for aesthetic values and environmental conservation. The planting of trees helps in mitigating the carbon footprints and providing good environmental conditions for survival.

### 4. Sustainability

According to the studies conducted in urban agricultural centres, it was noted that food sustainability can be achieved if the practice is carried out in the required scales. Urban agriculture is capable of providing foods for cities while creating a greener environments. Apart from the food security achievement, urban agriculture helps in fostering community unity amongst residents. The practice has more benefits than the challenges it is currently facing. Once plans and measures are put in place to overcome the snags, the sustainability of city farming shall be enhanced.

#### Hackney City Farm (Additional information)

Hackney City Farm is one of the largest urban agricultural centres in Haggerston, London. The city farm is located on the Hackney Road at the connection of Goldsmith's Row. The farm was established in the fall of 1984 and it is currently managed by eight directors. The farm employs about ten to twenty people at any given time.

The farm has made it possible for residents of the city to have access to fresh farm produce within the city.



Figure 1: Hackney City Farm Appearance

Source: (Hackney city farm, 2011)

The main aim of establishing the Hackney City Farm was to provide food security in the city and provide an opportunity for the young residents of the borough to have access to domestic animals and food crops. Since the farm keeps poultry birds, sheep, pigs, goats and donkeys, the children in the neighbouring area use the farm as a study centre. The farm is very important in disseminating knowledge on the origin of foods to the younger digital generation. Bee keeping and livestock husbandry are also practiced on the farm. The farm provides workshop training to the farmers and residents on craft, mechanics and music. The farm provides a good place for the adoption of animals which have no keepers. The products from the farm are sold at cheaper rates compared to the ones brought into the city from rural areas.

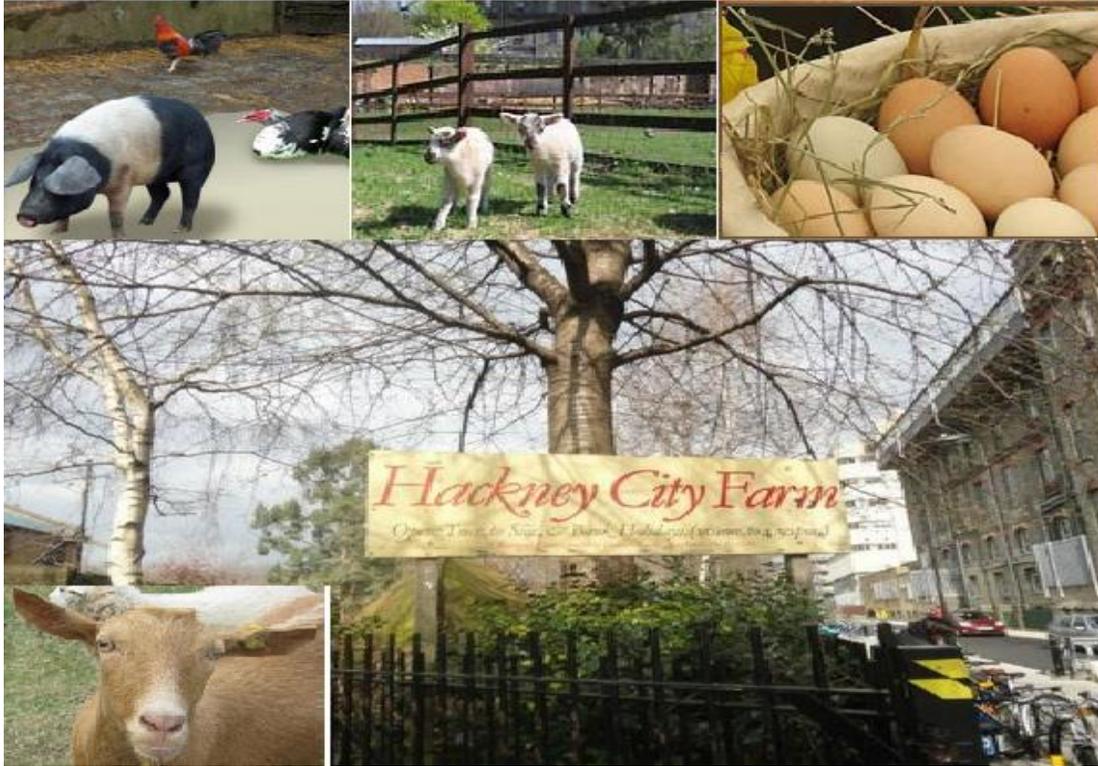


Figure 2: Hackney City Farm Products and Images

Source: (Google plus, 2013)

The farm also provides touring facilities for schools which would like to expose their students to practical city farming. Unlike other city farms, the Hackney City Farm charges a small fee for visits. The farm adopts an environmental conservation policy which aims at improving agricultural production using the safest agricultural practices.

Definition and analysis of urban agriculture by Vincent Callebaut

Vincent Callebaut, the Belgian architect, is a famous person for the revolution of urban agricultural farming architecture for improved sustainability. According to him, urban agriculture should take a futuristic approach of ensuring food sustainability and reduced urban-rural migration.

In his model of a modern urban farm, he proposed 'farmscrapers' as the solution to the basic needs of the city residents. His architectural plan focuses on more energy production and food security. For example, his design of the 'Asian Cairns' employs biomorphism and bionics in the production of a structure that can allow all sorts of agriculture. The following picture shown one such a model of the modern agricultural self contained structure of the Pearl River Delta.



Figure 3: Vincent Callebaut Architecture's: Asian Cairns, Shenzhen, China - Urban Farming

Source: (Bazaar, 2013)

The design is best suited for the Chinese lands. The structures can accommodate offices, orchards, city agricultural fields and other facilities found in conventional buildings. Modern technology is used in the elimination of pollutants and wastes (Bazaar, 2013). The interdependence of farm animals and food crops is exploited and this ensures no wastage. The foliage from the crops are consumed by animals which produce wastes that are needed for plant cultivation. Almost everything is recycled through an endless process. Vincent Callebaut's architecture provides a solution for the ever increasing consumption in the city. The buildings'

design reduces the towns into a self contained block of forests, firms and structures that can accommodate both plants and animals (Urbanagriculture europe, 2013)



Figure 4: Vincent Callebaut Architecture's: Asian Cairns, Shenzhen, China - Urban Farming

Source: (Bazaar, 2013)

It can be noted that city farming solves more problems than the challenges it is currently facing. It is a salient endeavour to achieve food sustinence and higher agricultural productivity and information dissemination in urban areas.



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