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The Cook, The Farmer, His Wife, and Her Grocer: Plotting a New Urban/Rural Interface

by

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ABSTRACT

The Cook, The Farmer, His Wife, And Her Grocer:
Plotting A New Urban/Rural Interface

By
Jonathan LaRocca

Plotting a new urban/rural interface provides a design proposal for a new kind of sustainable landscape within built-up areas: urban agriculture. The re-introduction of productive landscapes into the contemporary city changes the appearance of modern-day urban conditions towards an unprecedented economic, social, and environmental productiveness. Such landscapes adopt a strategy of systemic intensification which searches out reclaimable (unproductive) space with the existing urban fabric. By growing food within an urban rather than exclusively rural environment, productive landscapes within city boundaries reduce the need for industrialized production, packaging and transportation of foodstuffs from rural areas to the city dwelling consumers.

This project offers an examination of food as a fundamental aspect of a city, the study of how food relates to the economic, political, social and cultural environments of a city, and the study of how food imprints on the built environment. Urban agriculture is a theory that positions food is a primary transforming force capable of organising the city and enhancing the urban experience. The possibilities of urban agriculture in the United States are presented through a proposal for active farming and food retail projects in Houston as strategies for achieving sustainable growth.
ACKNOWLEDGMENTS

This project was inspired by my parents and grandparents, for their love and enduring support in all my pursuits, and who tolerated with good nature my seemingly endless academic career. I am especially grateful to them for indulging my curiosity in our farming history, and our historic farming home town.

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I also want to thank Chad Loucks for sharing his creative, technological, progressive ideas about model building.

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I'm especially greatful to passionate world-changers I met in Ithaca. You are the shoulders I am standing upon, looking, excited about a bright green future.

Finally, I want to thank Ishmael for challenging me to reshape how I think about everything.
PREFACE

An important component has been left out of new infrastructure-rich, enabling cities, namely new forms of ‘green’ as peri-inter/urban rural space. Food production, distribution, and consumption is an opportunity for architectural invention for real problems, in an area where architectural design is rarely a priority. New areas of productive landscapes within large urban conurbations are important for sustainable regional planning. In the mid-nineteenth century, Frederick Law Olmsted created the style of landscape architecture that would come to define the American urban park, allowing the urban denizen to profit from the beneficent effects of pastoral landscapes. Olmsted’s vision is no longer adequate in urban settings today. Re-envisioning new hybrids of urban and rural carries landscape design beyond its traditional role, offering city fabrics as synthetic productive landscapes – an alternative to the traditional model of clearly defined parks.

Landscape design in this context, needs to employ design as an inventive enabling agent to sustain productive lands as a new form of urbanism. ‘New Green’ requires new land-tenure models and innovative forms of agriculture that synthesize agriculture, nature conservation, infrastructure and communities. As a result, new forms of planning are needed.

Farming in cities provides a design proposal for a new kind of sustainable landscape within built-up areas: urban agriculture. The reintroduction of productive landscapes into the contemporary city will change the appearance of modern-day urban conditions towards an unprecedented economic, social, and environmental productiveness. Such landscapes cannot be created through a strategy of erasing urban tissue, or tabula rasa - paradigms of land-use tactics which only transplant built-up space from one place to another. Instead, designers and urban planners must adopt a strategy of systemic intensification which searches out reclaimable (unproductive) space with the-
existing urban fabric.

By growing food within an urban rather than exclusively rural environment, productive landscapes within city boundaries would reduce the need for industrialized production, packaging and transportation of foodstuffs from rural areas to the city dwelling consumers. Sprawl paves over huge expanses of arable farmland, replacing fields with roads, highways, homes, and commercial and industrial development, eliminating an estimated 46 acres of prime agricultural land every hour (Ehrlich, Ehrlich, Holden). This unbridled expansion of the built-up area pushes productive landscapes farther and farther away from urban centers, subsequently creating considerable travel distance to market areas. Growing food in urban areas reduces a city’s ecological footprint by decreasing or eliminating the long distance transport of food from the point of production to its destination – a major source of greenhouse gas emissions.

**Predicted Agricultural Land Demand (fig. 1)**


<table>
<thead>
<tr>
<th>Total World Land Area</th>
<th>13.4 billion hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Pasture Area</td>
<td>3.5 billion hectares</td>
</tr>
<tr>
<td>Current Arable Area</td>
<td>1.5 billion hectares</td>
</tr>
</tbody>
</table>

At first glance, local food does not fit within the narrow definition of efficiency used by industrial farms dominating the food production sector, or the grocery store chains that dominate the retail food sector. It is estimated that on average, food travels 1500 miles before reaching consumer - food is not local. Pushing food production farther away from our cities has a definite ecological impact.

**Food Miles (fig. 2)**

*The Leopold Center for Sustainable Agriculture in Iowa compiled data from the U.S. Department of Agriculture to find out how far produce typically traveled to a Chicago terminal market. This chart compares that with the distance produce typically travels to the San Francisco Ferry Plaza Farmers Market, which specializes in locally grown food.*
"A Nation That Destroys Its Soils Destroys Itself."

-Franklin D. Roosevelt

Additionally, the industrial farming revolution of the last century promised abundance and an end to hunger – but the introduction of chemical pesticides, monocultural production, and confined animal feedlots have made farming one of the world’s worst polluters.

Agriculture has done more to reshape the natural world than anything else we humans do, both its landscapes and the composition of its flora and fauna. How and what we eat and use determines to a great extent the use we make of the world - and what is to become of it. In the United States alone, we blanket the country with billions of pounds of pesticides. Industrial farming also has the dubious distinction of being one of the world’s biggest contributors to greenhouse gas emissions. Our petroleum dependent farming eats up oil, using ten calories of fossil fuels for every one calorie we produce. According to journalist Richard Manning, author of Against The Grain: How Agriculture Has Hijacked Civilization, the production of just one two pound bag of cereal burns the energy of half a gallon of gasoline.

As industrial farming pollutes our environment, it also pollutes our bodies. Research from the Centers For Disease Control and Prevention on exposure to environmental chemicals indicates that most of us walk around with a significant amount of farm chemicals residing in our body.

How can architecture, urbanism, and their associated theories innovate solutions to the problem of disappearing, but also polluting farmland? Preserving the world’s soils and the biological diversity of crops is key to maintaining healthy global ecosystem, curbing poverty, and ensuring a future food supply. It is believed that it may take 500 years for an inch of soil to develop; it’s existence constitutes an invaluable resource. Among different types of soils, mollisols and alfisols constitute the richest in organic
matter and therefore the best for growing healthy plants. Besides topsoil erosion; nitrogen exhaustion and irrigation salinization from human agricultural practices has ruined several million acres of cropland in the Northern Great Plains, as well as many other parts of the world besides the United States, including India, Turkey, and especially Australia (Diamond, 2006).

![Images of different types of soil](image1.jpg)

1. Alfisols  
2. Mollisols  
3. Degraded farmland, Western Australia


3. Farm, Western Australia. Copyright Jonathan LaRocca, August 2006.

**Predicted Topsoil Loss (Fig. 3)**

Natural topsoil loss rate from arable land of roughly 100 billion metric tons per year (100 Gt/year), minus topsoil creation rate of 20 Gt/year, resulting net topsoil loss rate of 80 Gt/year.

**Sources:**

Cities today are constantly renewing themselves. Faced with rapid urbanization, and loss of nearby arable lands due to sprawl, the future of agriculture is inseparable from the future of cities. The United Nations Conference on Environment and Development recognized the need to address agriculture and sustainable development in 1992 Earth Summit:

*By the year 20025, 83 percent of the expected global population will be living in developing countries...Agriculture has to meet this challenge...Major adjustments are needed in agriculture, environmental, and macro-economic policy, at both national and international levels, in developed as well as developing countries, to create conditions for sustainable development.*

*Agenda 21 (United Nations Conference On Environment and Development 1992)*

Many densely populated cities in the developing world already produce food inside the city – far more than in North America or Europe. The benefits of urban agriculture could be enormous and far-reaching. Gardens improve local urban microclimates and ecosystems. Organic soils act as carbon sinks, leaching carbon dioxide from the atmosphere, and reducing the effect of greenhouse gases. Increased urban plant life also contributes oxygen to the air through photosynthesis. Gardening in the city increases local biodiversity, providing habitat for other plant life, insects, birds, and other species that have been adversely affected by urban development. Urban agriculture provides an effective way of cycling the city’s waste back into the production stream. Organic waste can be used in gardens as compost, and household wastewater can replace treated drinking water to irrigate gardens. Gardens also do a service to cities by absorbing rainwater – a growing threat as more land is paved over and extreme weather conditions increasingly stretch the capabilities of cities’ drainage systems to cope. The benefits of urban agriculture stretch beyond the ecological realm. Garden enterprises are a source of job creation, where people can work and make a living. This is of increasing importance
in areas where the rural poor are flocking to cities in search of a better life. There are now a number of urban farms that have converted their farms to bakeries, delis, restaurants, and specialty stores. Many small urban and suburban farms across the country have paid employees who oversee the production of food to be sold at all types of retail outlets – cooperatives, farmers’ markets, restaurants, corner stores, and supermarkets. More FFA (Future Farmers of America) now come from towns, suburbs, city neighborhoods, including Queens and the South side of Chicago, than from rural regions. The largest chapter in the country is now in Philadelphia (NY Times, 2006).
Food producers and retailers will find farming in cities to be a sustainable method for producing, distributing, and selling fresh produce, as well as an important public image and marketing mechanism for appealing to consumers. Urban and peri-urban farming will decrease the need for both packaging and transporting foods. Food production companies will grow raw ingredients “on-site” along with packaging and administration facilities. Companies will save money by reducing fuel costs, a rapidly increasing expense.

Many food production companies are already interested in developing practices which are more friendly to the environment and more sustainable. In May 2002, three large food production companies (Unilever, Group Danone, and Nestle) launched the Sustainable Agriculture Initiative (SAI) Platform. Seventeen other members have since joined the platform, including big names such as Dole, Kraft, Coca-Cola, and McDonald’s. The members are able to share costs of developing sustainable agricultural practices with other members. The SAI supports sustainable agricultural practices which secure adequate food supplies, protect and improve the natural environment and resources, and economically viable and responsible farming systems. These companies also plan to further develop sustainable agricultural practices by testing them through pilot projects.

Potential Investors:
Urban Farming was prevalent during both world wars, prompted by the real threat of blockades. Victory gardens, also called war gardens or food gardens for defense, were vegetable, fruit and herb gardens planted at private residences in the United States and United Kingdom during World War I and World War II to reduce the pressure on the public food supply brought on by the war effort. Victory gardens were planted in backyards and on apartment-building rooftops, with the occasional vacant lot "commandeered for the war effort!" and put to use as a cornfield or a squash patch.

In 1946, with the war over, many residents did not plant Victory Gardens in expectation of greater produce availability (Turowski, 2002). Most of them disappeared from British cities by the end of the 1950’s, however the added pressures of supplying liberated Europe meant that, in the UK, shortages remained, or in many cases got worse (Francks, 2004).

Allotments were originally established in the early eighteenth century to compensate the landless rural poor for the enclosure of common land by wealthy land owners (Crouch & Ward, 1988). Despite delaying urban food growing until 1917 in London for fear of damaging morale during the first world war, production results were dramatic. The Dig For Victory Campaign was launch more preemptively for World War II in 1939, and had an estimated 1,500,000 allotment gardens at the end of the war.

http://en.wikipedia.org/wiki/Victory_garden
Urban food-growing in general, and allotments in particular, featured prominently in Ebenezer Howard’s Garden Cities of Tomorrow, first published in 1902. In each city, five-sixths of the area was devoted to food production (Francks, 2004). Garden Cities of Tomorrow (1902) offered a vision of towns free of slums and enjoying the benefits of both town (such as opportunity, amusement and high wages) and country (such as beauty, fresh air and low rents). Ebenezer Howard illustrated the idea with his famous three magnets diagram—(pictured), which addressed the question ‘Where will the people go?’, the choices being ‘Town’, ‘Country’ or ‘Town-Country’ - the Three Magnets. It called for the creation of new suburban towns of limited size, planned in advance, and surrounded by a permanent belt of agricultural land. These Garden cities were used as a role model for many suburbs. Howard believed that such Garden Cities were the perfect blend of city and nature. The towns would be largely independent, and managed and financed by the citizens who had an economic interest in them.
Visions of Urban Agriculture

I dreamed of fruits and vegetables. A building containing fruits, vegetables, and still more fruits and vegetables. Rooms with surfaces growing full of fruits and vegetables. You had to be able to see them, feel them, smell them.

You peruse for awhile, and come to a “growing” hall with asparagus. Not sure whether to buy thin or thick stalks, you also notice sweet onions, cucumbers, peas (English and sugar snap), garlic, tomatoes, cherries, peaches, and apples. You ask for a recipe from the farmer, who mentions that he will soon have 100 varieties of sweet and hot peppers. After talking with some other farmers and shoppers, you pick up a few other items – enough for apple-braised chicken and a salad of mixed greens with honey herb dressing....
After consolidating with several valley farmers, he purchased his own growing hall in this urban farm. The farmer grower starts each year his fresh asparagus, just as he has since first coming to the Market in 2007. Prefer thin or thick stalks? He has both. Look for sweet onions, cucumbers, peas (English and Sugar Snap), garlic, tomatoes, cherries, peaches and apples. He is growing more varieties of produce, too—he hopes to bring 100 varieties of sweet and hot peppers to the Market.
Audrey decided to lease one of the growing halls when the Houston Center for Food & Agriculture opened up in 2007. She grows strawberries, raspberries, currants, blueberries and 11 types of blackberries. While berry-growing is seasonal, she has developed a successful year-round business by creating delicious products made from their organic berries. The secret to their success is their farming philosophy: Grow the best varieties of berries available, and make everything fresh! All the recipes were developed by Robert Thorn (see other cast), one of the in-house chefs, who enjoys creating new products to sell as much as he enjoys making them. Everything is made weekly in small, single batches so customers get the best color and flavor. Product lines include gourmet berry jams, pepper jams (mild to hot), plus berry syrups, vinaigrettes and vinegars. Popular sellers include traditional raspberry and strawberry, but also popular are tayberry, golden raspberry, loganberry, marionberry, boysenberry and waldonberry. The marionberry-ginger vinaigrette is a perfect refresher in a summer salad. Audrey loves dabbling in the demonstration kitchen when it isn’t reserved for one of the cooking classes. She suggests, for a delightful appetizer, brie cheese with blackberry-habanero jam baked in the middle. Get more serving ideas from the her, when she hosts tasting on Thursday (with more days during summer).
There are plenty of personal care products to take care of the body. Botanical Artisanal soap sets like Legends (Frankincense, Myrrh and Sandalwood) and Evergreens (Cedar, Fir, Pine-Spruce) add an aromatherapy touch to bathrooms. There are many choices of herbals and herbal blends, such as Lavender-Rosemary, Sage-Thyme and Tea Tree-Mugwort. Balms for lips, hands and feet soothe after a hard day’s work. And each soap or balm is a loving creation of Jia-Ning. She uses a three-phase cold-process method to make the soaps. The bars come in 4-oz. sizes and ½-oz. mini-travel hospitality bars, in three-bar matched, themed or choose-your-own sets in hand-made boxes.

When a rare Market vacancy happened, he seized the opportunity. Burson opened the bakery in late 2007. During summer, the busiest season at the Market, 12 people work for the bakery. In winter, that number changes to eight. Burson at the Market at 6 a.m. each morning. It’s a special time of day to him. He loves the stillness of early morning and being alone for more than an hour before more people arrive. In the summer, by 10 a.m. the shop will have a line of customers out the door. Perhaps they are attracted to the aromas of fresh-baked pastries coming out of the ovens behind the counter.
Meet Robert Thorn, maker of the Market’s World Class Chili Robert knows what makes a perfect chili. After all, he’s been making it since the tender age of 14 while living on Montana ranches during the Depression. To Joe, the best chili is a combination of cooking techniques and great ingredients. And a perfect chili is very individualistic, depending on the region you live in. For example, California-style chili has chicken and more tomato than a Texas chili. Upper Midwest chili has no tomato and very little cumin. Cincinnati — which has more than 200 chili parlors — favors Mediterranean spices like cinnamon and cloves, and it’s often served over spaghetti. Texas chili is saltier and hotter than the other styles. Robert advises aspiring chili cooks to perfect general cooking techniques, such as browning meats, and sequencing of cooking. Temperature control and not allowing meats to touch while cooking are important, as is placing herbs and spices in their proper order: Roots go in first, then seeds, then leaves. Freshness is critical, too. When Robert cooks in a competition, he always grinds and toasts his own cumin seeds. Other tips for good chili? Robert says kidney beans hold their shape well in cooking. Try using cooked winter squash as an edible bowl for chili. Or stop by his demonstration cafe for lunch sometime and discover your own perfect chili
A Super Dense Box Of Growing

All retail and public space has to be carved out of this “library” of groceries. Greenhouses are treated as collections, and require specific strategies of expansion, circulation, and varying levels of security and access. In some areas the consumer has access and goes directly to pick their food, while in other spaces, a grower has to access, harvest, and package the food, where the consumer then accesses it in the grocery/retail space.
Theoretical Considerations

Initially the project proposed a confrontation between nature (i.e., the wheat, topsoil, et al.) and culture (i.e., the nearby skyscrapers, Wall Street, pavement, et al.) to draw attention to the processes of agriculture bring forth many questions about the nature of urban public space, and about the politics of land use and it's incumbent inequities.

Photo Collages
Photo Collage, A New Type Of Grocery Store
THE [NEW] URBAN/RURAL INTERFACE: Proposal For A New Gastronomic Quarter

A complex containing food growing, distribution, and consumption - high yield micro-farms, and a new vision of markets/grocers dedicated to advancing a sustainable plant agriculture and food system through state-of-the-art research and community programs that address local needs.
Why Houston?

HOUSTON SUPERMARKETS
RANDALL’S
◼ KROGER
◼ WHOLE FOODS
◼ FIESTA MART, INC.
◼ CENTRAL MARKET

5,297,000 Number of people in the region today. 8,835,000 In 2035.

The latest forecast for Houston’s future says that between now and 2035 we will add 3,538,000 people. The region should then contain 9,000,000 people. Adding 3,538,000 people and all their cars, homes, jobs, schools, police and firefighter stations, stores, and other needs will require the construction of more than 5 billion square feet of new buildings.
Site Aerial, Midtown, Houston, TX
The Midtown Superblock Site was chosen for its scale and proximity to expected housing development predictions and proximity of nearby grocery stores and food retail businesses.

Site from McGowen Street, Midtown, Houston, TX

Site from rail stop, Main Street, Midtown, Houston, TX
The Midtown Superblock’s scale allowed for a greater freedom to explore food production exceeding that of conventional community gardens. Already planned as a future greenspace for the area, by converting it to a multi-functional amenity which produces food and acts as well as providing other environmental benefits will contribute to the vitality of the surrounding area.
THE URBAN STEPPE:

A landscape raised above a mass of technical farming, with a consumption/distribution zone in between, skewering the two. The strategy of “peeling” is multi-scalar, acting at the urban scale to create the juxtaposition of outdoor and indoor growing, as well as at a smaller scale creating daylighting and ventilation openings, as well as circulation openings. These occur both as a field condition across the building and in singular special instances.

Different types of “peeling” strategies
Photo collage, view from helicopter

Photo collage, view from Travis Street
Floor Plans (2-4)
Interior Market Studies
Interior Market Study

Loading Entrance Study
Appendix:

Stone Barns Center For Food and Agriculture

Stone Barns Center for Food and Agriculture is a non-profit farm, educational center and restaurant in the heart of Westchester County. Its mission is to demonstrate, teach and promote sustainable, community-based food production. Stone Barns Center is also home to Blue Hill at Stone Barns, a restaurant that offers guests a taste of the farm in a four-season operation, producing food even in deep winter in the minimally heated greenhouse.

Greenhouses

Chicken Area

Sheep Pastures

Pig Paddocks

CIRCULATION
- greenhouse access
- parking
- restaurant access
- pasture cycling

PASTURES
- rotational portable electric fencing used to move livestock

ECOLOGY
- wetlands
- forest
- pasture

GREENHOUSE
- 22,000 sf.
- 35 varieties of produce year-round

GARDENS
- Dyes
- Flavors
- Foods

- Education Center
- 72 seasonal crops

- Berkshire Pigs
- Bourbon Turkeys
- Giant White Turkeys
- Finn-Dorset Sheep
- Rhode Island Red Cross Hens
- Cornish Rock Chickens
- White Rock Chickens
- Pastured Veal Calves
- Honey Bees
- Rabbits

rt 448
- public
- road

main entrance
Appendix: Organiponicos

Organic gardens are integral to Cuban urban agriculture and are basically long cement planting troughs for growing market garden crops. In Havana, Cuba, organopónicos are found in vacant lots, old parking lots, abandoned building sites, spaces between roads, any available site (even rooftops and balconies). They are taken over by thousands of new urban individual farmers called Parceleros and farmer cooperatives with the support of the Cuban Ministry of Agriculture (MINAGRI) making Cuba the only country in the world that has developed an extensive state-supported infrastructure to support urban food production. All garden crops such as beans, tomatoes, bananas, lettuce, okra, eggplant, and taro are grown intensively within the city using only organic farming methods since all chemical fertilizers are banned in Cuba. During the crises years of the early 1990s, Cuba lost its main trading partners and the US intensified its economic blockade against Cuba, resulting in a thriving black market skyrocketing food prices. Fresh fruits and vegetables, even when produced in ample quantities often rotted in the fields or at warehouses because the transportation system was also in crisis. As a result people in many communities began to quietly take over empty lots and to farm. Others requested local agencies to let them farm on their open space. Cuba has developed an innovative model supporting food production within the boundaries of its cities using a combination of top down and bottom up approaches.

*Plate 3, Pastorita Cienfuegos, Study By Tom Phillips, CPULS: Continuous Productive Urban Landscapes.*
MVRDV has studied ways to streamline production in the intensive pig farming sector. Examining animal welfare and efficient land use the result is Pig City: skyscrapers in which pigs live. In agriculture, a Concentrated Animal Feeding Operation (CAFO) is a farm that raises livestock and seeks to maximize production by making highly efficient use of space and other resources. Sometimes negatively referred to as factory farms, CAFOs hold large numbers (up to hundreds of thousands) of animals, typically cows, hogs, or chickens. The distinctive characteristics of a CAFO is the confinement of livestock in a limited space, with food is supplied in place, and employment of artificial methods to maintain animal health and improve production, such as use of antimicrobial agents, vitamin supplements and growth hormones. Mechanical methods are also employed, such as debeaking of chickens and physical restraints, to control undesirable behaviors.

_Pig City, KM3, MVRDV, 2006._

Pig City proposes 76 towers, each measuring 622 meters in height. MVRDV theorizes: is it possible to consolidate the entire pig farming industry into compact farm units, eliminating the need for transport and distribution and reducing the risk of spreading diseases? MVRDV collaborated with the Dutch Ministry of Agriculture, Nature and Fisheries to produce a film on the subject. Using computer animations, MVRDV outline the framework within which the pig sector could develop, on the basis of stacking pigs in ‘apartments’ in such a way that they enjoy better conditions, the meat acquires a better taste, livestock transport becomes unnecessary, diseases are eliminated, and the Netherlands acquires more space.

The Netherlands produces some 16.5 million tons of pig meat each year, making it the European Union’s leading exporter. In 1999 there were officially 15.2 million pigs in the country, and 15.5 million people. Each pig requires 664 m² of space, including that
Pig Pen Designs

2,040 Ft

100 M gas dome and manure storage silos.

50 M fish production

20 M food storage silos

stacked organic farms

Slaughterhouse & truck level
required for meat processing. If meat consumption was to stay at today’s levels and purely organic farming methods were introduced, the pig industry would need 75% of the surface area of the Netherlands. The pigs are kept on the 87m² floors, with large balconies allowing the animals to rummage around under trees outside. A central abattoir is housed in the plinth, and pigs for slaughter are moved in lifts. On top is a fish farm that supplies some of the food needed. Each tower also contains a central slurry-processing plant and a biogas tank, which easily caters for the tower’s energy needs. To reduce transport costs, 44 towers are located in the port; the other towers are located close to major cities. Criticism centred on the dangers of centralisation. Should one element be put out of operation, then the consequences for the whole system couldn’t be foreseen. There were also unfavourable comments about the belief that society can reduce nature into models that are then turned into reality.

One vertical farm with an architectural footprint of one square city block and rising up to 30 stories could provide enough nutrition to comfortably accommodate the needs of 10,000 people employing technologies currently available.

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