

by Dick Despommier were recently used as the basis for a collaborative Agritecture Workshop arranged through the CASS School of Architecture, Southbank Consulting, the Association for Vertical Farming and Blue Planet Consulting. The winning team named CitiSalads proposed to develop an underused London space in Spitalfields into a vertical farm with underground mushroom production, using an old mail tunnel to deliver their fresh produce more easily to market.

ONES TO WATCH

Technology is also influencing how food can be grown and distributed in cities. The Swiss company Urban Farmers AG have developed a Farm Scout App that uses geotagging to locate rooftops and evaluate them on their potential use for farming. The app also helps aspiring farmers to connect with other people interested in urban agriculture and partners able to help them implement their farming projects. In the UK a service called Farm Drop is working to fix the foodchain by providing an online farmers market where food is harvested to order. Farmers are able to receive between 70-75 per cent of the retail price of their food, rather than the 25-50 per cent typically offered by supermarkets. Less food is wasted as it is harvested, baked, or caught to order. After ordering online, customers receive their produce from an electric delivery vehicle. This tailored approach also

shortens the supply chain and delivers fresher food.

CONCLUSION

Urban planners and designers need to identify strategic opportunities to encourage the production of food in cities. Be it small scale community-driven initiatives or high-tech commercial farms, urban agriculture has an important role to play in improving the sustainability of cities and the health of residents. ●

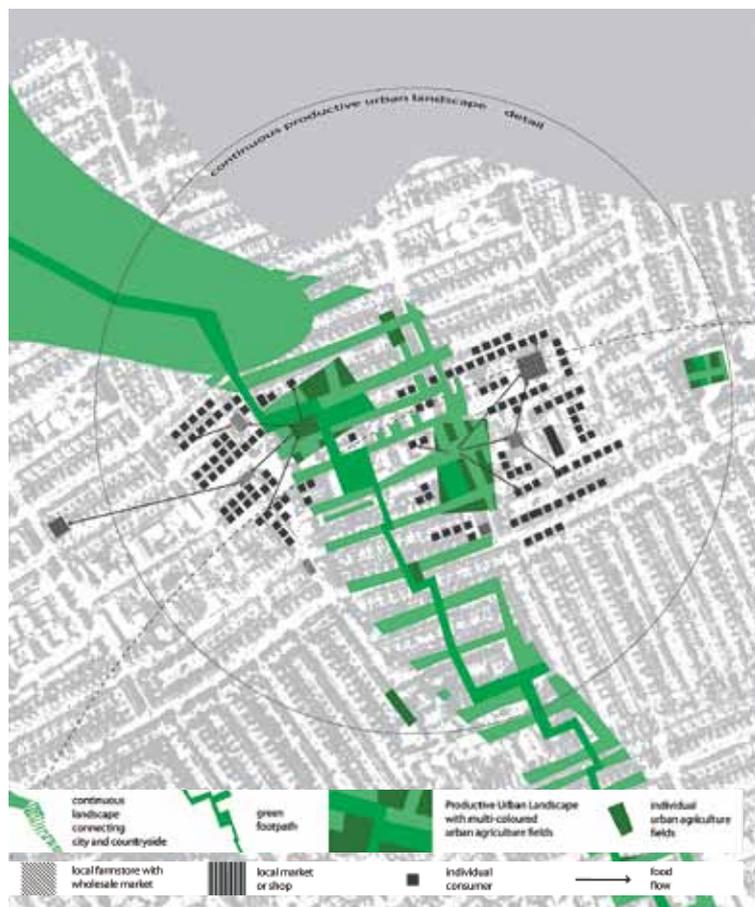
Elizabeth Reynolds, Director, Urben

REFERENCES

Archer, K., 2013 *The City: The Basics* New York: Routledge
 Greater London Authority 2008 *Living Roofs and Walls Technical Report: Supporting London Plan Policy* London: <https://www.london.gov.uk/sites/default/files/living-roofs.pdf>

The Productive City: Urban Agriculture on the map

Katrin Bohn and André Viljoen call for the integration of urban food production



1 The CPUL concept: green corridors provide a continuous network of productive open space, and routes for pedestrians and cyclists

Undeniably, during the last twenty or so years, urban agriculture has become an increasingly common feature of many urban areas in the global north and – responding to social, environmental and economic concerns – has long been practised in the global south. Urban agriculture is now understood as a movement and as a land use typology. It was defined in 1996 and has been widely researched ever since.

Irrespective of definitions, it is probably the stark contrast between the words urban and agriculture – picture them both individually – that triggered the imagination and creativity of those who used the term and sent it out into the world with a question mark and an exclamation mark. Above all, it expresses the duality of a spatial observation – the adjacency and immediacy of the urban and the field (agri) – and a direct action – to grow (culture).

Over the last ten years, design research and academic explorations of urban agriculture and its spatial effects have significantly increased in the global north. From an architectural and urban design point of view, concepts such as Agrarian Urbanism (Waldheim 2010) and Transition Towns (Hopkins 2008), as well as our ‘continuous productive urban



2

landscape' (CPUL) or CPUL City work, are examples of thinking holistically about the origin, current practice and future of spatially integrated urban food production.

THE CPUL CITY CONCEPT

Our work proposes design strategies and prototypes that can make urban space more productive and more desirable for its citizens. We start from our experience of the dense European or Western urban area and attempt to enrich the qualities of urban life whilst, at the same time, reducing the negative environmental impact of current urban food systems. We have developed the CPUL City concept to address this.

CPUL City describes an urban future based on the planned and designed introduction of what we call continuous productive urban landscape – landscapes defined by urban agriculture – into existing and emerging cities. CPUL City has fundamental physical and social implications. It follows a systematic approach and proposes that urban agriculture can contribute to more sustainable and resilient food systems, while also adding beneficially to the spatial quality of the urban realm. It is an environmental design strategy, and provides a strategic framework for the theoretical and practical exploration of ways to implement such landscapes within contemporary urban design.

Central to the concept is the creation of open urban space networks providing a coherent, designed multifunctional productive landscape that complements and supports the built environment. CPUL's physical manifestation will fundamentally change the urban landscape and implies an equally fundamental change to the way that societies and individuals experience, value and interact with it. Within the CPUL City concept, urban agriculture refers to fruit and vegetable production, as this provides the highest yields per square metre of urban ground. The key features of CPUL are outdoor spaces for food growing, leisure, movement and commerce shared by people, natural habitats, non-vehicular circulation routes and ecological corridors. Its network connects existing open urban spaces, maintaining and, in some cases, modifying their current uses.

The CPUL City concept recognises that each city and each site will present a unique set of conditions and competing pressures

informing the final shape and extent of its productive landscapes. It envisages a mixed economy of growers practising urban agriculture: projects for and by the community, small-scale and large-scale, commercial and communal, low-tech and hi-tech. Broadly speaking, commercial-scale production will be necessary if urban agriculture is to have a quantifiable impact on food production, whilst personalised production is very significant from a social and behavioural change perspective. Yet urban agriculture will not meet all of a city's food needs, and any in-depth review of urban food systems must consider the relationships between a city, its local region and beyond.

So, the spaces envisaged in a productive city such as CPUL City, are not only food-yield-productive, but their everyday use is also guided to be healthy, fair, economically stable and convivial. These spaces are green and open, and they flow out and into the countryside, and back from there, as do wildlife, air, people, and above all food.

THE GROWING PRACTICE OF URBAN AGRICULTURE

It is neither possible nor desirable to feed a city solely through urban agriculture. However, coordinated and well-managed relationships between urban, rural and international agriculture can lead to an environmentally optimal and equitable urban food system. In our 2005 book *Continuous Productive Urban Landscapes: Designing Urban Agriculture for Sustainable Cities*, we argued for a mix: a

2 Spiel/Feld Marzahn in Berlin, where landscape architecture students run a pilot place-making and community food-growing project supported by the borough

mix of open urban space uses around urban agriculture, as well as a mix of foods from various origins for the urban consumer. There, we presented estimates for potential self-sufficiency in fruit and vegetables of about 30 per cent. Subsequently, similar figures have been calculated by other planners and researchers such as Michael Sorkin and Mikey Tomkins, and architect Joe Lobko who presented findings for a housing development at the 2011 Ontario Association of Architects conference in Toronto.

Urban agriculture brings many advantages to a city, social, health, environmental, local, educational, and can be practised not only for food production, but to achieve these wider outcomes. However, international experience shows that more and more projects are being set up explicitly to produce food in larger quantities and that existing practice is being optimised. The increasing emergence of projects that are demonstrably successful enterprises – traditionally economic or newer social – provides proof of the acceptance of productive urban landscapes as a desired and planned urban land use. It also offers a reality check of the ideas.

Contemporary and new forms of urban agriculture in the north have, in the main, originated in North America and, looking eastwards, spread from there since the early 2000s to the UK and Europe. The establishment of economically viable schemes for various types of urban agriculture during the past five, or even ten to fifteen years, is new on both sides of the Atlantic, complementing older, more leisure-based and communal practices, such as the European allotments or the North American community gardens.

In the UK, the Capital Growth project gave the London community gardening scene an important boost in 2009 with the goal of creating 2,012 new projects in the three years to the 2012 Olympics. Several British cities, such as Brighton (Brighton and Hove Food Partnership 2012), Bristol (Bristol Food Network 2010), Leeds (Leeds Permaculture Network *n.d.*) or London (Sustain *n.d.*) have developed strong dedicated food-growing networks and programmes since at least 1999 (which is when Sustain was founded). The first farmers' market was set up in Bath in 1997, followed by the nationwide establishment of the National Association of Farmers' Markets in 1998, and policy interest is evident in several places, for example in London with the *Cultivating the Capital* report (London Assembly 2010) or in Brighton and Hove where the local council requires a statement about food growing for every new-built planning application.

Taking all of these facts as signs of a public willingness to address urban food systems, the question now is how best to support the development of urban agriculture and productive

The increasing emergence of projects that are demonstrably successful enterprises... provides proof of the acceptance of productive urban landscapes as a desired and planned urban land use

urban landscapes, so that they can reach both their full food-growing potential, and move beyond niche activism, to become part of integrated urban food systems, consequently gaining spatial significance within the urban fabric.

Four main challenges can be identified:

1. In order to coherently embed urban agriculture spatially into urban areas and local contexts, both temporarily and permanently, research- and planning-led urban design and architectural concepts are needed. (Keyword: productive urban landscape).
2. Despite the great accumulated knowledge about and the huge social capital invested in urban agriculture, clear applicable guidance and best practice dissemination are essential to enable and augment the capacity of urban food growers, their projects and their sites. (Keyword: toolkit/ actions).
3. Recognised regulations or agreements with public decision-makers (e.g. planning, trading, land rights) and other food-related entities (e.g. rural, markets, accreditation bodies) are needed to support and safeguard urban agriculture practice and sites. (Keyword: food policy).
4. To become widespread and maximise its associated social, public health

3–4 The Urban Agriculture Curtain shows the CPUL concept applied to buildings as a vertical hydroponic system



3

4

and environmental benefits, urban agriculture needs to be integrated into mainstream food production and procurement systems. (Keyword: urban food systems).

These four challenges need to be developed in parallel within a city's particular local, regional and international urban food systems.

DESIGNING URBAN FOOD SYSTEMS

Urban agriculture is always part of something. As a land use type, it may be part of more strategic concepts, such as CPUL City or other development concepts adopted by a municipality. As a food-growing activity by individuals or groups, it is part of a network of processes aiming to sustain urban life, either directly by the produce grown, or by the commercial exchanges it generates. Additionally, supportive policy frameworks – food policies – generally do not target productive urban landscapes or urban agriculture alone, but wider and often very complex networks of food provision supplying city dwellers, i.e. urban food systems.

In the 1990s, researchers in the USA laid the foundations for an understanding of urban food systems that is still used and referred to today. Kenneth Dahlberg's work, for example, aimed at developing food-related policy as a basis to devise specific strategies for food planning in particular urban contexts, emphasising the need for understanding food systems as local systems.

Around the same time, Kameshwari Pothukuchi and Jerome Kaufman began urging for food systems to be placed on the urban agenda in order to fully address the quality of life in urban localities. Both researchers later wrote the now seminal 2007 *APA Policy Guide on Food Planning* which crosses the divide between food systems planning and urban spatial design. We see urban agriculture and productive urban landscapes as ways to contribute to this vision of a more sustainable and equitable provision of food for cities.

Urban food systems can be broken down into smaller components such as household or neighbourhood food systems,

which make it easier to tackle more local challenges, provided that the bigger picture stays in focus. Urban agriculture and productive urban landscapes are, or should be part of both scales of urban food systems.

However, whilst historic models of urban agriculture evolved out of necessity, in the contemporary city we now have a window of opportunity to plan coherent strategies for its introduction. As urban agriculture, in all its different forms appears and grows within cities, the next critical step is to get it written into planning documents and legislation as a proactive way of improving current urban food systems and providing value beyond direct financial return. In doing so, a rich public discourse can develop, as seen in New York, Berlin or London, articulating urban agriculture's many benefits from environmental motivation to ornament, to behaviour change, and challenging current measures of success. The other action required, and here architects, planners and designers have a lot to do, is to knowingly bring forth the design and development of processes, landscapes, buildings and infrastructure which new urban farmers and the wider urban population need and desire. ●

Katrin Bohn, senior lecturer, and Professor André Viljoen, at University of Brighton, co-founders of architectural practice and environmental consultancy Bohn&Viljoen Architects

Towards an Indigenous, Sunlit, Rooftop Food Production

Oscar Rodriguez looks at London's capacity to change



Food prices are expected to rise after the UK's Brexit vote. We are 40 per cent reliant on EU fruit and vegetable imports, and critically reliant on labour, research funding, farmer subsidies and environmental protection legislation.

In 2014, we imported £8.7bn and exported £0.9bn-worth of fruit and vegetables globally (mostly with Europe), amounting to a trade deficit of £7.8bn. Concerns over quality, chemical content and farm-working conditions have led to increasing unease with cheap imports. If the pound's recent devaluation marks a new normal, the price of foreign produce will rise and spark a renewed cost of living panic and a politically-motivated oil price