

From Food Consumption to Eating Awareness

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Working on her research towards a doctorate, Barbara Ribeiro discusses the importance of introducing sustainable and inclusive food processes in cities. A methodology for planning and designing urban food forestry in public spaces is explored through proposals for two parks in the city of Auckland.

How did we get ourselves into the mess that became our food system, and how can we revitalise the ways we grow, process, distribute and consume our food? This article takes a longitudinal approach to this question to learn about social mechanisms that are beginning to foster more sustainable and inclusive food futures, exploring 'consumer empowerment' as a potential key trigger. A food timeline is presented that coalesces into a scholarly discussion about pathways for reconnecting urban people with food processes to foster more significant systemic change. Planned urban food forestry is explored as a potentially effective mechanism to achieve such reconnection.

This article suggests a methodology for mapping focal points to start growing urban food forestry in highly consolidated urban tissues, a participatory approach for designing these sites, and the idea of pre-preparation food units. These units can entail socio-cultural benefits and embody a mechanism for closing the loop of the waste generated by these initiatives. Design concepts for introducing urban food forestry in public spaces in Auckland (New Zealand) demonstrate how inexpensive and feasible they can be while highlighting the complexities of people-place dynamics and local politics. Upscaling planned urban food forestry can activate our cities' public spaces into dynamic knowledge platforms with politics having as much a part of achieving this as the suggested methodology and the rationale for utilising agroforestry technology.

A Food Timeline

Until the beginning of the 19th century, urban people shared the streets with pigs and cattle, among other life forms (Steel, 2013). Livestock was usually bred in the urban fringes and transported on foot to pre-industrial cities (Tannahill, 1989). The excrement, blood and death behind every meat-based dish took place intertwined with urban life. People were aware of where their food came from because they saw it alive on the streets. Our detachment from our food's origins and meanings

began once railways enabled our food to come from far away, which unleashed urban cities growth potential. Producers started transporting carcasses instead of living animals, keeping the streets cleaner. The people selling food in street markets were not necessarily the ones that bred the animals or cultivated the crops anymore. Other distribution channels increased, overshadowing the central market's long-standing role as the heart of the city. As time went by, urban people became oblivious to food production, processing and delivery systems (Nasr & Komisar, 2012).

This physical and mental detachment also marked the dawn of the industrialised food system. My food timeline explores how industrialisation took off in the food sector after WWII. It starts 68 years ago because that is when transitions scholars mapped the rise of 'consumer empowerment', which has been portrayed in the literature as a key potential trigger for more sustainable futures. I took a 'longitudinal approach' (Ruspini, 2002) to the rise of consumer empowerment to understand its 'underlying mechanisms' (George & Bennett, 2005). The food timeline's structure is divided in three broad bi-decadal periods defined by particular supply-chain and consumer-retailer relations in Western nations. Based on Boltanski and Thévenot's work, I identified key 'orders of worth' that helped organise markets as more sustainable foods penetrated mainstream urban food provisioning (Boltanski & Thévenot, 2006).

1950 to 1970: The Rise of Consumer Empowerment

During WWII, the dark shadow of food scarcity drove food industrialisation. Health through abundance became the post-war motto, which coalesced into the 'Green Revolution'. Consumers welcomed abundant and cheap food without paying much attention to the livestock's living conditions, nor the rise of monocultures (Otterloo 2013). Efficiency marked the separation between crop production and livestock breeding ever since. Zukauskaitė & Moodysson (2016) argue these were the years that saw the last 'path renewal' in the food system with

the successful inception of frozen and chilled foods into the processing industry, distribution businesses and household dynamics (Zukauskaitė & Moodysson, 2016). Women gained space in the workforce, further triggering the rise of new food cultures. With no one left in the kitchen to cook in wealthier nations (Grin, 2013), the food industry began successfully marketing highly processed edibles and empty calories foodstuffs.

Scholars refer to this nexus of changes in social dynamics and technological development as ‘the birth of consumer and the rise of a counterculture’ (Otterloo, 2013). Overall, consumers embraced efficiency as a quality convention that would deliver food that was cheap, convenient and abundant. Although the latter was associated with health in the post-war period, a group of scientists and scholars realised that food production was actually heading in the opposite direction of a healthy system. In the literature, Carson’s *Silent Spring* triggered concerns in Western nations about the use of pesticides in agricultural systems (Carson, 1962). He argues that we would soon experience silent springs as the result of poisoned food crops killing pollinator insects, bees and birds; suggesting that environmental degradation and the loss of biodiversity would be the external costs of industrialised agriculture in the years to come.

1970 to 1990: Food Industrialization Takes Off

During the 1970s a new counterculture rose as a response to the environmental problems identified in the late 1960s. The increased use of pesticides on food crops fuelled concerns about its impact on the human body’s health. Small communities were formed by highly educated people who chose to exchange the dynamics of living in cities for growing their own foods and living on their own terms (Otterloo, 2013). However, these initiatives never gained momentum to disrupt the system, and food industrialisation proceeded to devour land and dominating socio-technical and socio-ecological systems worldwide.

During the 1970s and 1980s, a new generation showed fewer concerns about sustainable food practices. The rise of yuppies was mostly about consumption of inorganic goods, like clothes and cars; whereas the squatter’s movement was focused on other problems, such as housing (Otterloo, 2013). The alternative food movement remained a dormant niche. In the 1980s, concerns about overabundance sensitised Western governments: a result of the heavily subsidised agricultural practices inherited from the post-war period (Marsden, 2013). At the same time, governments also opened regulatory space for corporations to become co-regulators of food quality standards (Marsden, 2013).

In 1987, a new cultural shift began with the publication of the Brundtland Report (United Nations, 1987). The United Nations report presented a compromise in which, for the first

time, economic growth and sustainable practices were not mutually exclusive. Its motto sensitised audiences worldwide: ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (United Nations, 1987). This compelling trade-off offered triggers for the sustainability momentum in the decades to come, which gained further traction after the UK registered the first BSE case in 1987. BSE, otherwise known as ‘mad cow disease’, was a result of feeding infected animal remains to cattle (such as meat and bone meals) and causes irreversible destruction to the human brain (Morgan, Marsden & Murdoch, 2006).

1990 to 2010: The ‘Quality Turn’

A sequence of food scares followed BSE’s spread across Europe and overseas. A number of new illnesses inflicted ‘industrialised animals: foot-and-mouth disease, avian influenza, swine fever, bluetongue, and, most recently, Q fever among goats and people’ (Otterloo, 2013). Throughout the 1990s, the media consistently displayed livestock’s living conditions under the industrialised meat production system; further kindling consumers’ reactions in Western nations. NGOs and consumer organisations produced pamphlets, websites and campaigns conveying information about agri-food companies involved in the food scares. The inception of genetically modified organisms in the 1990s also raised concerns in Europe, while the USA market did not show similar degrees of resistance (Otterloo, 2013). To further complicate things, food is inextricably linked with profits since we entrusted our production, distribution and retail systems to transnational corporations. Once the banking system collapsed between 2007 and 2008, food prices increased sharply worldwide (Marsden, 2013).

This nexus of changes offered triggers for the widely studied organics transitions in European countries, such as Germany, the UK and the Netherlands. In just a few years, the organics market share grew by 25-30% in Europe, marking what scholars labelled the ‘quality turn’ (Ponte, 2016; Spaargaren, Oosterveer & Loeber, 2013). Efficiency and price became less prominent for the first time in over 40 years, as animal welfare, environmental stewardship and fair trade increasingly gained space in rearranging the market organisational principles identified in previous decades.

Consumer demands had an impact not least in major retailers’ rearrangement of quality conventions on the distribution side of the system. As supermarkets sought more sustainable products for their shelves to secure consumer loyalty, competitors felt the pressure to follow their lead (Oosterveer & Spaargaren, 2013). The organics transitions in Europe blurred the boundaries between mainstream and alternative food, and sustainable

food options became normalised in the wider social domain for the first time in over 40 years. These pioneer transitions impacted countries abroad, such as New Zealand: where organics production upscaled in the 1990s mainly to feed European markets (Rosin & Campbell, 2009).

New Trends

Figure 1 represents my food timeline as a network, instead of taking a more conventional linear approach, to gain insights into how each node predominantly fostered or hindered food sustainability transitions. In between 1950 and 1970 our current socio-ecological and socio-technical food systems matured. This is the most robust node in the timeline because the dominance of industrial and market worlds was felt in the decades that followed and still prevails today. The alternative food movement was born in the 1970s but resisted upscaling in the decades to come. This lock-in effect is represented as a weak node in the food timeline, that failed to connect with the decades to come. In the 1990s, the industrialised food system backfired a number of animal diseases detrimental to humans. Fear and environmental stewardship consumed the reputation of industrialised agriculture in Western nations. The resulting 'quality turn' is represented as a strong node in the timeline because it opened windows of opportunity for more significant on-going changes in the food system (i.e. sustainable foods mainstream penetration).

Sustainable foods currently account for 'less than 5% market share in most nations': which is hardly a game changer (Morgan, 2014; Spaargaren, Oosterveer & Loeber, 2013). Yet sustainable foods market share grew around 500% in the past three decades, considering sustainable foods were practically absent in mainstream retailing during the 1990s. During this time, organics transitioned in Europe, and sustainable food market share kept growing in Western nations. In Scandinavia, for example, that number already rose to 8% market share (Oelreich & Milestad, 2017).

As demonstrated in the food timeline, the critical literature highlights how changes in consumption behaviour (i.e. consumer empowerment) was a key trigger for organics mainstream penetration in Europe. These recent dramatic systemic transformations in the Western retailing sector demonstrate that 'key structuring relationships at the heart of a food regime can be reset, inverted or emerge in totally new forms' (Campbell & Dixon, 2009). Food sustainability transitions are a recent phenomenon, which remains 'politically open to multiple potential outcomes' (Campbell & Dixon, 2009).

The notion of consumer empowerment implies that urban people's (dis)connection with food processes opens (or hin-

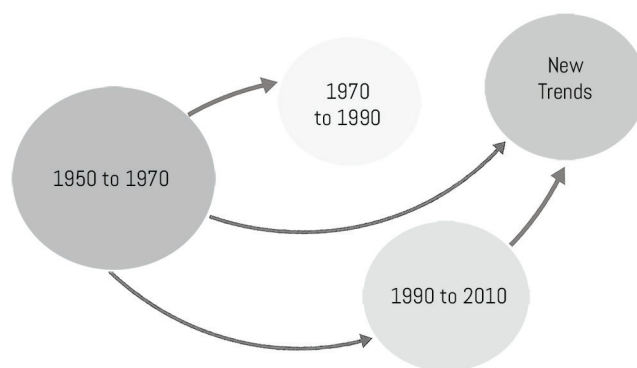


Figure 1: The Food Timeline as a network.

ders) windows of opportunity for food transitions to sustainability. The food industry deploys expensive marketing campaigns aimed at feeding us what suits their profits best (Carolan, 2017; Morgan, Marsden & Murdoch, 2006). They depend on us to sustain their cash flows, but they also constantly create demands for unsustainable foods once we allow ourselves to buy whatever food is on sale. A better understanding of these dynamics is essential because urban food provisioning increasingly shapes global food systems. We live in a rapidly urbanising world where cities already consume around 75% of the planet's food and energy resources (Steel, 2013). Since 2006, more than half of us live in cities. The UN predicts this number will rise to 9.8 billion people by 2050 when 66% of us are urban (United Nations, 2017). This paper builds upon transitions scholars' argument that consumer empowerment constitutes a key trigger for transitions to sustainability; further arguing that we need to explore pathways for reconnecting urban people with food processes to foster more significant systemic change.

What drives people to take the journey from consuming unsustainable foods to becoming conscious eaters? Michael Carolan dedicated years of research to answer this question (Carolan, 2011; Carolan, 2017). A focus group he called 'The Strawberry Experiment' enabled hopeful results. Instead of promoting food discussions with his participants, Carolan got them working the land for a whole day: in which they experienced the hardship of hand-picking strawberries. After that experience, he noticed a change in the discussions: the participants showed empathy for the people who grew strawberries, a deeper understanding about the strawberry production system and, most importantly, a change in how they perceived their role in the system as eaters and food shoppers. Carolan's research demonstrates how experience, rather than words, is an effective pathway to change people's political and ethical views on food. However, how can we upscale this experience outside a controlled academic environment? How can we include a more significant number of people – like an entire city?

Community gardens, urban farms, school gardens and like-minded initiatives pursue themes of reconnection that encourage people to go to a specific space and experience an immersion. These initiatives' potential for upscaling through integration with urban planning has been explored in the critical literature worldwide (de Graaf, 2012; Mansfield & Mendes, 2013; Napawan, 2016; Tornaghi, 2014). However, the question of to whom the food belongs to rises from the private nature of these spaces, which limits the sharing experience (Figure 2). I suggest that edible landscapes offer a more inclusive environment for sharing food practices with fellow citizens than other forms of urban agriculture (UA).

The 'pioneer Incredible Edible Todmorden' (Tornaghi, 2014) is a 15,000 habitant city in the U.K. where citizens got together and decided to grow edible landscapes in 2008. Guerrilla gardening took place everywhere: cemeteries, schoolyards, police stations and street verges. The city began attracting tourists, which enabled new economic activities (incredible-edible-todmorden.co.uk). Tornaghi (2014) writes about Todmorden, stating that the city has provided opportunities to reconnect 'gardening for its leisure, educational and therapeutic benefits', with 'radical, informal, grassroots practices'. In other words, Todmorden's streets became unique commons, in which citizens share the experiences of cultivating and harvesting foods. The strength of the model lies in the constant contact with food as a daily public experience, which heightens the possibility of engaging cultural change.

In the cities where urban food forestry took form, they were mostly triggered by bottom-up initiatives. Examples include Todmorden (UK) and the Beacon Food Forest in Seattle (USA). These types of initiatives have been explored in the critical literature for their potential to foster behavioural change in food practices (Davies et al., 2017; Muñoz & Cohen, 2017). From this perspective, our streets can be framed as underutilised 'commons' in most cities (Gibson-Graham, 2006). Although some of

these authors recognize that local municipalities can be resistant to the kinds of shifts in management necessary to enable UA in general (e.g. Sonnino, 2009), other authors increasingly portray urban food forestry as a mechanism for reconnecting urban people with food processes (Galt, Gray & Hurley, 2014; McLain et al., 2012).

'The Continuous Productive Urban Landscapes' (CPUL) initiated an important debate around incorporating UA in urban planners' and urban designers' lexicon (Viljoen & Bohn, 2014; Viljoen, Bohn & Howe, 2005). CPULs are a 'thought experiment' (Yeates 2004), whereby the authors envisioned an urban experience that offers 'the rural on the urban doorstep' (Viljoen, Bohn & Howe, 2005). An identified gap in CPUL's framework is the lack of a clear methodology for how to start edible landscaping our cities. This gap likely results from its generic approach: the authors' ambition is to develop a toolkit applicable to any city in the world. Designs were developed for the city of Auckland to demonstrate a methodological contribution to approaching the complexities and realities embodied in people-place dynamics.

A Methodology for Starting Urban Food Forestry

Mapping potential sites for growing food forestry in metropolises needs to be contextualised by the particularities of each urban morphology (de Graaf, 2012; Napawan, 2016). De Graaf (2012) suggests that public parks and green pockets are most likely the best sites to grow food forestry in highly consolidated urban tissues because a metropolis usually presents a dense, often vertical, built landscape. I suggest that visibility and potential social reach should also guide the choice of the first sites for growing urban food forestry (i.e. focal points). The focal points function as a visible platform that can reach a significant number of dwellers. The more prominent the initial focal points, the higher the potential to impact the urban food provisioning system; by engaging as many citizens as possible in reconnecting with food processes. The focal points idea is meant to start a food forestry network, which would spread

Figure 2: Kelmarna Community Garden in Auckland.



across the city's 'interstitial spaces', in alignment with the CPUL concept (Viljoen, Bohn & Howe, 2005).

After deciding on the focal point(s), the next step is the design concept. The principle of preserving every sign of heritage guides the suggested methodology, which aims at injecting the function of awareness and the use of harvesting into highly consolidated urban tissues. Nothing is demolished. An interactive landscape results in a dialogue about food processes. The goal is to tease out a dialogic communication process between society and place, in which both can change while interacting with each other (Bakhtin, 1986, cited in Ribeiro, 2006). In this way, urban food forestry might become imprinted on the urban fabric, recycling people's 'connection with the reality beyond their city's boundary' (Viljoen, Bohn & Howe, 2005).

Urban food forestry is an edible landscaping practice that combines elements of urban agriculture, urban forestry and agroforestry, to optimise the 'benefits they can provide to cities regarding food provisioning and ecosystem services' (Clark & Nicholas, 2013). Urban food forestry can also provide an answer to aesthetic principles. The resulting landscape looks more like a beautiful food forest, instead of an agriculture pattern, requiring low maintenance. A natural system in syntropy basically just needs trimming to multiply life endlessly and can recuperate ecosystems, even creating the possibility of growth for plants from other climates and soil characteristics (de Graaf, 2012; Gotsch, 2015).

Syntropy can be achieved through a combination of two strategies. Firstly, 'closed-loop waste systems' embody initiatives such as food waste fed to vermicompost centers (i.e. using worms to promote composting of discarded food, vegetable peels and scraps), and waste-water and sewage treated for phosphorus: a finite resource that we keep mining, instead of using the abundant offer discarded in our sewage systems (Viljoen & Bohn, 2014). Secondly, polycultures are used for combining food crops (annuals) with tree crops (perennials) (Clark & Nicholas, 2013). For example, legumes fertilise the soil organically due to their 'special ability to form a relationship with bacteria called Rhizobia, that fix nitrogen from the air' (Furey, 2017); while other edibles work as natural pesticides, such as garlic and onions, and can take part in many companionships.

'Agroforestry technology', or 'systems in syntropy', constitute an economically viable alternative to the monocultures we still rely on to produce the majority of our food (Lawhon & Murphy, 2012). The system is considered in syntropy once the topsoil is replenished with nutrients and life through organic inputs, potentially eliminating the need for mineral fertilisers and pesticides. In other words, the topsoil needs organic sources of NPK that are high in Nitrogen, but low in Phosphorus and

Potassium. By establishing beneficial companionships, soil exhaustion and crop rotation can be avoided – a knowledge applied in agricultural practices in Colonial times (Barber, 2015). Agroforestry technology results in plural outputs such as biomass, nutrient dense foods and non-edible plants; while providing a platform for sustaining biodiversity.

Case Study: Auckland (NZ)

In Auckland, fragmented alternative food movements have developed against a background of state-institutional neglect of food (Sharp et al., 2016). However, the food production of these initiatives is not present in retail outputs; where healthy foods are hard to find while processed and low nutritious options are the abundant offer (Ribeiro & Lewis, 2017). Auckland also faces sustainability challenges common to other places in the West, but with particular inflections; such as one of the highest obesity rates in developed nations of 1 in every 3 dwellers (Ministry of Health, 2014/2015, cited in Swinburn, Dominick & Vandevijvere, 2014), and the acute rise in diabetes II (dpt.org.nz).

An interview with a sustainability professional from the Auckland Council (the city's local municipality) highlighted that while food policy is touched on in several strategies and plans, there is no comprehensive strategic direction for Auckland's food system. The interviewee pointed out that her team faces the challenge of bridging connections within departments to start tackling the numerous food problems faced by the city: 'we are really in the infancy of working in the food space', she stated. Auckland presents a combination of rising diet-related diseases, fragmented alternative food movements and a disjunction within local plans and policies where it comes to food.

Site Selection of Focal Points

The super city is divided into 21 Local Boards, including the Waitemata Local Board area chosen for this study. According to NZ stats (stats.govt.nz) in 2016 the Waitemata had a 177,100 Employee Count (i.e. 24.44% of Auckland City's total of 724,400). An initiative in this area is likely to gain visibility due to this high concentration of workers, potentially raising awareness about food processes among a more significant amount of people. In turn, the analysis of the city's current Unitary Plan (Figure 3) revealed that these employees are mostly concentrated in a specific area inside Waitemata: the City Centre Zone (CBD).

The map in Figure 4 shows the high urban density of the CBD, where the built verticality provides vast areas of shade. Therefore, green pockets are the only viable options for growing urban food forests in Auckland's CBD, as noted before by Graaf (2012). Figure 5 shows the two prominent inner-city parks chosen as focal points. Albert Park was chosen due to its proximity to the University of Auckland, a powerful culture hub. Urban

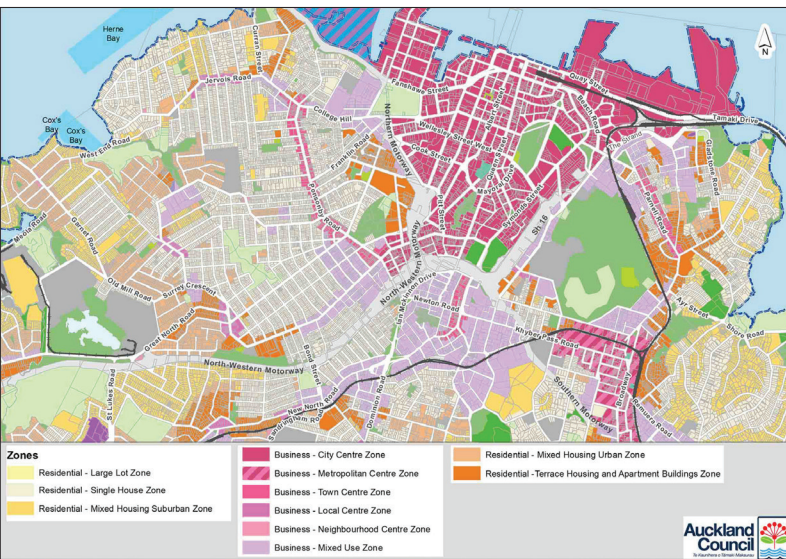
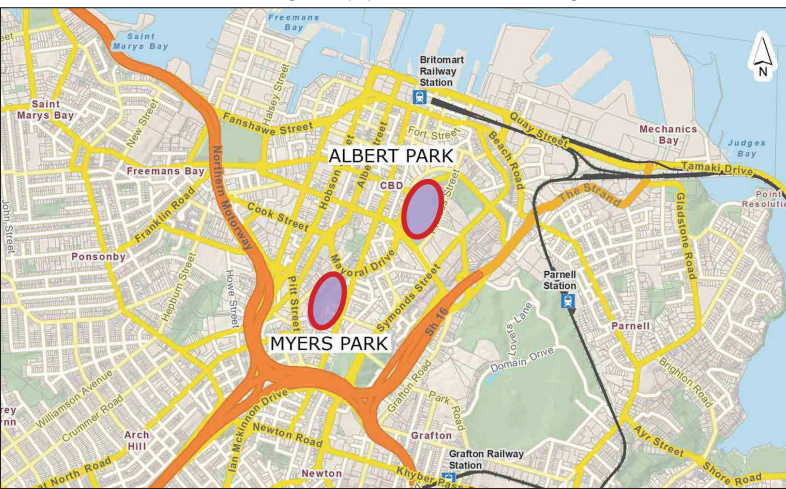


Figure 3: Unitary Plan. (source: geomapspublic.aucklandcouncil.govt.nz).

Figure 4: The high density of Auckland's CBD. (source: geomapspublic.aucklandcouncil.govt.nz).



Figure 5: Location of the two focal points. (source: geomapspublic.aucklandcouncil.govt.nz).



food forestry at this site is likely to raise awareness about food processes among students, professors and staff; which entails a social reproduction potential. Myers Park has a playground on site actively used by both many resident children and the ones that attend a traditional kindergarten fully functional inside the park. The critical literature highlights that educating the youth about food processes is paramount (Morgan & Sonnino, 2013).

In this section I have discussed the suggested methodology for mapping focal points, which can function as a start point for growing networks of urban food forestry in metropolises. Next, a participatory methodology for designing urban food forestry is demonstrated, which included a key stakeholder in Auckland's foodscape: the Kelmarna Gardens' manager. These designs are not built realities yet, although conversations have been taking place with decision-makers in the Auckland Council.

A Participatory Approach to Urban Food Forestry Design

Kelmarna Gardens is a community garden that sits in Ponsonby, an expensive suburb located in the vicinity of the two focal points. I met the manager, Adrian Roche, on a cold winter morning. He took me around the space, teaching me about the foods that were thriving in the organic garden. The proximity of Kelmarna Gardens to the two parks led me to draw upon Adrian's expertise in the choice of plants for the urban food forestry designs. The selected species are meant to grow in raised beds: a standard solution to avoid expensive soil treatments (as is the case with most metropolises in the world, Auckland's soil is heavily contaminated as a consequence of previous industrial activities, and pesticides use) (Mitchell et al., 2014).

For Myers Park, my design concept was aimed at fostering a ludic interaction between the children and the urban food forestry. I worked on the gardens close to the playground where the vegetation currently shows signs of neglect (Figures 6 & 7). A diversity of flowers, spices, herbs, legumes, edible leaves and vegetables form an urban food forestry design rich in colours and textures. That synergistic experience is aimed at fostering children's curiosity. The different smells from these plants contribute to a multisensory experience to engage the little ones in a journey of food discovery. Interactive signboards are placed by the gardens, through which the children can learn about food while playing games embedded in them.

For Albert Park, my concept maintains the flowers that people are used to having throughout the year but substituted the decorative species for the mix of edible flowers displayed in the preliminary study (Figures 8 & 9). The photographs of the edible flowers at the Kelmarna Gardens demonstrate how beautifully they bloom with no chemicals added; if the right companionship is cultivated. A signboard is placed by

the flowerbeds, which explains the adopted concepts and cultivation processes; so that this knowledge is passed on along with the invitation for people to harvest some edible flowers to take home.

Finally, I propose pre-preparation food units to be placed in the car parks near both focal points. The typology suggested uses recycled steel shipping containers, the same used iat another park in the CBD (Figure 10). While they currently resemble food trucks, as the cooking happens onsite, I propose them to be converted to allow for the cleaning and peeling of recently harvested food. The remainder vegetable skins and scraps will become on-site composting for the gardens, closing the loop of the urban food forestry systems. These units can alleviate dwellers of some of the work involved in eating real food, further incentivising people to harvest during their leisure time. Imagine people having fun with their children and friends, or strangers becoming friends while freely sharing harvesting experiences and food knowledge: without the burden of cleaning and peeling these fresh foods afterwards!

Auckland Council could re-direct tax money spent on ornamental landscapes to subsidise this service and take care of the urban food forestry maintenance. However, there are processes in place to restrict urban food forestry in the city of Auckland. According to my interviewee from the Auckland Council, on-going maintenance and costs would be a consideration and potential hinderer for this kind of initiative.

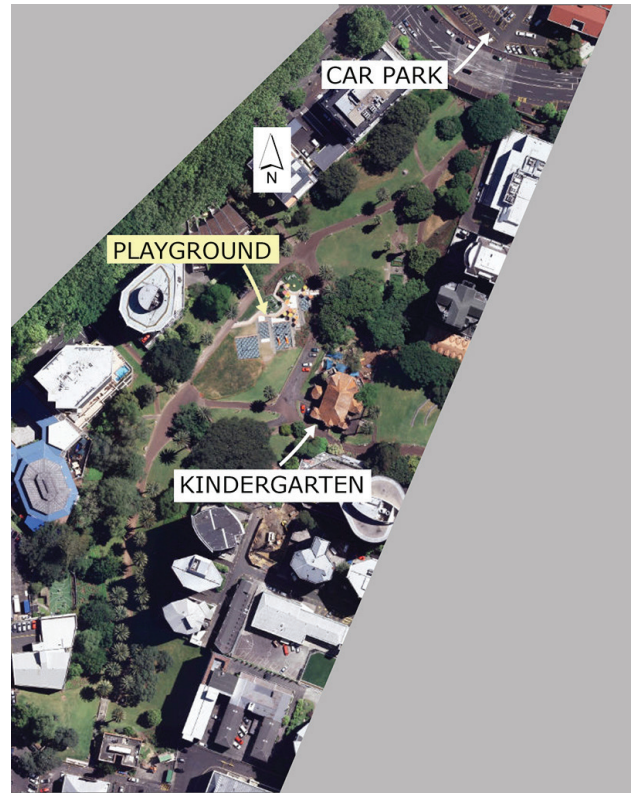


Figure 6: Myers Park aerial photo.

Figure 7: Myers Park design concept.

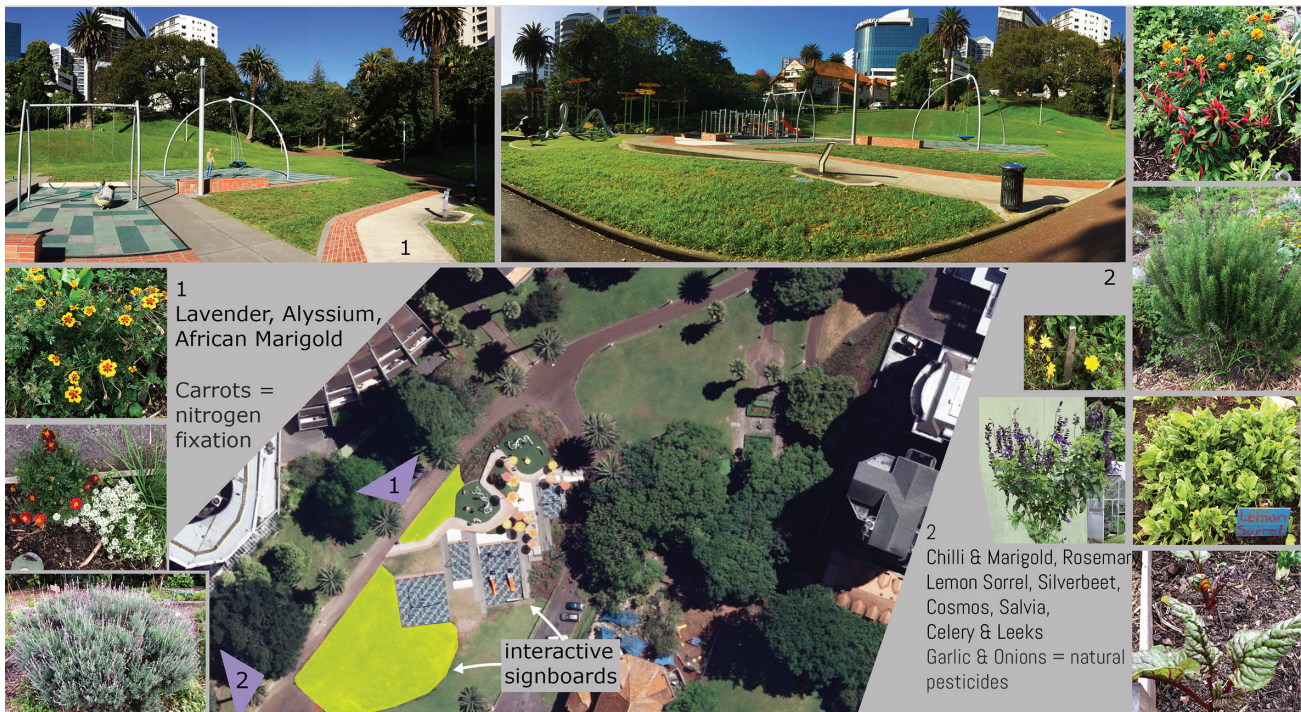




Figure 8: Albert Park aerial.

This article responds to these concerns demonstrating how agroforestry systems of food production actually require low maintenance, which entails low costs.

Conclusions

This article firstly identified how we detached our cities and ourselves from food processes, and wicked challenges we currently face as a consequence. A food timeline began 68 years ago to

gain insights into how food practices changed after the ‘rise of consumer empowerment’. I explored market organisational principles and orders of worth that changed after 40 years because of fear, and how consumer empowerment fostered sustainable foods penetration in Western nations’ mainstream retailing. Michael Carolan’s extensive research demonstrated how people are more likely to become aware of food processes through experience, rather than words. Drawing upon his findings, I argued that urban planners and urban designers could play a vital role in transforming our cities’ streets into inclusive food experiences for a more significant number of people.

A methodological contribution followed a short literature review of efforts to include edible landscapes in urban planners’ and urban designers’ lexicon. This contribution addressed two gaps found in the literature, suggesting: a methodology for mapping focal points to start growing urban food forestry in highly consolidated urban tissues, and a participatory approach to designing these sites. A third contribution was the pre-preparation food trucks, which entails socio-cultural benefits while embodying a mechanism for closing the loop of the waste generated by these initiatives. Although these three ideas were not tested as built realities yet, they contribute to a dialogue in which scholars, urban planners and urban designers increasingly portray urban food forestry as a mechanism for reconnecting urban people with food processes.

To demonstrate how inexpensive, doable and fun these initiatives would be, I designed urban food forestry for two

Figure 9: Albert Park design concept.





Figure 10: Pre-preparation Food Unit typology concept.

inner-city parks in the city of Auckland while indicating processes that the local municipality has in place currently hindering urban food forestry. To turn this kind of initiative into a built reality, my interviewee from the Auckland Council indicated the need to build connections with decision-makers. I conclude that upscaling planned urban food forestry can activate our cities' commons into dynamic knowledge platforms and that politics is as much a part of achieving this as the suggested methodology and the rationale for utilising agroforestry technology.

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References:

- Barber, D. (2015). *The Third Plate: Field Notes on the Future of Food*. New York: Penguin Books.
- Boltanski, L. & Thévenot, L. (2006). *On Justification: Economies of Worth*. Princeton: Princeton University Press.
- Campbell, H. & Dixon, J. (2009). Introduction to the Special Symposium: Reflecting on Twenty Years of the Food Regimes Approach in Agri-Food Studies. *Agriculture and Human Values* 26 (4): 261. <https://doi.org/10.1007/s10460-009-9224-7>.
- Carolan, M. (2011). *The Real Cost of Cheap Food*. New York: Earthscan.
- Carolan, M. (2017). *No One Eats Alone: Food as a Social Enterprise*. Washington: Island Press.
- Carson, R. (1962). *Silent Spring*. New York: Houghton Mifflin.
- Clark, Kyle & Nicholas, K. (2013). Introducing Urban Food Forestry: A Multifunctional Approach to Increase Food Security and Provide Ecosystem Services. *Landscape Ecology* 28 (9): 1649–69. <https://doi.org/10.1007/s10980-013-9903-z>.
- Davies, A., Edwards, E., Marovelli, B., Morrow, O., Rut, M., & Weymes, M. (2017). Making Visible: Interrogating the Performance of Food Sharing across 100 Urban Areas. *Geoforum* 86 (Supplement C), 136–49. <https://doi.org/10.1016/j.geoforum.2017.09.007>.
- Furey, G. (2017). Testing a Polyculture of Cover Crops for Improved Farm Sustainability. Centre for Sustainable Food Systems at UBC Farm. <http://ubcfarm.ubc.ca/2014/05/22/testing-a-polyculture-of-cover-crops-for-improved-farm-sustainability/>.
- Galt, R. E., Gray, L. C., & Hurley, P. (2014). Subversive and Interstitial Food Spaces: Transforming Selves, Societies, and Society–Environment Relations through Urban Agriculture and Foraging. *Local Environment* 19 (2): 133–46. <https://doi.org/10.1080/13549839.2013.832554>.
- George, A. L., & Bennett, A. (2005). *Case Studies and Theory Development in the Social Sciences*. Cambridge, MA: MIT Press.
- Gibson-Graham, J.K. (2006). *The End Of Capitalism (As We Knew It): A Feminist Critique of Political Economy*. Kindle Edition. Minneapolis: University of Minnesota Press.
- Gotsch, A. (2015). *Life in Syntropy*. <https://www.youtube.com/watch?v=gSPNRu4ZPvE>. Watched on April 27th, 2017.
- Graaf, P. A. de. (2012). Room for Urban Agriculture in Rotterdam: Defining the Spatial Opportunities for Urban Agriculture within the Industrialised City. In A. Viljoen & J. Wiskerke (Eds.) *Sustainable Food Planning: Evolving Theory and Practice* (pp. 533–45). Wageningen, the Netherlands: Wageningen Academic Publishers.

- Grin, J. (2013). Changing Governments, Kitchens, Supermarkets, Firms and Farms: The Governance of Transitions Between Societal Practices and Supply Systems. In G. Spaargaren, P. Oosterveer & A. Loeber (Eds.) *Food Practices in Transition: Changing Food Consumption, Retail and Production in the Age of Reflexive Modernity* (pp. 35–59). Routledge.
- Lawhon, M. & Murphy, J. T. (2012). Socio-Technical Regimes and Sustainability Transitions: Insights from Political Ecology." *Progress in Human Geography* 36 (3), 354–78. <https://doi.org/10.1177/0309132511427960>.
- Mansfield, B., & Mendes, W. (2013). Municipal Food Strategies and Integrated Approaches to Urban Agriculture: Exploring Three Cases from the Global North. *International Planning Studies* 18 (1), 37–60. <https://doi.org/10.1080/13563475.2013.750942>.
- Marsden, T. (2013). Food Systems Under Pressure: Regulatory Instabilities and the Challenge of Sustainable Development. In G. Spaargaren, P. Oosterveer & A. Loeber (Eds.) *Food Practices in Transition: Changing Food Consumption, Retail and Production in the Age of Reflexive Modernity* (pp. 291–311). New York: Routledge.
- McLain, R., Poe, M., Hurley, P. T., Lecompte-Mastenbrook, J., & Emery, M. R. (2012). Producing Edible Landscapes in Seattle's Urban Forest. *Urban Forestry & Urban Greening* 11 (2), 187–94. <https://doi.org/10.1016/j.ufug.2011.12.002>.
- Mitchell, Rebecca G., Henry M. Spliethoff, Lisa N. Ribauda, Donna M. Lopp, Hannah A. Shayler, Lydia G. Marquez-Bravo, Veronique T. Lambert, et al. 2014. "Lead (Pb) and Other Metals in New York City Community Garden Soils: Factors Influencing Contaminant Distributions." *Environmental Pollution* 187 (April): 162–69. <https://doi.org/10.1016/j.envpol.2014.01.007>.
- Morgan, Kevin. 2014. "The New Urban Foodscape: Planning, Politics and Power." In A. Viljoen & K. Bohn (Eds.) *Second Nature Urban Agriculture: Making Cities Productive* (pp. 18–23). New York: Routledge.
- Morgan, K., Marsden, T., & Murdoch, J. (2006). *Worlds of Food: Place, Power, and Provenance in the Food Chain*. Oxford University Press.
- Morgan, K., & Sonnino, R. (2013). *The School Food Revolution: Public Food and the Challenge of Sustainable Development*. New York: Routledge.
- Muñoz, P., & Cohen, B. (2017). Mapping out the Sharing Economy: A Configurational Approach to Sharing Business Modeling. *Technological Forecasting and Social Change* 125 (Supplement C), 21–37. <https://doi.org/10.1016/j.techfore.2017.03.035>.
- Napawan, N. C. (2016). Complexity in Urban Agriculture: The Role of Landscape Typologies in Promoting Urban Agriculture's Growth. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability* 9 (1): 19–38. <https://doi.org/10.1080/17549175.2014.950317>.
- Nasr, J., & Komisar, J. (2012). The Integration of Food and Agriculture into Urban Planning and Design Practices. In A. Viljoen & J. Wiskerke (Eds.) *Sustainable Food Planning: Evolving Theory and Practice* (pp. 47–58). Wageningen, the Netherlands: Wageningen Academic Publishers.
- Oelreich, J. von, & Milestad, R. (2017). Sustainability Transformations in the Balance: Exploring Swedish Initiatives Challenging the Corporate Food Regime." *European Planning Studies* 25 (7): 1129–46. <https://doi.org/10.1080/09654313.2016.1270908>.
- Oosterveer, P., & Spaargaren, G. (2013). Green Consumption Practices and Emerging Sustainable Food Regimes: The Role Of Consumers. In A. Viljoen & J. Wiskerke (Eds.) *Food Practices in Transition: Changing Food Consumption, Retail and Production in the Age of Reflexive Modernity* (pp. 131–52). New York: Routledge.
- Otterloo, A. H. Van. (2013). Health, Safe and Sustainable: Consumers and the Public Debate on Food in Europe and the Netherlands Since 1945. In A. Viljoen & J. Wiskerke (Eds.) *Food Practices in Transition: Changing Food Consumption, Retail and Production in the Age of Reflexive Modernity* (pp. 60–85). New York: Routledge.
- Ponte, S. (2016). Convention Theory in the Anglophone Agro-Food Literature: Past, Present and Future. *Journal of Rural Studies* 44 (April), 12–23. <https://doi.org/10.1016/j.jrurstud.2015.12.019>.
- Ribeiro, B. (2006). Design e Comunicação na Análise de Três Marcos Referenciais Urbanos: Rio Cidade 1, Obelisco/Passarela (Ipanema) e Laranja (Campo Grande); Renascença de Providence, E.U.A., Waterfire (Downtown) [Design and Communication in the Analysis of Three Built Landscape Marks: Rio Cidade 1, Obelisk/Pedestrian Bridge (Ipanema) and Orange (Campo Grande); Providence's Renaissance, U.S.A., Waterfire (Downtown)]. MSc Thesis. Rio de Janeiro, Brazil: Pontific Catholic University of Rio de Janeiro (PUC-Rio). <https://doi.org/10.17771/PUCRio.acad.8121>.
- Ribeiro, B., & Lewis, N. (2017). Changing the World One Meal at a Time. Paper presented at the ECOCITY World Summit 2017. Melbourne, Australia. <http://assets.entegy.com.au/projects/6538f560-63f4-4faa-968e-0d1d89633ad8/documents/090.pdf>.

- Rosin, C., & Campbell, H. (2009). Beyond Bifurcation: Examining the Conventions of Organic Agriculture in New Zealand. *Journal of Rural Studies* 25 (1), 35–47. <https://doi.org/10.1016/j.jrurstud.2008.05.002>.
- Ruspini, E. (2002). *Introduction to Longitudinal Research*. New York: Routledge.
- Sharp, E. L., Schindler, E., Lewis, N. & Friesen, W. (2016). Food Fights: Irritating for Social Change among Auckland's Alternative Food Initiatives. *Kōtuitui: New Zealand Journal of Social Sciences Online* 11 (2), 133–45. <https://doi.org/10.1080/1177083X.2016.1158197>.
- Sonnino, Roberta. 2009. "Feeding the City: Towards a New Research and Planning Agenda." *International Planning Studies* 14 (4): 425–35. <https://doi.org/10.1080/13563471003642795>.
- Spaargaren, G., Oosterveer, P. & Loeber, A. (Eds.) (2013). *Food Practices in Transition: Changing Food Consumption, Retail and Production in the Age of Reflexive Modernity*. New York: Routledge.
- Steel, C. (2013). *Hungry City: How Food Shapes Our Lives*. Vintage Digital-Kindle Edition. Vintage Digital.
- Swinburn, B., Dominick, C. & Vandevijvere, S. (2014). Benchmarking Food Environments: Experts' Assessments of Policy Gaps and Priorities for the New Zealand Government. INFORMAS - The University of Auckland. <https://www.fmhs.auckland.ac.nz/assets/fmhs/soph/globalhealth/informas/docs/Full%20Food-EPI%20report1.pdf>.
- Tannahill, R. (1989). *Food in History*. New York, N.Y.: Three Rivers Press.
- Tornaghi, C. (2014). Critical Geography of Urban Agriculture. *Progress in Human Geography* 38 (4), 551–67. <https://doi.org/10.1177/0309132513512542>.
- United Nations. (1987). Report of the World Commission on Environment and Development: Our Common Future. <http://www.un-documents.net/wced-ocf.htm>
- United Nations. (2017). World Population Projected to Reach 9.8 Billion in 2050. <https://www.un.org/development/desa/en/news/population/world-population-prospects-2017.html>.
- Viljoen, A., & Bohn, K. (2014). *Second Nature Urban Agriculture: Designing Productive Cities*. New York: Routledge.
- Viljoen, A., Bohn, K. & Howe, J. (2005). *Continuous Productive Urban Landscapes: Designing Urban Agriculture for Sustainable Cities*. Oxford: Architectural Press.
- Yeates, L. (2004). *Thought Experimentation: A Cognitive Approach*. New South Wales: University of New South Wales.
- Zukauskaite, E., & Moodysson, J. (2016). Multiple Paths of Development: Knowledge Bases and Institutional Characteristics of the Swedish Food Sector. *European Planning Studies* 24 (3), 589–606. <https://doi.org/10.1080/09654313.2015.1092502>.