

Digging up the past: urban agriculture narratives in Melbourne and São Paulo

Over the past decade urban agriculture has been recognised as a method for achieving greener, healthier, and more equitable cities by the United Nations Food and Agriculture Organisation (FAO 2014), the UN Sustainable Development Goals (UNDESA 2019), the Ecocity movement (Ecocity Builders 2019, UEA 2019), the C40 Cities initiative (2019), and others. As the practice becomes more popular, real estate developers, politicians, and community associations have promoted it to advance distinct agendas.

Researchers have identified some of the conflicting agendas that coalesce in urban agriculture, finding that “ecogentrification” often undermines progressive projects (Gould and Lewis 2017, McClintock 2017). As Nathan McClintock writes, “coming to terms with its internal contradictions can help activists, policy-makers and practitioners better position urban agriculture within coordinated efforts for structural change” (2014:147). This article examines the contradictory narratives about urban agriculture deployed by property developers and community advocates to discern how its practice can both deepen inequalities and improve structural conditions.

Australia and Brazil reflect a comparable history of food production: from indigenous subsistence farming to colonial agriculture, and subsequent reliance on transnational agribusiness to service European and more recently Chinese demand (Alejandro 1985, Hearn 2012). The expansion of commodity crops in both countries has combined with rapid urbanisation to encroach on peri-urban land, where fresh food has historically been grown for both nations’ cities. This process has stimulated greater awareness of industrial agriculture’s myriad consequences and an emerging rediscovery of small-scale urban horticulture (Carey et al. 2018, Rose and Hearn 2017). But gardening is not what it used to be. Intense competition for land; loss of subsidised council allotments and horticulture staff; and contaminated air, water, and soil are among the pressures confronting urban agriculture in both countries.

According to *The Economist*, in 2017 Melbourne was the “world’s most liveable city” for the seventh consecutive year and has since ranked second after Vienna, while São Paulo—now the Southern hemisphere’s largest city—continued to grapple with lack of green space, air pollution, and entrenched inequality (Economist 2017, 2019). On the ground, though, the liveability criteria of a conservative magazine do not equate to sustainable urban outcomes. Economic streamlining and deregulation are generating a particular kind of liveability that emphasises marketable aspects of sustainability while diverting attention away from broader structural challenges.

The phenomenon of “urban sustainability fix” identified by Aiden While et al. (2004) manifests in Melbourne and São Paulo through the proliferation of ostensibly green apartment complexes that include community vegetable gardens and micro-orchards. These features, offered at premium prices, are advertised as a means to rediscover lost connections with nature, revitalise community ties, and improve environmental sustainability (e.g. Cardim 2017, Gardiner 2017, Ideazarvos 2019, Strachan 2015). But as discussed below, lack of space and long waiting lists often result in fenced-off garden beds measuring just a few square metres, failing to alleviate social and environmental ills as promised.

By contrast, urban agriculture initiatives are emerging in both cities to more genuinely improve food systems, promoting reflection and action to deal with structural deficits. Their proponents, introduced below in four short case studies,

advocate the restoration of capacities and assets that have historically enabled food production in and around cities. These include the allocation and protection of productive public land, the training and employment of horticultural workers by local governments, and less polluted urban ecosystems. The case studies show that progressive policy frameworks are critical to the advancement of these goals, as they enable community organisers to push back against real estate development by aligning their projects with Council funding and administrative support. Although such frameworks have been eroded by pro-market policies, activists in both cities have identified relevant state support schemes and formulated narratives to engage them.

The article begins by reflecting on our methodological approach, in particular the ethical challenges resulting from personal involvement in three of the four case studies. We then consider how the growing popularity of urban agriculture around the world resonates with notions of traditional food production despite the erosion of enabling conditions. The next sections outline the Australian and Brazilian contexts, sketching how colonial approaches to land use and urban development oriented the trajectory of both nations' food systems. Melbourne and São Paulo demonstrate these legacies, including the industrialisation of food production and consumption, and resulting impacts on public health. We look at examples of property marketing in the two cities that promises to restore healthy lifestyles and reconnect customers with nature but fails to acknowledge the structural causes of these deficits. By contrast, the four case studies show how urban agriculture advocates have sought to redress specific structural shortcomings while raising awareness about the history of their food systems. We conclude that urban agriculture's capacity to improve food systems is enhanced when proponents develop historically informed narratives that support progressive municipal policies and social enterprises.

Reflections on methodology

Supported by funding from the São Paulo Research Foundation (FAPESP), between 2016 and 2018 the Australian and Brazilian research teams each undertook two two-week visits to small farms operating on contested lands in or around each other's cities. Our goal was to elaborate four case studies that ground what Scott Campbell (2003:3) calls the "loose ends" of statistical data in the lived experience of urban food producers in Melbourne and São Paulo.

The first case study is from the Greater Melbourne suburb of Dandenong, where the progressive municipal government was replacing ornamental flowers in the central public park with spinach, sweet potatoes, and taro for donation to a local charity. During six visits between 2016 and 2018 we captured randomised public responses by approaching seventeen passers-by to canvass first impressions of the project. We followed up these conversations with eight semi-structured interviews. A structured interview involving submission of pre-selected questions was conducted with the council's horticulture team leader, allowing us to explore government efforts to associate the initiative with Dandenong's multicultural food heritage.

The second case study, from the Melbourne suburb of Moreland, examined the evolution of an online organic delivery and farmer support program called CERES Fair Food. Over sixteen months we conducted six collective discussions with groups of five to twelve Fair Food employees, most of whom were asylum seekers with insecure migration status. These discussions enabled us to survey perceptions of food production, distribution, and education as activities intertwined with social and

environmental justice. Semi-structured interviews with Fair Food’s director and Moreland councillor (subsequently mayor) Ms. Natalie Aboud allowed us to interrogate the interface of community activism with policy development.

The first of the two São Paulo case studies examined the city government’s policies for procuring organic produce from peri-urban zones, including the Bloomberg-funded Connect the Dots scheme. To investigate farmers’ engagement with these policies we conducted on-site interviews with two farm managers in the southern district of Parelheiros and ten family producers in the eastern districts of Cidade Tiradentes and Sao Mateus. The fourth and final case study did not involve empirical data collection as it examined how the São Paulo co-authors refashioned their academic research on aerial contamination of urban crops into a platform for engaging policymakers and urban farmers.

Conducting the interviews *in situ* at horticulture farms and the Fair Food distribution centre allowed us to see firsthand how managers, their families, and employees had faced challenges and achieved successes under changing policy conditions. These encounters illuminated urban farmers’ attempts to “translate knowledge into action” by developing narratives that engage local policymakers (Birch 2012:259). Interviewees provided informed consent either in writing or verbally, with a preference for the latter among the Fair Food employees and some of the São Paulo family farmers. While both forms of consent are acceptable for [REDACTED] ethics clearance, the reluctance of some participants to sign their names on a formal document reflects their legal precarity. As noted, many of the Fair Food staff were asylum seekers, while some of the São Paulo farmers were concerned that their farms may become publicly associated with the use of agrochemicals. Unless they requested otherwise, we have replaced participant names with pseudonyms.

The co-authors were personally involved in three of the four case studies, affording comprehensive access to local data and interviewees but raising challenges for ethical and reflexive research. The Melbourne team had previously advised the municipal governments of Moreland and Dandenong on their food systems strategies, which in turn provided financial and technical resources for the urban farming projects outlined in the case studies. One of the two São Paulo case studies is similarly personal, describing the Brazilian team’s elaboration of its earlier published work into a practical guide for urban farmers and policymakers. The research ethics review processes required by our universities provoked us to consider how our personal involvement might limit our perspectives and generate pre-conceived conclusions. We tried to be conscious of this risk while collecting the data and writing this article, whose *Journal of Urbanism* reviewers urged us to openly acknowledge it.

Anthropologists have debated the implications of personal involvement in case study research. “Auto-ethnography” leverages existing relationships and favours efficient data collection, diminishing the need to become familiar with unknown contexts and to establish trust with strangers (Hayano 1979:99-101). Accompanying these benefits, though, is the risk of insensitivity to contextual influences on a particular scenario’s development trajectory and power dynamics (Adler and Adler 1987:47-48, Couser 2004, Shim 2018:4-5). This tension surfaced as we, the five co-authors, considered how to study food production and consumption traditions in each other’s and our own cities. We managed this dilemma by committing to work as “professional strangers” (Agar 1980), agreeing to candidly share with each other (and each other’s communities) our embedded insider perceptions and less partial outsider

observations. Our attempt to juxtapose specific local insights with general contextual observations was facilitated by our team research approach, whose capacity to “bring to light certain agreements and convergence” among collaborators working “separately together” has long been studied (Gillin 1954:4-5, cited in Blackwell 1955:369; Siltanen, Willis and Scobie 2008:45; also see Benington and Hartley 2004).

The case studies were chosen because they favoured this heuristic blend while enabling targeted data collection when the research teams visited each other twice each between 2016 and 2018.

Our positionality as researchers engaged in community projects and policy advice is evident in the research design. For instance, our decision not to interview real estate developers and instead gather data from their websites reflects a concern that conflicting interests would likely impede a genuine exchange of perspectives, and therefore undermine the validity of resulting data. A casualty of this decision was our inability to fully explore the motivations driving developers’ incorporation of horticulture gardens and orchards into their projects. The consequent epistemological risk is to limit our understanding of developers’ advertising campaigns to superficial impressions of commercial motives without sufficiently exploring potential convergences of corporate objectives with public interests.

Our research, like other studies, found some evidence of corporate convergences with certain sectors of the public in instances of what Sarah Dooling calls “ecological gentrification” (2009). Upper-middle class professionals and other “gentrifiers” seeking to create a “distinctive and authentic sense of place” established common cause with both developers and community organisers in the pursuit of green infrastructure and new markets for fresh food (Zukin 2011:161, Pearsall and Anguelovski 2016:1). However, below we argue that corporate actors and community organisers differ in their visions of urban agriculture’s capacity to generate public benefits and raise awareness about enabling conditions. The narratives accompanying the proliferation of horticulture in Melbourne and São Paulo demonstrate these differences. While property developers promise a quick remedy for social and ecological estrangement, the case studies show that community advocates articulated the historical accrual of these problems and the need for sustained collective action to redress them.

Urban food: a contested tradition

The resurgent international interest in urban agriculture results from a combination of concerns including personal health and wellbeing, nutrition-poor processed diets, food waste, lack of green space, and growing scepticism of industrial agriculture (Giacchè and Silva 2014, Holmgren 2018, McCarthy et al. 2017, Nuttavuthisit and Thøgersen 2017). As the world’s urban populations increase—to a projected 68 percent of humanity by 2050 according to the UN Department of Economic and Social Affairs (UNDESA 2018)—the notion of return to ecologically balanced, simpler lifestyles is gaining traction. The international embrace of urban agriculture reflects this trend, expanding beyond the mission statements of community associations and environmental organisations to become standard content for real estate billboards, property developer websites, and home improvement advertisements.

The marketing of fruit and vegetable gardens in exclusive condominiums demonstrates a long-practiced narrative technique: desirable conditions are advertised as lost heritage that, for a price, can be salvaged and revived. Invoking what Max Weber (1991 [1921]:249) called “authority from traditional custom,” developers

portray local food growing as having been widespread in an imagined past, but elusive today except for select property buyers. Such purposeful invocations of the past shape consumer identities, revealing agency in the passage of culture through time: a “model of tradition” becomes a “model for tradition” (Geertz 1973:93, also see Ortner 1991). But cultural reproduction entails both memory and amnesia, for as Lyon and Colquhoun find in their analysis of food advertising:

We require the best that yesterday had to offer, we do not require those aspects of it that were dull, tedious, uncomfortable or inconvenient...we are able to extract those design features, artefacts, and even experiences, that please us and forget about those that do not (1999:193-194).

Forgotten in contemporary urban agriculture marketing is the inconvenient truth that preindustrial food production relied on micro-markets, subsidised supply and demand, and strong socio-economic bonds between cities and their rural surroundings (Steel 2009). Structural necessities included dedicated green space, trained and remunerated gardeners, and protection of soil and air in and around cities. These conditions have become increasingly treated as costs rather than market gains, failing to register in contemporary real estate advertising. The significance of this phenomenon extends beyond rhetorical omission: ignoring the conditions that were historically critical to healthy food systems can deflect public attention away from inadequate land protection, socio-economic inequality, and the contamination of urban environments. Attention is directed instead to the apparent ecological responsibility of developers and the personal prestige of customers. In the words of a prominent Australian real estate agent, a vegetable garden “makes a home much more emotionally appealing...people want a garden they can show off to their friends that says something about them” (quoted in Farrelly 2018).

While the real estate industry has become proficient in providing cities with a “sustainability fix” (While et al. 2004), urban farmers in Melbourne and São Paulo are harnessing the lessons of the past in more holistic ways. The projects discussed below simultaneously acted to redress structural shortcomings and educated publics about their causes. They each strengthened their impact by articulating narratives that resonated with the interests of progressive municipal governments in addressing the long-term impacts of land use, employment, and ecology on urban food systems. Dealing directly with the issues that developers have avoided enabled them to integrate their projects with emerging food sustainability policies such as the Moreland Food Systems Strategy in Melbourne (MCC 2017) and the *Connect the Dots* initiative funded by the Bloomberg Foundation (2016) in São Paulo.

To contextualise the case studies we first consider how the development of Australian and Brazilian food systems has set the stage for urban agriculture’s resurgence. Legacies of colonial land policies and subsequent economic rationalism saw food become progressively industrialised, processed, and mass produced, with severe consequences for peri-urban family farms and nutritional health. Melbourne and São Paulo demonstrate these structural transformations, how they are omitted from commercial urban agriculture narratives, and how their detrimental impact on quality of life has begun to provoke more informed alternative visions. In both cities the agendas of gentrifiers and community actors are distinguished by conflicting narratives of food and urbanism.

Deep roots: urban agriculture through time

Urban agriculture responds to quantifiable problems of food security and nutritional health, but it also reflects historically accumulated relationships between people and their natural environments. Australian approaches have been influenced by British antecedents, including the rise of suburban cities with botanical gardens, pocket parks, private domestic spaces, and allotments for growing food during the industrial revolution (Gaynor 2006). Ebenezer Howard, an English stenographer whose ideas became influential in urban planning, advocated such rural-urban integration through the concept of “garden cities” (1902). His ideas were taken up in Australian towns such as Sunshine (now a suburb in Melbourne’s west), where industrialist Hugh Victor McKay integrated a public park into the sprawling Sunshine combine harvester factory. Installed in 1909 explicitly to improve conditions for employees, the park “was central to his vision of a garden suburb to house a contented and respectable workforce whose life would revolve around work, church, sport, and horticulture” (Bampton 2010:10).¹

Other British contributions to Australian urbanism consolidated in 19th century Manchester, Birmingham, Leeds and Liverpool. As hubs of the industrial revolution, these cities experienced rapid growth and the proliferation of disease-ridden slums. This provoked parliamentary inquiries into sanitation, health, fresh air, and accessibility of urban green space. Victorian era reformers were determined to bring the country into the city and in 1887 passed the Allotments Act to promote community food plots. By 1895 there were 450,000 allotments in Britain, and during the First World War the every-man-a-gardener campaign increased the number to 1.5 million (Crouch and Ward 1997). Furthermore, local governments employed gardeners in parks, ran nurseries, and created horticultural services. Interest in urban agriculture thus reflected not only wartime necessity, but an attempt to integrate the natural beauty of the countryside with the commercial infrastructure of towns and cities as Howard had advocated. After a decline during the inter-war period, the Dig for Victory campaigns of World War II saw the number of subsidised allotments return to a historic high. The campaign aimed to secure food for working class people while keeping them occupied with a broadly beneficial pursuit (rather than drinking or gambling), though grassroots activists pushed for access to allotments independently of this discourse (Willes 2014). These experiences conditioned overseas colonial practices, setting historical precedent for Australian urban food production and even making their mark in Brazil.

Portuguese colonisation of Brazil in the 16th century triggered an extensive exchange of plants with Europe. Native varieties of yams, taro, cassava, peanuts, sweet potatoes, pine nuts, pumpkins, and squashes were introduced into settler diets and came to characterise Brazilian cuisine. From Europe came sugar cane, lemons, oranges, mangos, coconuts, figs, pomegranates, lettuces, cabbages, turnips, carrots, cucumbers, spinach, onions, mustard, tomatoes and ginger. This diversification produced genetic improvements enabling foreign species to adapt to Brazil’s edaphic and climatic conditions (Madeira et al. 2008). São Paulo and other colonial settlements were initially dependent on Portuguese food supply, but transportation across the Atlantic and even from surrounding rural zones was costly and impractical. Vegetable gardens and urban farms thus became important sources of food, contributing to the consolidation of autonomous Brazilian markets, services, and systems of land governance.

When Brazil declared independence from Portugal in 1822 Britain was its main commercial partner. The ensuing century saw British investment in Brazil's industrialisation and infrastructure through projects such as the São Paulo Railway, completed in 1867. Less well known is the influence of Ebenezer Howard's garden city movement on the establishment of several São Paulo suburbs, including Jardim América in 1917. The suburb was designed by the British architects Raymond Unwin and Barry Parker, members of Howard's Garden City Association who had previously been instrumental in creating the world's first garden city in Letchworth, England, in 1903. Contracted by the City of São Paulo, Parker and Unwin left their mark in Jardim América's tree-lined streets, curved boulevards, and public parks, which in turn influenced the neighbouring suburbs of Jardim Europa and Jardim Paulista, and others such as Alto da Lapa (IGCI 2020). These zones remain a green oasis amidst grey and brown high-rises, but public access has become increasingly restricted as occupants of new condominiums gain private rights to orchards and vegetable gardens. As in Melbourne, green spaces for recreation, horticulture, and the supply of fresh food within and around the city have diminished with inward densification and outward sprawl (Duran et al. 2013).

The challenges characterising fresh food production in Melbourne and São Paulo reflect the adoption of neoliberal policies between the 1950s and 1980s, which unleashed private property ownership across Europe, Australia, and the Americas. Suburbs with residential gardens and backyards expanded, but the intensity of localised food production declined as these private spaces ostensibly diminished the need for public allotments. By the early 1980s municipal governments were abandoning subsidies for allotments and horticulture training programs and scaling back to the barest standards of maintenance for public parks and gardens. Meanwhile, agriculture ministries increasingly focussed on boosting chemical-intensive commodity crops for export while large retail supermarkets came to dominate domestic markets with processed and packaged food (FAO 2003, Parham 2015).

Half a century of economic rationalism has shown that the withdrawal of public funding for fresh food production correlates with the expansion of the processed food industry, a rise in dietary health problems, and resulting budget crises for national health systems. Over the past twenty years overweight (including obesity) rates have grown to more than 30 percent in Melbourne's western suburbs and 54 percent in São Paulo (Capone 2015, Ministry of Health of Brazil 2016:14). Consequently, type II diabetes and other diet-related diseases are growing across Australian, Brazilian, and other cities. Direct and indirect obesity-related health conditions cost Australia more than \$100 billion per year (Rose and Hearn 2017), while in Brazil, where only the direct costs of obesity are calculated, they cost the public health system more than \$270 million annually (de Oliveira et al. 2015).² As Susan Parham writes, the industrialisation of food systems has incurred an economic and social toll:

In the early 21st century, we primarily rely on intensive, chemically dependent and, now increasingly, genetically modified food production, intensive processing and packaging of food, and long-distance transportation, with enormous wholesaling facilities to serve very large-scale, car-dependent industrialised (and now also 'functional' and 'nutrimedical') food retailing. Food companies seek vertical integration from farm to plate, as far as possible to externalise environmental and social costs. And these costs are substantial,

including impoverishing producers, diminishing consumers' tastes, and creating unacceptable food miles and food deserts through profit maximising spatial practices (2005:89).

Demand for locally produced organic food is growing as consumers become more aware of these conditions and discerning about the personal and political implications of their diets (Hempel and Hamm 2016, McCarthy and Liu 2017, Nuttavuthisit and Thøgersen 2017). Edible landscapes and vegetable patches are appearing in private homes and alongside suburban streets, increasingly supported by municipal governments to improve local health and sustainability indicators (e.g. MCC 2017).

Restaurants have pursued the expanding market for organic ingredients produced locally and responsibly. Some of these are social enterprises that source ingredients from—and return organic waste to—nearby community gardens, employ disadvantaged refugees or former inmates, and communicate their vision of sustainability on the backs of menus or online. Others focus narrowly on market opportunity, conspicuously displaying planter boxes to demonstrate sustainability, charging premium prices for pretentious menus, and retailing mass-produced homewares at the counter. The two varieties of restaurant articulate their purpose differently, the prior seeking to provoke reflection about the place of food in urban renewal and the latter concerning itself mainly with public image. The growing popularity of organic menus is thus underpinned by deeply diverging priorities (Poulston and Yiu 2011).

As discussed below, real estate developers in Melbourne and São Paulo are also targeting the urban agriculture boom, incorporating private vegetable plots and gardens into their premium offerings. Seemingly progressive projects claim to revive citizens' connections with land, community, and food production but fail to stimulate awareness or action around the place of food in urban development. More genuine attempts to educate citizens about the historical trajectory of food systems and involve the public in neighbourhood projects are nevertheless beginning to emerge. Recent initiatives in both cities, profiled below, have encouraged reform beyond their localities by developing historically informed narratives about urban agriculture that engage consumers and municipal governments.

Making space in Melbourne

With 85 percent of Australia's 25 million citizens living in sprawling suburbs, private backyard horticulture is widespread. The large size of Australian front and backyards has historically tempered demand for public allotments and community gardens, which have never enjoyed comparable support or continuity as in Britain or the United States (Gaynor 2006).

Australia has one of the highest rates of urbanisation in the world, with more than 75 percent of the population living in five cities: Sydney, Melbourne, Brisbane, Perth and Adelaide. Melbourne is projected to overtake Sydney as Australia's most populous city by 2028, with overseas migration and university student enrolments expected to underpin population growth from five million in 2019 to eight million in 2050 (Longbottom and Knight 2018, Urban 2018). A recent Australian study correlates cardio-metabolic health problems related to blood pressure, obesity, and diabetes with time spent driving, noting that 78 percent of adults use a car as the main form of transport to work (Sugiyama et al. 2016). While longer commutes reflect

Greater Melbourne’s outward expansion to incorporate seventeen new suburbs in 2018, a simultaneous inward contraction is compounding the city’s liveability challenges. As Tony Hall’s (2010) book *The Life and Death of the Australian Backyard* argues, current urban consolidation policies and planning regulations are shrinking green space and compromising quality of life. Balancing Melbourne’s outward expansion with inward densification was central to the state of Victoria’s 2018 elections, as both are necessary to manage population growth, provide housing, ensure adequate infrastructure for an ageing population, and avoid unmanageable congestion (Urban 2018).

Britain’s earlier experiences with urban industrialisation influenced Australian approaches to land use, for instance ensuring public accessibility to green space in the colony’s emerging cities. This is evident in Melbourne, which after a globally significant gold rush in the 1850s, came to embody Victorian era confidence in urban development as a marker of national progress. Embracing the philosophy of large parks and gardens, the colonial government mandated the creation of urban green areas and facilities such as the Burnley horticultural college six kilometres from the city centre on the Yarra River. The physical maintenance of these properties required coordinated workforce planning, training, and employment. At the turn of the 20th century Burnley employed over one hundred educators and maintenance specialists. This commitment to public resourcing persisted for over one hundred years, sharply contrasting with today’s prevailing economic rationalism.

As publicly subsidised green space contracts, private real estate developers have begun to include community gardens in their prime offerings. The title of an article featured on the website of Australia’s largest estate agent Domain explains why: “Food for thought: sustainable eating becomes property selling point across Australia” (Farrelly 2018). Property giant Stockland, for instance, has worked with the Green Building Council of Australia to develop “Green Star” projects. According to its website, “Stockland is one of the largest diversified property groups in Australia with more than [AUD] \$15.8 billion of real estate assets” across the residential, commercial, and industrial sectors (Stockland 2017). The community gardens included in its recent developments purportedly enable residents to experience “how different cultures grow things differently” in “really old-style communities” (Lindsay 2016, Strachan 2015). Other developers, such as Shayher Group, believe that installing vegetable gardens amidst their high-rise apartments will “draw locals together” and enable them to “remain connected to nature” (Gardiner 2017).

Efforts to revive old-style traditions and connections with nature sound progressive, but do not address systemic deficiencies. Availability of green space is among the casualties of the emerging trend, evident in the gentrifying central Melbourne suburb of Moreland, where an eco-friendly apartment complex for 1,800 people recently won the Excellence in Urban Renewal award. The development features rooftop solar panels, 300 bicycle racks, and a closed-loop irrigation system for the carrots, tomatoes, and kale grown in a community garden. The developer’s website explains that the apartment complex prioritises social wellbeing and “encourages residents to live sustainably...where history meets style” (Little Projects 2015). Three years after its completion, the building manager described the challenges of achieving these goals: a sense of community has been slow to emerge because sixty percent of the residents are renting; there is a two-year waiting list to secure one of the fifteen available garden plots; and these plots each measure less than one square metre (interview, 28 June 2018). The spatial contrast with neighbouring

1970s brick houses, most with 20 or 30 square-metre front gardens, illustrates Melbourne's changing landscape.

Moreland's economic transformation is embodied in a strip of boutique restaurants one block away on the iconic Lygon Street. References to the district's Italian heritage appear on the walls of these chic establishments in paintings of bygone Tuscan family farms, grey reprints of early migrants, obsolete coffee grinders, classic Vespa mopeds parked casually amongst the tables, and menus that promise traditional and fresh organic ingredients. As Moreland becomes increasingly inhabited by young professionals, such scenarios provide what Tim Butler (2006:21) has observed in other gentrifying neighbourhoods: "a ready made narrative of icons from a past age suitably sanitized for busy lives."

These restaurants and bars have a similar gentrifying effect as the ostensibly sustainable apartment blocks that increasingly form Moreland's skyline: inflating council taxes, making the suburb unaffordable for older neighbours, and converting houses into businesses. Anguelovski and Connolly's international case studies of "the green urban life" are instructive:

...interventions increasingly create new dynamics of exclusion, polarization, segregation, and invisibilization. Despite claims about the public good, these interventions take place to the detriment of the most socially and racially marginalized urban groups whose land and landscapes are appropriated through the creation of a 'green gap' in property markets (2018: 417).

The heritage narratives and gentrifying impacts of Melbourne property developers, estate agents, and restaurants contrast with those of a growing number of community projects committed to "learning from our productive past" (Gaynor 2018). Some of these have established common purpose with local governments and socially committed customers by emphasising the industrialisation of food systems and the need for action to forge alternative futures. The two Melbourne cases that follow were among the projects surveyed when the Brazilian co-authors visited in 2017 and 2018 to research the inclusion of urban agriculture in the city's emerging food policies. Funded by the São Paulo Research Foundation (FAPESP), the visits included a project designed by co-author [REDACTED] to elicit local government inputs such as horticultural employment for food production in public parks (case one). The other Melbourne case study describes the development of an online platform to create opportunities for local producers and protect productive green space in and around the city.

The case studies were selected because of their proponents' efforts to situate their work in history. For the first case, from the East Melbourne suburb of Dandenong, this meant raising public awareness about local food multiculturalism dating back to the establishment of the iconic central market in the mid-19th century. In the second case, from the central Melbourne suburb of Moreland, newsletters and education programs urged the public to consider how a century of consumerism has eroded human connections with the natural environment. As the case studies progressed, it became evident that these attempts to educate publics about historical context aligned with the efforts of progressive councils and citizens to more comprehensively support horticultural employment and land tenure. Observing the consolidation of these agendas over time confirmed Boyko et al.'s point that, "the

case study methodology enables a story to be told as it unfolds and materialises” (2006:695).

Food traditions and public space in Dandenong

One quarter of Australians were born overseas, but some councils, such as Dandenong in Melbourne’s east, are especially diverse. Once a manufacturing hub but now a rust-belt zone of high unemployment, the council is home to 156,000 residents from 150 different nationalities, more than half of whom were born in a non-English speaking country (CGD 2017:1, 10). Food options reflect the district’s diversity, particularly around the central market that since the 1860s has been a hub of cultural exchange.

In 2013 Dandenong Council invited co-author [REDACTED] [REDACTED] to develop an urban agriculture project capable of leveraging the district’s multicultural heritage to promote healthy diets and raise awareness about obesity and diabetes. The notion that local heritage might inspire residents to embrace food diversity was articulated in the *Greater Dandenong Regional Food Strategy 2015-2018*:

Food is something that connects us all. It is a driver of employment and health and a significant part of our environmental, social, and cultural identity...Greater Dandenong has the ability to have a very strong multi-cultural food identity providing great food variety that taps into the exciting flavours and food styles represented in the area. Greater Dandenong has a long history in all aspects of food (CGD 2014:2, 34).

In partnership with the horticultural team from the council’s parks department, [REDACTED] proposed installing edible landscapes in public parks near Dandenong’s thriving market to help achieve the Strategy’s goals. His “Novel Crops” research at Burnley Gardens had featured in national media (Backhouse 2016), providing a basis for selection of sweet potato varieties whose ornamental appearance would enhance visual appeal and whose yields would supply a local charity. These species and their cultivars are not widely available in Australian supermarkets and are rarely grown, yet are common in many residents’ countries of origin.

In 2014 [REDACTED] and the council parks gardening staff created a 60-square metre edible planting bed in Dandenong Park. In-house horticultural staff have disappeared from most Australian councils since the

1980s, replaced by short-term contractors tasked with the basic maintenance of public landscapes. The Food Strategy had supported the retention of horticultural staff through a promise to “stimulate stronger integration of food cultivation and production into urban and peri-urban locations” (CGD 2014:38). The gardening team had already begun substituting ornamental flowers with lettuce, chillies, and corn for local charities six months prior to the sweet potato project. In its first harvest, in 2016, Dandenong park produced approximately 100 kilograms of sweet potatoes and taro, and in 2017 a plot in front of the market produced 90 kilograms of sweet potatoes and 20 kilograms of taro and yams.

As passers-by approached the garden beds, seventeen informal conversations undertaken by the co-authors and a research student recorded reactions, including reports of familiarity with the crops and surprise at seeing them grow in Australia. More extensive interviews with eight residents revealed a perception that Dandenong’s multicultural history favoured flexibility in food choices and tolerance for such experimental food growing projects. To mitigate against researcher bias and influence arising from [REDACTED] long-term association with Council, he did not participate in the interviews. These informal and formal interactions evidenced positive local opinions about the replacement of ornamental flowers with edible plants in the public park. The finding was supported by local media, which reported on the project’s community impact, encouraging council to extend the range of edible crops and the land dedicated to their cultivation (Neill 2016). By 2018 community and school gardens had been revived or created in 27 sites across the municipality.

The project would not have been possible without Dandenong council’s progressive vision, which commits staff and resources to the creative remodelling of public land. The horticulture team had access to vehicles, tools, equipment, mulch, and other resources that community groups often spend years raising funds to purchase. The initiative thus marks a departure from decades of state withdrawal from public food production, and resonates with earlier public employment and resourcing practices. Similarly, the productive use of council land constitutes a defence of urban green space against mounting pressure from commercial real estate. Moreover, the project blends neighbours’ various crop cultivation traditions with Australia’s heritage of ornamental parklands.

The council’s horticulture team leader, John, stated that these achievements would have been impossible in the absence of a “good argument” capable of galvanising the diverse participants (interview, 27 May 2017). The argument had developed “organically,” he said, through educational interventions such as information boards installed next to the planting beds, public information

and feedback sessions conducted by two University of Melbourne research students, activities with local schools, community “planting days,” and discussions between council officials and the co-authors. Together these activities generated knowledge about Dandenong’s vibrant multicultural food heritage and the need for local government investment to sustain it. The resulting “argument,” as John described it, was that the suburb’s food multiculturalism should be conserved as a marker of local identity at a time of economic strain, gentrification, and proliferation of fast food and related health impacts. An alignment of historical memory with contemporary need underpinned consensus between council and community to invest in urban agriculture training, employment, and land use.

Past and future in Moreland: CERES Fair Food

In 1982 the Greater Melbourne council of Moreland sought expressions of interest to rehabilitate a 4.5-hectare waste landfill, which had been a bluestone quarry in the early 1900s and an Indigenous (Wurundjeri) hub for food gathering prior to European colonisation (CERES 2019). An independent association of local organic food producers won the council-subsidised tender to establish the Centre for Education and Research in Environmental Strategies (CERES). Today CERES attracts 400,000 visitors each year and employs over 180 farmers, educators, and service staff. At the core of the organisation’s mission is public education about sustainable food production and practical methods for achieving it. Council grants and land allocation were critical for establishing CERES, but subsequent funding cuts have seen it become 95 percent self-funded through commercial operations. These include two markets that retail seedlings, plants, and organic produce; a restaurant; an events facility for conferences and workshops; a teaching service for local schools; an educational travel division; and most significantly the Fair Food organic home delivery service.

Fair Food’s customers place orders via a website and collect their boxes from “food host” centres throughout Melbourne and its suburbs, attracting 985 members by 2012 (Chung 2012:16). According to the service’s director, Chris Ennis, by 2018 its turnover had more than tripled to AUD \$6 million (UK \$3.3 million), enabling it to reach over a thousand families and restaurants within and beyond the city each week (interview 17 September 2018). Fresh food (including in supermarkets) is more accessible in wealthier areas of Melbourne while less advantaged zones have a higher proportion of fast food outlets (Burns and Inglis 2007). Fair Food thus offers a pathway to healthier diets in Melbourne’s outer suburbs, where cardiovascular health problems are on the rise (Capone 2015).

Growing demand has increased Fair Food’s purchases of organic products, sustaining approximately 100 small farms in and around Melbourne. This has created jobs, protected land from real estate development, and facilitated long-term leases and tax concessions for productive use of green space. These outcomes align with Moreland’s 2017-2019 Food Systems Strategy, which committed AUD \$320,000 (UK \$185,000) to projects that promote fresh food growing, trading, and educating (MCC 2017). Moreland councillor Ms. Natalie Abboud (subsequently elected mayor) noted

that CERES and its allies were “banging the drum” to protest the historical decline of green space for horticulture, and that this influenced council’s decision to adopt the strategy (interview, 30 October 2017). As the first funded framework of its kind in Australia, the Strategy incentivised the productive use of urban arable land and—as long as Moreland council maintains its progressive orientation—reduced the risk of small farms functioning as temporary placeholders for commercial or residential construction. Fair Food’s support for land conservation is set to increase, having moved into a new warehouse in 2017 with capacity to grow the business threefold over the next ten years.

Approaching Fair Food as a case study “illuminate[d] a decision or set of decisions: why they were taken, how they were implemented, and with what result” (Schramm, quoted in Yin 1994:13). Of particular interest was how decisions that influenced the initiative’s development were informed by perceptions of local food history. Semi-structured interviews with Ennis and Aboud, cited above, illuminated this connection, as did six less structured conversations with Fair Food’s employees. Most are refugees with uncertain migration status and few job opportunities, but every day they prepare lunch in the Fair Food kitchen and sit down together to share their cuisines and stories. Participating in these sessions, which ranged from five to twelve people each in 2017 and 2018, opened a window into their hopes, struggles, and enthusiasm for diverse food traditions. Victims of unjust circumstances and migration policies, each had decided to support Fair Food’s vision of a more socially and environmentally just urban food system. Ennis describes the need for reform in a CERES newsletter:

In Australia in 1900 one in seven of us were farmers, today only one in 33 grows the food we eat...As we push our trolleys down the aisles of Coles and Woolworths, comforted by idealised rural farmyard pictures on our food labels, the reality is that our demand for cheap food all year round clears away forests and bush, erodes soils on millions of acres of once productive land, cages millions of farm animals, poisons our rivers and oceans and overloads our atmosphere with carbon dioxide (Ennis 2012:6).

Noting how food labels depicting the “idealised rural farmyard” divert attention from structural problems, Ennis uses newsletters, social media, and educational tours to raise public awareness about the historical trajectory of food systems. By strengthening the viability of small farms, Fair Food attempts to locally redress the problems of diminishing employment and land. Like the Dandenong project, it is supported by local government, but it also accommodates the power of private demand. Online customers may not have space or time to grow food, but as public awareness about the historical trajectory of food systems grows, many wish to see the diversification of supply and demand for health, ethical, and other reasons. Fair Food and the wider CERES initiative do not seek to revive the past, but their educational services, employment model, and adoption of online technologies are building knowledge about the relevance of history to the future intersection of food and urbanism.

Feeding the megacity: São Paulo

As in Melbourne, particular aspects of urban agriculture are on the rise in São Paulo, propelled by a unique blend of commercial, political, and historical pressures. The Brazilian Agricultural Research Corporation (Embrapa), the German NGO Cities Without Hunger, and the USP Urban Agriculture Study Group have each supported local organic food production to ameliorate urban conditions while raising awareness about changes in land use, ecology, and political representation (Giacchè and Silva 2014, Nagib 2016). Supported by these efforts and inspired by a 20 percent annual increase in national consumption of organics to US\$600 million in 2015, 222 São Paulo municipalities ran urban agriculture projects in 2016 (Organics News Brazil 2017, Organicsnet 2016).

To service the growing demand for fresh food and sustainable lifestyles, São Paulo real estate developers have begun building vegetable gardens into their high-rise projects. As noted below, they advertise that this will revive citizens' long-lost connections with nature and with each other. This promise is as dubious in São Paulo as it is in Melbourne, but below we find evidence that recent urban agriculture initiatives are more genuinely addressing the shortcomings that have historically eroded the city's ecology. First, though, we must consider how São Paulo's urban conditions have changed over time.

When Prince Dom Pedro stood in São Paulo in 1822 to deliver Brazil's Declaration of Independence from Portugal, the city had become a commercial hub producing crops for local consumption, trade with neighbouring regions, and national food security (Blaj 1998). At that time the city's Southern, Northern and Eastern zones were fertile floodplains well suited to agriculture. Small farms or *chácaras* in these areas provided vegetables and meat for the city's 30,000 residents and for Brazil's then capital Rio de Janeiro, while sugar production was concentrated at greater distance from the city (Vieira de Melo 2006). As there was no legal distinction between urban and rural land, population growth gradually transformed farms into residential zones, pushing the *chácaras* outward to a food-producing "green belt" around the city's outskirts (Fernandes 2008).

The rise of coffee plantations in the late 19th century brought a new wave of European migration, increasing São Paulo's population from 64,934 in 1890 to 239,820 in 1900 and over 580,000 by 1920 (Singer 1977:47). Agriculture became organised into two concentric rings: the inner *chácaras* belt characterised by small family farms and the outer *caipiras* dedicated to industrialised production of coffee, livestock, and sugar. The inner ring came under intense pressure as the automobile industry began to compete with rail transport in the 1940s, lobbying for highways across the city's suburbs and beyond. São Paulo's cultivated land decreased from 121,58km² to 9,536km² between 1960 and 1970 as a dense network of businesses and factories developed along the new highways. Land beyond the municipal area was turned increasingly to export-oriented agribusiness, stimulated by a forced-draft federal industrialization policy (Pereira et al. 2012:11).

Employment opportunities brought further migration, especially from rural areas, increasing São Paulo's population to 12.6 million by 1980. The rapid influx of people was met with a shortage of housing, intensifying the pressure for residential development on the city's fringes despite the lack of primary services. Disorganised and chaotic settlements, many of them illegal, encroached on forests, waterways, and the remaining *chácaras*. Economic stagnation in the 1980s saw a dispersion of São Paulo's industries to other cities, stimulated by federal incentives. The inner-city population began to decline, but the broader metropolitan population continued to grow, reaching 21 million by 2014.

The local production of São Paulo's fresh food has dwindled to a few remaining family farms and waterways, which together constitute the last remnants of the green belt. A degree of legal protection has been afforded through the zone's inclusion in the larger (98,800km²) Atlantic Forest reserve (Morellato and Haddad 2000:786). However, the area is under constant pressure owing to land speculation, illegal settlements, air and water pollution, illicit extraction of forest products, and highways that permeate ostensibly preserved areas. Fruits and vegetables cultivated in this area must travel 50-80km to reach the city's main supply hub, the CEAGESP (Companhia de Entrepósitos e Armazéns Gerais de São Paulo).

Servicing the city's wholesalers and markets, the CEAGESP trades an average of 283 thousand tons per month mainly of fruit, vegetables, and derivative products originating from 1,500 municipalities in 22 Brazilian states and 19 other countries. Industrial scale food production has enabled quantity, but mass production has compromised quality. In 2006 and 2007 researchers tested 240 products sold at the CEAGESP, finding that 19 of these contained pesticides beyond the permitted levels and 28 percent contained unregistered ingredients (Gorenstein 2008). An aggregated study of nation-wide tests between 2001 and 2010 found that 48.3 percent of food samples contained pesticide traces and 13.2 percent contained non-authorised ingredients (Oliveira Jardim and Caldas 2012:607).

Brazil is the world's largest consumer of pesticides, using 914,000 tons in 2014-2015 at a cost of US\$ 9.6 billion (ABRASCO 2016). São Paulo regulations such as Law 01-00891/2013 restrict the commercialisation and use of 19 pesticides, but compliance is low among farmers in the green belt zones, particularly those who do not claim to produce organic food. Among the consequences is contamination of the city's eight waterways, such as the Guarapiranga system that intersects the green belt and is responsible for 21 percent of the city's supply. A recent study identified 31 organic compounds in São Paulo's water, including pesticides, illicit drugs, and pharmaceuticals (López-Doval et al. 2017).

Urban sprawl has aggravated water contamination, particularly in the Guarapiranga and Billings Basins, whose cumulative population has grown to two million people (SABESP 2017). In these and other São Paulo ostensibly green zones, overweight (including obesity) rates exceed the city's already high average of 54 percent (Ministry of Health of Brazil 2016:5). These indicators reflect the lack of fruit and vegetable retail in peri-urban areas, underpinned by two centuries of food system industrialisation (Santandreu and Lovo 2007). The predicament demonstrates how fundamentally São Paulo's geographic and economic conditions have changed since the days of Prince Dom Pedro.

São Paulo's transformation cannot be reversed, but as in Melbourne, property developers invoke narratives about the capacity of traditional food production to restore lost connections between people and nature. "It's not only about the desire for healthy food," says one São Paulo consultant, "but also about a set of values that recognises the importance of local production and its emotional connections" (quoted in Muniz 2017). Pursuing the market for these connections, one developer of luxury condominiums in the upmarket district of Itaim Bibi is installing vegetable gardens that enable residents to rediscover "the history of contact with the earth through urban agriculture" (Huma 2017). Another is designing exclusive apartment towers with "agro-forests" that "link aesthetics with functionality, restoring in a pleasant way the conviviality between people and the natural countryside" (Cardim 2017).

Restoring a quality of life lost to urbanisation also characterises the new central São Paulo Seed complex, whose 80 apartments each contain a 3-square metre

patch of fruit trees. According to the developer, this feature adds ten per cent to the value of each apartment because it represents “more than sustainability; it is a connection with nature” (quoted in Corrêa 2019). Another developer won the 2017 Master Real Estate Marketing Award for “hooking” customers on the promise to “bring the Atlantic Forest into the city” (Moreira 2017). Similar upmarket projects have appeared around São Paulo, offering vegetable patches and micro-orchards that extend the “benefits of nature” into urban zones (Ecoeficientes 2019), promote “conviviality” (Ideazarvos 2019), and enable customers to “pick fruit where it is least expected” (Grupo SP 2007).

As with the cases of “ecological gentrification” and “sustainability fix” analysed by Gould and Lewis (2017), Dooling (2009), McClintock (2017), and While et al. (2004), the promises of São Paulo developers to restore lost human connections with nature and promote social conviviality do not address broader structural problems. These include the loss of productive urban and peri-urban land to real estate development, the contraction of funding for local governments to maintain green spaces, and lack of environmental protections against air and water pollution. Exclusive vegetable gardens atop luxury apartments reflect a larger green infrastructure trend that not only diverts attention from these issues but deepens what São Paulo urban planner Paulo Pellegrino calls “vegetation apartheid” (quoted in França 2011). Indeed, the “revitalisation” of São Paulo and other Brazilian cities demonstrates gentrification fuelled by the commodification of public space and “heritage conservation based on market demands” (Leite 2015:175, Rubino 2005).

To this divisive backdrop, initiatives are emerging in São Paulo to generate awareness about these structural challenges and locally redress them. Profiled in the following case studies, the first of two projects is an ambitious scheme established by São Paulo’s centre-left former mayor called Connect the Dots, which seeks to overcome divides between under-resourced family farmers on the city’s fringes with urban customers. During visits to six farms in 2016 and 2017, the authors interviewed seven producers and engaged customers and neighbours in informal conversations to explore their impressions of the initiative. The second project was developed by co-authors [REDACTED] to assess the impact of traffic-derived air pollution on urban crops. The case study summarises the project’s published findings and how these subsequently informed a practical guidebook of countermeasures for São Paulo urban farmers.

The cases were selected for their relevance to urban food systems broadly, for their proponents’ efforts to position them in historical context, and for the synergies they have pursued with municipal governments and with the emerging market for local fresh food. The Bloomberg Foundation (2016) has endorsed the former’s attempt to confront decades of urban sprawl and protect productive land around the city. The latter, having discovered unsafe levels of lead and cadmium in São Paulo vegetable gardens, has published a set of guidelines urging caution among producers, consumers, and policymakers as urban traffic densities increase.

Connecting the Dots

São Paulo’s expansion into surrounding green zones is a historical process whose impacts on environmental sustainability, social welfare, and dietary health have become acute. The 2014 City Master Plan, in effect until 2030, attempts to slow this process by reclassifying 25 percent of metropolitan land as “rural zones,” prohibiting new residential construction and authorising family farmers to access low-interest

loans and subsidies for machinery and seeds (Prefeitura de São Paulo 2014:18-19). The legal manoeuvre looks good on paper, but according to one study, one year after implementation 90 percent of São Paulo producers were still unable to secure technical or financial support (Ferreira 2015:30).

Demand-side strategies have proven more successful, evident in municipal procurement of organics from family farms for public schools, hospitals, and enterprises. Underpinned by a price guarantee 30 percent higher than non-organics and a municipal ban on several pesticides, direct government purchases have stimulated a gradual shift to organic farming (Chatterjee 2016, Datamark 2016). Farmers in the southern district of Parelheiros, known for its peri-urban arable land but also for its low socio-economic indicators, confirmed this shift. Interviewed during the authors' visits in 2016 and 2017, two family farm managers were worried about the effects of pesticide application on their own health as well as that of consumers. Like ten other producers we interviewed onsite at their farms in the Eastern districts of Cidade Tiradentes and São Mateo, they were seeking ways to connect with government organic procurement programs. Among these is a purchasing scheme established by former Mayor Fernando Haddad (2013-2016) of the Workers' Party, which under Law 610 aims for all public school lunches to be sourced from organic farms by 2026 (Camara dos Deputados 2015). As more farmers seek access to the program, the São Paulo government has explored ways to expand it by encouraging greater demand from the private sector.

Proposing to diversify demand for organics, in 2016 Haddad won the \$5 million Bloomberg Mayor's Challenge for a project called Connect the Dots (Bloomberg Foundation 2016). The project envisions an online platform, a smartphone application, and logistical infrastructure to connect family farmers on the city's outskirts not only with public schools and hospitals, but also with inner-city private restaurants, supermarkets, and fresh food stores. Expanding their markets should strengthen the viability of peri-urban farms and enable them to retain green space as land taxes rise, creating a natural barrier to São Paulo's outward growth. As an official of the Urban Licensing Secretariat notes, "Restrictive laws were not working...stimulating a productive use of the land through agriculture could be more effective" (quoted in Amigo 2017).

Amidst the *Lava Jato* corruption scandal that precipitated the impeachment of President Dilma Rousseff and other Workers' Party officials, in 2017 Mr. João Doria of the conservative Brazilian Social Democracy Party ousted Haddad on the campaign slogan "I'm a businessman, not a politician" (Magalhaes and Pearson 2017). Promoting business and connecting the dots between producers and consumers are potentially complementary propositions, but Doria's promise to sell off \$2 billion of public assets contrasts with the project's plan for subsidised storage warehouses and distribution hubs.

After just fifteen months in office, Doria resigned to contest the São Paulo state government elections of October 2018, which he won. Vice-mayor Bruno Covas assumed the post of city mayor and has pursued a similar pro-business agenda, though less blatantly. He has not, for instance, advocated Doria's "modern management techniques," which among other things envisioned private advertising in public parks in return for donations of trees and seeds as a solution to the city's deficit of green canopy (Leahy 2017). However, Covas has supported his predecessor's denationalisation campaign, whose attempts to privatise public assets such as the Anhembi convention centre and Interlagos racing track have been broadly criticised

(Seto 2017, 2018). Covas also favours new private real estate construction in and around the city, raising questions about the protected status of peri-urban land.

Despite Haddad’s replacement by two conservative mayors, Connect the Dots and Law 610 remain in effect, and are currently subsidising agronomists to assist peri-urban farmers. The resilience of these programs owes much to their articulation of the socio-economic pressures historically endured by farming communities on São Paulo’s fringes. Proposing to “find a solution to the urban sprawl threatening the region’s local farmers and forcing them to struggle to make a living off their produce,” Connect the Dots has developed a narrative—amplified to the world by the Bloomberg Foundation (2017)—to redress the negative consequences of the city’s physical and industrial expansion. The project aligns with Article 5 of Law 610, which promises that “priority will be given to acquisition of organic produce directly from family farmers,...traditional communities, and producers located in the proximity of public schools” (Camara dos Deputados 2015:2). Recognising the imbalances brought by the industrialisation of São Paulo’s food system, the initiative aims to restore a measure of urban-rural interdependence. As the next case study shows, though, intensifying automobile emissions in and around the city over the past century has compromised the quality of urban crops.

Unearthing food safety

The impact of environmental pollution on urban agriculture is emerging as a public concern as small farmers, often maintaining family traditions handed down across generations, learn that their produce is contaminated. A study published by the University São Paulo co-authors of this article () found that traffic-derived airborne lead and cadmium particles in four of ten São Paulo urban farms exceeded United Nations, European Union, and Australian safety limits. Controlling for soil, water, and exposure time, the experiment was the first to show that heavy metals penetrate vegetables not only through their roots, but also through leaf and stem pores, and therefore cannot be simply rinsed off. Covered on São Paulo’s most viewed television news program, the study demonstrated how decades of industrialisation and growth have eroded the city’s urban food sustainability (Globo 2016).

The study’s silver lining was its recognition of a problem that must be addressed as urban horticulture expands around the world. It noted that distance from traffic and protection behind barriers reduce chemical uptake, and that root crops and legumes are less affected. Among its recommendations was that urban agriculture guidelines, increasingly published by local governments, should take note of these findings to mitigate the impact of air pollution. Brochures and information sheets can recommend, for instance, that gardens be positioned away from dense traffic, that thick bushes encircle leafy vegetables, and that root crops should be prioritised when neither of these options is possible. The long-term drivers and contemporary urgency of these measures was then detailed in a practical guide subsequently produced by co-authors (). Circulated among urban farmers and environmental policymakers, the guide is timely as certification procedures for organic food increasingly seek to standardise thresholds for acceptable chemical exposure.

The USP study established that urban crops should be protected from air pollution, but more broadly it demonstrated the environmental harm caused by increasing reliance on cars since the mid 20th century. The same point had been

foreshadowed by Ebenezer Howard, who proposed in 1902 that electrically powered transport in garden cities would keep the “smoke fiend...well within bounds,” allowing for cleaner delivery of food to markets (quoted in Parham 2016). Urban agriculture does not feature prominently enough in São Paulo’s food supply to influence policies on vehicle numbers and circulation, but Law 610 on organic school meals, alongside the Connect the Dots initiative and growing concerns about traffic congestion and air pollution, make this more likely. In 2017 Doria began a campaign to close bicycle paths installed under his predecessor, arguing that this would improve traffic flow and support small businesses. This argument has precedent in the automobile industry’s advocacy for new roads and roadside businesses over the city’s green spaces since the 1940s. Rolling back the clock on this history is impossible, but as the USP study suggests, awareness of history’s consequences for ecological sustainability and citizens’ health should inform future actions.

Historically informed action is nowhere more urgent than in food systems. Airborne lead and cadmium now join sugar, pesticides, and other industrial inputs to undermine the quality of urban diets. Growing public interest in nutritional health, evident as much in São Paulo as in Melbourne, is beginning to stimulate societal questions about this problem and how it relates to land use and environment. The easy reconciliation with nature offered by planter boxes atop expensive apartments cannot answer these questions. Solutions are more likely to emerge from projects that draw attention to long-term structural shortcomings, offer localised adaptation strategies for urban farmers, and develop policy recommendations that link present challenges with historical circumstances.

Conclusion

As urban agriculture gains prominence around the world, real estate developers and community activists are articulating distinct narratives about food and urbanism. These narratives are evident in Australia and Brazil, nations that share a comparable history of colonial land use, dependence on commodity exports, and intense industrialisation of food production and consumption. Growing interest in urban agriculture manifests in the real estate sector through exclusive condominiums featuring vegetable patches and fruit trees, advertised as a means to restore citizens’ lost connections with nature and each other. Sold at premium prices, these features ostensibly “draw locals together” and enable them to revive “the history of contact with the earth” (Cardim 2017, Gardiner 2017).

Reviving an ecologically balanced and healthy past is an appealing prospect, but current economic circumstances do not favour it. Availability of land for small farming, municipal employment and training of horticultural staff, and subsidised green spaces are among the conditions that have been subordinated to economic rationalism. Land use is especially contested, with urban agriculture potentially contributing to “vegetation apartheid” as green zones become unaffordable and exclusive (França 2011). Cultural and economic diversification, pledged around the world in urban policies to achieve a better “social mix,” is rarely more than a temporary phase in such gentrifying contexts (Bridge et al. 2014:1133). The narratives employed by developers are therefore incomplete, recalling the benefits of food diversification and localisation but forgetting the requisite structural conditions.

In the cases above, more complete narratives about urban agriculture were articulated by community advocates. Their projects identified the need to push back against systemic deficiencies while acting to improve them, in the process supporting

progressive municipal urban food policies. The Dandenong project developed school interventions, community feedback sessions, and information boards to raise awareness about the district’s vibrant multicultural food heritage and the need for workforce planning and creative land management to conserve it. CERES Fair Food’s online system harnessed growing demand for organics to enable Melbourne family farmers to earn an income and retain productive land. Using social media, newsletters, and educational tours, the project’s director urged reflection on the long-term environmental consequences of demand for “cheap food all year round” (Ennis 2012:6).

In São Paulo, Connect the Dots set out to confront decades of urban sprawl and protect peri-urban farms. Aided by the publicity of the Bloomberg Foundation, the project aims to achieve this through an online platform similar to that of CERES Fair Food, opening new inner-city markets for organic food producers. Finally, USP’s experimental testing revealed unhealthy levels of lead and cadmium in urban farms, generating recommendations for crop protection and an empirical basis for stronger clean air policies. Among the project’s innovations was the creation of a practical guide for farmers and policymakers that frames the problem in light of the city’s historical reliance on automobiles.

The diverse actors discussed above made use of history in particular ways. Advertising campaigns formulated by property developers presented narratives of urban agriculture as a purchasable commodity capable of recovering customers’ lost connections with nature and each other. “Really old-style communities” that promote “sustainable eating” in Melbourne share the exclusive appeal (and elevated prices) of São Paulo’s mid-city “agro-forests” (Cardim 2017, Farrelly 2018, Ideazarvos 2019, Lindsay 2016). Such language invokes ecological heritage but obscures the loss of enabling conditions such as protection of productive land, subsidised horticultural workforces, and environmental stewardship as espoused by the garden city movement.

By contrast, community advocates presented history as a source of insights for redressing the long-term erosion of urban food systems. The impact of their projects was enhanced by their alignment with Moreland’s Food Systems Strategy and São Paulo’s Law 610, which provided the administrative architecture to support their activities. The longevity of these policies is uncertain, particularly as state and municipal governments grapple with population growth through outward housing expansion and inward densification. Real estate developers and pro-market structures will thus continue to put pressure on progressive urban agriculture policies. In this light it is noteworthy that CERES in Melbourne and Connect the Dots in São Paulo relied not only on government inputs but also on emerging private markets for organic local produce. This dual engagement with the public and private sectors was aided by narratives that established common ground among customers and policymakers around the need to redress historically accrued structural problems and improve the long-term balance of food and urbanism.

Citizens, governments, and companies will continue to incorporate urban agriculture into future projects in distinct and sometimes contradictory ways, but convergences are possible. While the case studies suggest that community actors understood urban agriculture’s public benefits more comprehensively than property developers, there is a need for research that investigates overlapping interests. This would require an expanded interview sample that includes developers, architects, and planning consultants. A case study approach, ideal for “exploring new areas and discovering new phenomena,” could illuminate emerging collaborative attempts to

achieve more socially and historically aware urban renewal (Carroll and Johnson 1990:44).

To the extent that fresh food consumption impacts positively on health and wellbeing outcomes, there is scope for closer public-private collaboration to support the integration of real estate development, horticultural entrepreneurship, and community markets. To advance such convergences, community actors can provide city officials and consumers with historically informed narratives that identify the need to invest in productive green space, employment, and environmental conditions. Articulating these issues establishes a basis for consensus and cooperation, and for contesting less reflexive commercial appropriations of the past.

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[note to editor: some information is blacked out to conserve author anonymity for the purpose of review]

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¹ The park remains to this day, now commemorated as Australia's oldest industrial garden under the name H.V. McKay Memorial Gardens. It is noteworthy that three years prior to the park's creation McKay lost a court case brought by his workers, who demanded conditions commensurate with "the normal needs of the average employee regarded as a human being living in a civilized community" (Parliament of Australia 1907:3). The ruling was the basis for Australia's minimum wage law and, though no evidence confirms it, may have motivated McKay's experimentation with the garden city concept.

² Currency values are in USD throughout unless indicated

Digging up the past: urban agriculture in Melbourne and São Paulo

Response to reviews (round 5)

The reviewer suggests the following two “advisory” adjustments.

Suggestion 1

“Our attempt to juxtapose specific local insights with general contextual observations was facilitated by our team research approach, whose capacity to “bring to light certain agreements and convergence” among collaborators has long been studied (Gillin 1954:4-5, cited in Blackwell 1955:369; also see Benington and Hartley 2004).”

These 1950 references are extremely old. Are there any other more recent references in the area as well as the 2004 one which is also reasonably old.

We think that citing sources on this topic from both the 20th and 21st centuries strengthens the point that team research is an effective way to understand issues from diverse perspectives. We have nevertheless added a more recent reference to the notion of working “separately together”:

P.4

Our attempt to juxtapose specific local insights with general contextual observations was facilitated by our team research approach, whose capacity to “bring to light certain agreements and convergence” among collaborators working “separately together” has long been studied (Gillin 1954:4-5, cited in Blackwell 1955:369; Siltanen, Willis and Scobie 2008:45; also see Benington and Hartley 2004).

REF:

Siltanen, Janet, Alette Willis, and Willow Scobie. 2008. “Separately Together: Working Reflexively as a Team.” *International Journal of Social Research Methodology* 11(1):45-61.

Suggestion 2

“Upper-middle class professionals and other “gentrifiers” seeking to create a “distinctive and authentic sense of place” established common cause with both developers and community organisers in the pursuit of green infrastructure and new markets for fresh food (Zukin 2011:161, Pearsall and Angelovski 2016:1).”

Could the authors reflect that they themselves may be considered upper middle-class professionals? How do their own interactions differ from what seems to be presented as a negative?

The quoted passage notes a finding about gentrification in the work of Zukin (2011) and Pearsall and Angelovski (2016). While the reviewer’s suggestions about research reflexivity have been useful in refining and expanding other parts of the manuscript, we would prefer not to insert a discussion about ourselves into this paragraph.