Towards city resilience, food security and territorial learning. Three territorial paradigmatic shifts triggered by the COVID-19 pandemic.

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Abstract *-According to projections, the urban share of the world population will grow to 66% by 2050, with people moving to cities seeking shelter and jobs. Whilst the current pandemic is questioning the validity of globalisation upon which our societies rely, cities are growing even more dependent. Although the in-comers are hoping the city will provide them with what they need, they themselves could help to co-create a new urban reality in which people learn from each other to build more urban autonomy. This collaborative process will need to be facilitated through new approaches in urbanism that we suggest tackling here through the issue of city food security. Throughout time, historical ties to the localised food production system have been disrupted: globalised food systems have encouraged unsustainable industrial production processes that have, beside generating pollution and reduced biodiversity, damaged our health, created dependencies, and has impacted upon food security. The objective of this chapter is to discuss the rationale for a new research project. Through a focus on Urban Agriculture in Lisbon, the project will analyse the potential for an urbanistic reform that could facilitate the creation of a sustainable food system based on sustainable agriculture, the circularity of activities, the empowerment of participants, equipped with 'soft skills' and the collective co-creation of sense-making of the city space. This chapter examines three shifts concerning our approach towards the metropolitan area of Lisbon paradigmatic as a contextual territory for urban agriculture. First, a shift away from a nature vs city dichotomy; then a reflexion on how cities could also become food production spaces and, finally, a shift away from global educational systems and geared towards context-territory-based problems to be solved by local participants through new forms of Territorial Education.*

Keywords - *Food security, circularity, urban agriculture, social urbanism, territorial education; resilient cities*

INTRODUCTION

While cities cover 3% of all land areas on the planet, they consume 75% of the world's energy, generate 80% of CO2 emissions, use large quantities of water and create an enormous amount of waste and pollution (UN, 2018). The objective of this research is to contribute to finding ways of making cities more sustainable. In particular, the aim is to increase cities' food security, citizens' sense of identity and belonging and to improve urban planning by integrating social urbanism values and social learning processes into it. The way in which we suggest doing so is to explore how Urban Agriculture (UA) projects could serve as platforms i) for the

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participatory creation of knowledge and skills in various target groups, ii) for the improvement of decision-making process and iii) to identify ways to assess the circularity of the food system processes and its contribution as a barometer in urban planning.

The research project described here adopts a multidisciplinary approach by working at the intersection of the two PhD programmes (one in education and one in urban planning). Finding ways of making cities more sustainable addresses the need to transform urban planning processes. – in addition to improving the way they are built and managed. This is a social learning and participatory issue, which will transpire through social urbanism only if both planners and stakeholders are involved. For this to happen, new types of platforms need to be created. New advances in Territorial Education (TE) can help this; learning will be further enhanced if young stakeholders learn skills and feel better equipped for their future, and if older stakeholders are also invited to learn and share their know-how. The objectives of this project relate to those of the CeiED research areas, in particular those of the CEM and CIDATE, to the research programme in social urban planning, and also aligns with the FCT objectives to make scientific outputs accessible to citizens.

In order to address the research questions raised by this book – i.e. to help us "increase the understanding, the challenges, the strategies of use and the management of the territory as well as processes and mechanisms of production of the urban space" - this chapter discusses three territorial paradigm shifts in three parts.

We first start by exploring how environmental and food security concerns, exacerbated by the pandemic have questioned the territorial dichotomy between cities and the countryside. Then, a focus on circular economies, which link UA activities to other activities, will emphasise the importance in setting up the boundaries of the food systems at stake. Finally, we will explore at what territorial scale, and in which context, learning and governance are being facilitated to promote the development of sustainable cities.

QUESTIONING THE 'VILLE ET CAMPAGNE' DICHOTOMY

In terms of 'human habitat', the dichotomy 'city vs countryside', accentuated in old – and newer – folk stories, has been even more accentuated at the end of the 20th c. and at the beginning of the 21st c., with rapidly growing urbanisation. In Portugal, nearly a third of the population (2.8 million inhabitants) lives in Lisbon Metropolitan Area (LMA) – the focus of our case study. A rapid urbanisation process there started with the country's entry into the EU (in 1986), its industrialisation, and turning its back on agriculture. 'Third Sector industries', such as tourism, rapidly developed. International businesses' headquarters relocated in Lisbon, cheaper than, say, London, and the capital city developed a unique capacity in integrating traditions with very forward-looking design, architecture or IT innovations. Such massive changes in the economy had impacts on the structure of the Portuguese society.

Greening Lisbon

Other changes, such as the rise of environmental movements in the 1970s and the progressive impacts they had on urban planning, resulted in concerns about pollution, poor city dwellers' health, and negative psychological impacts on communities living further away from their natural environment. This led to the will to explore how to make cities more sustainable. The Rio 1992 conference, and then the 1996 UN City Summit in Istanbul, initiated this process in view of understanding how sustainability could be put into practice in the context of urban development. The nomination of Lisbon as the Green Capital of Europe in 2020 was the result of considerable efforts to recycle waste, reduce CO2 emissions and green the city. Lisbon was the first European capital city to sign the New Covenant of Mayors for Climate and Energy in 2016, after achieving a 42% reduction in CO2 emissions from 2002 to 2014, surpassing the 40% initial goal for 2030; and reducing energy consumption by 28% from 2012 to 2017 (Sustain Europe, 2020). Changes were made to the city's Masterplan (in 2012), resulting in a considerable increase in green corridors and areas, a strong emphasis on public transport, walking and cycling, and the development of a Climate Adaptation plan which includes a programme to plant 100,000 trees and the installation of green infrastructure to help reduce temperatures. The city expanded its green strategy to ensure an increase of 250 hectares of green space between 2008 and 2019, and a total of 350 hectares until 2022. Currently, 85.3% of the population lives within 300m of a large green area. All this brought some aspects of the countryside within the city, mixing the two types of environment. Whilst, for long, cities were perceived as the cultural core but also the (polluting) industrial centres, new 'environmental pockets' within cities, such as vast areas of forest (e.g. 1000 hectares in Monsanto) represent considerable 'lungs' to the country, despite being 'urban'.

Concerns about the health of city dwellers, originally related to the dramatic levels of pollution in their habitat, have been accentuated during the current pandemic, and research on the links between our weak immune systems and our ways of living was encouraged. "*Those living in polluted cities are more at risk from COVID-19*", the European Public Health Alliance already warned in March 2016.

For the FAO (2010), 'greening cities' goes beyond increasing the area of parks; it also means 'ensuring an urban type of development that can guarantee jobs, a clean environment and a governance that is beneficial for all citizens, but also food security. Regarding this last point, the current pandemic has shaken our economic systems by generating concerns about food chains. This is encouraging people to think about whether cities could and should possibly be more food-autonomous. Besides, people are also starting to recognise that industrial food production, and the hegemony of intensive farming and livestock have caused health, environmental, even ethical problems (Shiva, 1993). It might be time to bring nature into cities, in line with the concept of *continuum naturale*, introduced in Portugal by Caldeira Cabral in the 1950s, which led to the famous notion of 'green corridor' defended by Ribeiro Telles (1997), foundation of the Plano Verde de Lisboa and later integrated in the city PDM (2008). It is also time to adopt a systemic vision of the landscape within the process of the formation of the city (Sousa Matos & Sares Batista, 2013: 2).

Re-integrating agriculture within cities

Economic crises have shown to affect our relationships to the 'urban vs rural territories' by encouraging subsistence UA throughout times. The dramatic rise in the price of food products during the 2007-2008 crisis was, the FAO asserted (2010 :5), the cause for a considerable increase (from 100 million to more than one billion) in the number of people chronically suffering from hunger. The most affected communities were poor urban ones. For the FAO (2010: 5), "*in order to green cities, one has to start by integrating numerous innovative solutions that emerged from poorer urban communities into urban planning reforms. One of these solutions focuses on urban and peri-urban agriculture*". In Lisbon, the FAO Information Office and the CPLP developed activities aimed at mobilizing local authorities to formulate Appropriate Food and Nutrition Strategies, in 2017. This initiative complemented health strategies focused on food and diet (2010-2020) (Graça et al., 2020). In line with this, the Lisbon municipality established the Lisbon Strategy (2010-2024), whose objectives focus on city regeneration, climate change adaptation and connecting green spaces (Santos et al., 2015). Besides, Lisbon's Master development plan (2014) and the Green Plan (2008), together with the Biodiversity 2020 Strategy, promoted UA, stressing that it can enhance sustainable urbanisation, restore ecosystems, contribute to climate change mitigation and adaptation, and improve risk management .

The existence of 20 parks and 750 allotment gardens for local organic farming (Sustain Europe, 2020: 38) results from green initiatives and the evolution of UA tradition. If, as Cancela (2009) points out, such tradition already existed in the 21th c. in Portugal, with the 'quintas de recreio' that provided the city with fresh products, the resurgence of UA nevertheless tended to be symptomatic, later on, of immediate basic needs (for food) that could only be met by city dwellers' autonomous initiatives. Thus, in the 1970s, with the degradation of the economic situation in Portugal and the return of people from former Portuguese provinces in Africa, some shantytowns grew in the peripheries of cities, in parallel with spaces for subsistence agriculture. Marginal spaces (roadsides, ancient farms, or unoccupied urban areas) have been used for subsistence agriculture throughout time and today, several squatter gardens still exist in Lisbon (e.g. Horta do Monte, Vale de Carnide and Oeiras) (Santos, 2011; Saraiva, 2011). Delgado (2017) identified that, in Lisbon, UA has been focused for very long on food production for self-consumption among formal and informal frameworks and the 2008 economic crisis brought about a significant increase in allotment gardens. In 2011, Lisbon municipality began the programme 'parquet Horticolas Municipais' (CML, 2016), which today comprises 25 urban spaces, involving more than 500 families. Few years later, in 2013, according to the Portuguese national report to habitat III (Branco, 2016), 16 out of the 18 LMA districts had allotment gardens, "*covering 27 hectares of hortas urbanas*" (Delgado, 2017:140).

From the beginning of the 21st c. informal UA initiatives were backed up by more institutionalised ones and the question is now whether urban planners are actively going to facilitate further move towards city food-autonomy. In the same way that Paris has seen roof-tops being transformed into farms, the idea of making Lisbon less dependent on food imports makes sense.

Numerous authors have highlighted the difficulty in shifting towards 'Sustainability food urban planning'. Cina (2015), who worked on the Italian peri-urban fringes,

stressed that such an innovative shift was impeded by a strongly limiting obstacle: the powerful prevalence of buildable land values on agricultural land values and the consequent relegation of the PAA to the role of 'reserve for new urbanisation'. Others (Pothukuchi and Kaufman, 2000) highlight that, still in 2000, most city planning literature ignored food issues. Nevertheless, the rise of the urban food question in the Global North (Morgan, 2009) has boosted an extensive system of networks, associations, research centres and training institutes, technical and regulatory instruments have been developed. The acknowledgement of the role of spatial planning in food planning, as well as the attempt to build new agro-cities, such as Almere Oosterworld, where the challenging objectives (to provide 50% of urban / agricultural areas) is associated with a bottom-up implementation model (Jansma et al., 2013), has emerged (2009: 58). Despite difficulties, "*a new interest for re-integrating agriculture into urban areas has emerged in Western cities as part of food movements*" (Poli, 2017: 2). These were born in the United States and emerged from a food insecure system that had become dependent on agro-industry, with a high incidence of health problems related to poor nutritional value and the massive presence of additives in food (Feagan, 2007). Some communities even claim a role in the organization of production and consumption chains in their territories, and appeal to acquire a certain 'food sovereignty'. In the US, certain territories have actually been redesigned according to "Community food security" in what has grown to be called "a process of re-spatialization of food systems" (Feagan 2007: 27). In many big Western cities, centres of agriculture have been created producing a phenomenon called by some authors "Agropolia" or "Agropolis" (Donadieu 2011; Mougeot 2005; Schröder 2011). In some cases, this has resulted in removing agriculture from the soil and push it onto buildings (roofs, skyscrapers, balconies, etc). In some others, the opposite has happened: for instance, 'guerrilla gardeners' reclaim urban soils to cultivate them. A striking case is that of Detroit, a city that went bankrupt because of the automobile crisis from 2008 to 2014, and which is now being transformed into a new hybrid city form with important UA initiatives (Dion, 2015; Ron Finley's TedX presentation).

In Portugal, concerns about food, diet, and health were addressed in 2012 through the National Programme for the Promotion of Healthy Eating, and later grew into the development of a national strategy throughout 2010–2020 (Graça et al., 2020). Evidence needs to be drawn to illustrate new food systems issues arising from economic transformations post COVID-19. The current pandemic is creating an opportunity to re-explore how we produce food, who does it and how food relates to culture, history and identity.

With globalisation being questioned and, with it, the sustainability of food supply and food chains, the schematic vision of 'countryside producer of food' vs 'dependent cities, consumers of food' may be in the process of being reformed. A continuum of nature within the city is being created and cities are becoming hybrid territories. Beyond the 'ville et campagne' dichotomy, the current pandemic has introduced a new approach of the 'urban territory' that combines – rather than oppose – the physicality of the city to the digital networks that underpin its life, its co-creation (Smaniotto Costa et al., 2019), the planning of its activities and learning how to live together.

CIRCULAR ECONOMIES: ON WHICH TERRITORY SHALL WE 'CLOSE THE LOOP'?

Giving more attention to food systems within cities is going to open up a debate concerning how all types of activities and actors could connect through a 'circular economy'. This is because, as explained by Barbero and Tamborrini (2015: 517), "*the environmental sustainability related to food systems involves the entire food's life-cycle and every stakeholders who take part in it. That includes food production, transformation, conservation, transport, direct sell to the consumer, consumption habits and disposal*". Thus, in this second part, we examine the territorial implication of developing a no-waste circular city.

Towards a city that feeds its dwellers. UA and Food security

The fact that Portugal focused on its industrialisation and considerably reduced its involvement in the agricultural sector when it joined the EU, led the country to suffer from an unbalanced food system within which it needs to import food to meet its own needs. With the current pandemic, concerns are expressed regarding food systems. According to the World Food programme, the Covid-19 pandemic could see more than a quarter of a billion people suffering from acute hunger worldwide by the end of the year unless swift action is taken to ensure that food supply chains keep running . The FAO (2002) defines food insecurity as a socioeconomic situation that leads to limited or uncertain access to the nutritious food necessary to maintain a healthy life. Various studies have focused on food security in Portugal (Alvares and Amaral, 2014; Maia et al., 2019; Gregorio et al., 2018). From 2014 until now, these estimated food insecurity in Portugal to be affecting on average 17% of the population. Learning how to strengthen food security and autonomy could be done through UA initiatives if those were better coordinated and integrated into urban planning.

The definitions of UA (Lourenco-Lindell, 1995; Moustier and Danso, 2006; Mougeot, 2006) all converge to describing UA as the growing of plants and the raising of animals within and around cities (Van Veenhuizen, 2006). It also includes concepts such as aquaponics, indoor agriculture, vertical or rooftops farming, edible walls and landscapes, school and community gardens, and other forms of integrated agriculture (Skar et al, 2020).

During the last 20 years, research has shown that UA can contribute to minimising the effects of climate change and to improving the quality of life in urban areas. McDougall et al. (2019) focused on the high yields generated by small-scale UA. Altierri and Nicholls (2018) investigated how agro-ecology, which can currently provide 15 to 20% of global food, could help cities reach a state of food self-sufficiency. Saavedra et al. (2017) investigated food system transformation through changes of diet. Howard et al. (2008) showed how Globally Important Agricultural Heritage Systems (GIAHS) could carry on feeding communities around the world. A has also been extended geographically through the CPUL concept - Continuous Productive Urban Landscape (Viljoen et al., 2005), which interconnects urban food producing landscapes within cities.

Various studies have been carried out on today's revival of UA in Portugal. Mougeot (2015) focused on hortas urbanas and studied how Portuguese innovative short food chains can be drivers for sustainable urban development. Saavedra et al. (2017) evaluated the agro-ecological potential of Lisbon to increase

its Regional Food Self-Reliance (RFSR). Branco (2016) explored the historical evolution of the revival of UA in Portugal, and identified the beginning of the 21st c. as a turning point, when Portugal started benefiting from European programmes such as the Leader + initiative (2000-2006), which supported the PROVE (national short food chain enterprise orientated initiative connecting producers directly with consumers – PROVE, 2017). The first formal Portuguese allotment garden opened in 2003, led by LIPOR. In 2011 Lisbon started an ambitious programme (Parques Horticolas Municipais). The Portuguese National report to Habitat III (2013) listed allotment gardens initiatives (in 16 out of 28 districts) that constituted 27 hectares of hortas urbanas. The 2017 PRONE Programme (Portugal national short food chains enterprises oriented initiative) connected producers with consumers. The European programmes 'Cost Urban Allotments Gardens in European Cities' (2012-2016) and 'Cost UA Europe' (2012-2016) strengthened the connections between Portugal and Europe. Besides, Portugal, with 136 other countries, joined the Milan Urban Food Policy Act (OIKOS, 2017), an International Protocol that engages cities in the development of sustainable urban food systems (MUFPP, 2015). In the context of this Pact, Portugal won three awards through projects carried out in Funchal in 2019 and 2020, with a focus on social and economic equity. As stressed in the Pact, "*The Covid-19 emergency has shown that cities are at the front line to provide solutions to citizens' needs. In particular, food policy teams have to face many unexpected urgent challenges as the urban food systems have been severely hit*".

UA within the wider food systems and circular economies

The 29 UA initiatives mapped out by Delgado included allotment gardens (15/29), UA capacity building programmes (6/29), projects focused on commercial food distribution through short food chains (4/29), urban farms (3/29); and one gourmet shop. As Delgado (2017: 141) stressed, "So far, a key lesson is the absence of UA from a city food system approach that connects all stakeholders involved". Despite this, examples of 'connected' food systems exist – e.g. through the work of the cooperatives Fruta Feia (Fruta Feia CRL, 2017). ADREPES, or the PROVE programme, all good applied examples of 'social economy and entrepreneurship'. Various schools of thoughts on circular economies have developed since the 1970s, referred to as 'cradle to cradle', 'industrial symbiosis', 'industrial ecology' (Beaulieu, 2015; Sauvé, Normandin and McDonald, 2016; Le Moigne, 2018). For the Ellen MacArthur Foundation (2019), the benefits of a circular approach are both social (it promotes 'green jobs' and eco-innovation), economic (improved productivity, efficient use of inputs and costs reduction) and environmental (reduction of raw material and energy consumption, of waste creation, of GHG emissions and improvement of soils' quality).

The issue of circularity is core to 'sustainable cities'. The linear urban metabolism (Rogers, 1997, Daigger, 2009) which dominates in contemporary towns is causing a plethora of problems (Skar et al. 2020). A circular approach leads to a redesign of the urban, peri-urban and rural spaces, and to a new conceptualisation of their interlinkages (Skar et al. 2020). The circularity of cities therefore calls for a reformed urban governance where stakeholders become better connected and interdependent. Our research project will therefore identify which activities UA could be linked to for it to contribute to 'closing the zero-waste economic loop' so that all by-products can be re-used in new innovative ways.

Our second paradigmatic shift triggered by concerns for food security in cities thus suggests that integrating circular production processes in urban planning within a metropolitan territorial geo-socio-economic system could help make cities more sustainable.

TOWARDS A TERRITORY-FOCUSED EDUCATIONAL APPROACH

Social urbanism

Creating a circular economy requires the construction of collective strategies, negotiation and much learning from each other. It implies that urban planners invite more participation and include food production - and the allocation of land for such purposes - as part of the urban planning process.

As Cancela (2009) highlighted, laws have been created that recognize agriculture as a compatible activity within the green infrastructure . However, as Chapter III of the UN-Habitat III report illustrates (Cavaco, 2016), too little focus, if any, has been put on making cities 'circular'. Oktay (2012), Innes and Booher (2010) and Healey (2006) suggested to work on 'sustainable urbanism' and to critically revisit collaborative planning. Participatory planning approaches have emerged, challenging the technocratic practices of the past through the promotion of more inclusive and democratic decision-making processes (Calderon, 2012; Healy, 1996). The work carried out on social urbanism and UA by Spada and Bigiotti (2017: 51) stressed that a "*new conception of the city could improve the use of UA to overcompensate for the empty spaces between industrial and rural areas, as well as sub-urban voids*". Work on governance processes, initiatives such as roof-top agriculture, and research on food justice, pursued the same objectives (Skar et al 2020; Toporova, 2018; Horst et al., 2017).

Measures of the benefits generated by such new models have vaguely been investigated. Deelstra and Girardet (2000) used the urban ecological footprint concept (Rees and Wackernagel, 1996) to measure the sum of land and water required to meet material consumption and waste discharge of a city's population. Developing 'barometers' of the circularity of economic activities could also help (Ellen MacArthur Foundation, 2018). Food production could be approached as an urban 'enterprise', engaging directly with the concept of Urban Metabolism (Girardet, 1999): circular food production would significantly reduce the ecological footprint of food consumed in cities (Jarosz, 2008).

As Oliveira and Morgado (2014: 6) explain, "*A comprehensive analysis of how the current organization of food production, processing, distribution and consumption in Metropolitan Areas requires a broader concept of a "food system" (…) at a scale that encompasses the whole production-loop*". So far, the rural-urban divide approach has persistently resulted in ill-conceived policy and planning tools (Tacoli, 2006). The fact that, in the LMA, 37% of the land is used for agricultural purpose, justifies the need to integrate its food system into urban planning strategies since, as Sonnino (2009)stresses, it relates to urban and territorial planning at all levels (food security, sustainability, social justice).

Our research project is thus exploring how social urbanism could tackle the long-term changes that COVID-19 will have triggered, focusing on participatory governance through UA. The current research context is favourable to it. In

Europe, the New Urban Agenda stresses the 'transformative power' of urbanisation to operationalising sustainability. In Portugal, the Directorate General for Territorial Development, in its 'Strategy for sustainable cities 2020', emphasised that "*UA is a growing social urban phenomenon, not only leading city's inhabitants to good environmental practices, but also helping the requalification of urban spaces with a positive contribution to social inclusion*".

The emergence of Territorial Education (TE)

The multiple and complex links between education and territory are generally better understood although "*the influence of territoriality on [changing] education has only really been tackled for fifteen years*" (Champollion in Boix et al., 2015: 12). Yet, as Lahire (2012) emphasises, no other notion is at the same time as essential to the reasoning of human and social sciences and paradoxically as neglected as the notion of context.

In TE, teaching and learning are understood as dynamics that both can adapt to territorial specificities and can contribute to territorial sustainability by helping to re-establish respect for an adapted relationship with the local territory without losing a global perspective (Boix et al., 2015). Many institutional networks have recognised this and have been mobilized in many countries to facilitate the integration of a school in its territory, in line with programmes focused on Education for Sustainable Development (Francis et al, 2011).

Thus, for instance, Howard et al. (2019) presented the Living School concept, whose main message is that the learning outcomes of education for sustainability have to be meaningful in practice for communities, who therefore get a sense of ownership of the concept through acquiring the skills and the ethos that will lead to its operationalisation. These include critical thinking, communication, collaboration, creative problem solving, character education, and citizenship but also innovation, creativity, computer-enhanced learning, entrepreneurial mindsets (Fullan and Langworthy, 2013), but also outdoor learning (Williams and Brown, 2012), positive education, as well as social-emotional learning (CASEL, 2013) and health (Morrison and Peterson, 2013). These competencies, together with the principles of Community Economic Development , call for holistic approaches to creating sustainable communities. Work on living schools and CED helped re-localise and contextualise work on sustainability.

In the transdisciplinary agro-ecology educational projects presented by Francis et al. (2011), people felt that work on sustainable farming and food systems created an effective learning landscapes "*for students to deal with complexity and uncertainty and a wide range of biological and social dimensions, life-cycle analysis and consideration of long-term impacts*" (Francis et al, 2011: 226). In those projects, students develop new governance and management systems in order to improve the interconnections between agriculture and overarching resource systems of food, energy, water and land-use, using a whole set of skills - such as negotiating, open-mindedness, and appreciation of different perspectives. In Landscape Architecture, experiential learning and 'placed-based education' have also been advocated; Keeler (2011), for instance, documented the benefits derived from the 'Urban Farm educational Program' (University of Oregon) and concluded that "*place-based education implies a process of re-storying, whereby students are asked to becoming part of the community, rather than a passive observer of it*".

Overall, research has demonstrated that sustainability-oriented programmes could not be successful unless people directly concerned by them were also involved in their design and running (Healy et al. 2013). This implies an appropriate size of activities, at a manageable scale, but also a move away from a teacher-student model and more active participation. As Kolb explained (1984), learners need experiential components to really understand concepts, as well as systems perspectives (Bawden, 1991) to apprehend issues such as sustainable cities.

In Lisbon, about a third of the UA projects (including the LIPOR programme, Lisbon Allotments Parks, and Cascais allotments) focus on mandatory training on organic production or composting, education and capacity building (Abreu, 2012). As Cancela (2009) showed, some UA initiatives created small-scale pedagogic kitchen-gardens in schools, or "Pedagogical allotments", where the public can visit and learn farming techniques, or even farm their own plot. "Olivais Pedagogical Farm" is one of the first examples, together with the "Alta de Lisboa" where, thanks to the organization of local residents, an "urban agricultural park" was born in a truly bottom-up approach (Cancela, 2009: 7). Practically all the UA initiatives explored by Delgado (2017) include educational activities in parallel with food production. Learning is enhanced both conceptually and through experience and skills. TE based on UA could also include debates on health and immunity (Saavedra et al., 2017) – much needed during the pandemic - that could be one main motivation for learning about sustainability.

For citizens, institutions, small businesses and urban planners, working together at linking activities that could make the city greener – with UA at the core of a circular economy – could be a promising way to appreciate what 'operationalising sustainability' through co-creating a sustainable city, might imply. Such process would "*focus on the collective influence and responsibility of all stakeholders in creating inclusive and responsive public spaces*" (Smaniotto et al., 2017: 53), and promoting integrated and lifelong learning education, backed by knowledge development, policies and democratic practices, which would assume the territory both as educational agent and content (Villar-Caballo, 2001). This could be done by building on the participatory platforms that have recently been put into place in the context of the city's Food Strategy, presented in the next section.

Integrating TE into participatory urbanism

Very recently, a research report came out (Serra, 2021) highlighting that Lisbon still needs a comprehensive strategy to integrate the Food System into urban planning and spatial management. The European project conducted semi-structured interviews with 31 types of stakeholders strategically identified to prioritise preferences for a food strategy (Serra, 2021: 6). These priorities were ranked and, out of 21, short food supply chain, food security, food waste, and food literacy scored the highest and helped to identify four main clusters (boosting agricultural production; stimulating sustainable food distribution; developing food education; and valuing waste). Through interviews and continuing participation, requests were identified to formulate a food strategy that would allow to improve elements belonging to these clusters. Thus, for instance, a global food strategy could help boosting agricultural production by facilitating the provision of technical and financial support to farmers, or by supporting organic farming and incentivising UA. About half of the people being interviewed selected a 'food platform' as a preferred governance platform for the development of a

food strategy (Serra, 2021: 21). The potential for making more land available for food production, as well as shortening the distance between producers and consumers, were perceived as real benefits from a Food Strategy, which could also provide funds for better governance, education and training (Serra, 2021: 24). Interestingly, this research facilitated online, interactive, participation and not only proved to be successful but also could be worked on to carry on integrating a comprehensive food strategy with urban agriculture and circular economies.

In the research project discussed here, pursuing work on the development of such a learning platform will be key to integrating very different urban citizens as active participants in the co-creation of urban space and the resilience of their city. Doing so "*will require a rich understanding of how people live, encounter others and move around, and of how people use public spaces, as well as what their needs and preferences are*" (Estrela and Smaniotto, 2019: 47). Therefore, the core 'facilitator' of social urbanism will have to be networks, which will facilitate SL outside educational institutions, with the exchange of different types of knowledge between alternative types of 'experts' (Castells, 1996), and through dialogical processes of joint-meaning construction (Johnson and Morris, 2010; Veugelers, 2011).

The radical divide that was drawn in the past between science and other types of knowledge (local, traditional, indigenous) has led to deep contradictions at the centre of contemporary epistemic debates. "*The challenge faced is that of converting [learning platforms] into cosmopolitan centres capable of building bridges between different cultures and types of knowledge in a process of epistemological decolonization*" (Teodoro, 2020: 94).

In cities, developing online platforms will help not only to consolidate networks and social learning but also in constructing 'mediated places'. In the same way pandemics changed the urban landscape throughout time, mass media also contributed to shaping public spaces. As Zammit et al. explain, in the 21th c. "*the introduction of newspapers activated public spaces in new ways and cafes became hubs for community building by providing a space for information exchange and dialogue. (…) As ICTs continue to change our social dynamics, they simultaneously modify the space that we use daily*" (2019: 138). With the current pandemic and need for social distancing, urban and public spaces need to be re-thought. This might lead to the emergence of 'third place spaces' that reflect 'distant proximities of socialities', which could well be mediated by ICTs (Graham, 2004, in Smaniotto Costa et al., 2019). Recently, the CyberParks research project (2014-2018) highlighted the need for a conceptual framework for the production of such 'digitally mediated public space' that it defined as "*space where nature, society, and cyber-technologies blend together to generate hybrid experiences, opening new possibilities of use and enhancing quality of urban life*" (2019:4). Since social interactions are important for defining a sense of place and for contributing to people's physical, cultural and spiritual well-being, one challenge for TE is going to create open learning spaces, both physical and virtual, that enable people to be in a public space and to practice sociability on neutral ground.

The lesson drawn from this third paradigm shift is therefore that metropolitan areas could constitute relevant territories within which to contextualise education for sustainability if the new forms encouraged are to be genuinely inclusive and enable learners to also be the 'change agents' in city transformations.

CONCLUSION

The ways in which various aspects of globalisation have been questioned due to the current pandemic has also led to boosting reflection on how to make our cities more sustainable and food secure. This chapter has highlighted three paradigm shifts that are transforming our vision of the city (previously seen as the 'opposite' of the countryside, and certainly not a place for food production) and are suggesting that metropolitan areas could constitute relevant territories for 'education for sustainability'. Territorial Education has the potential to both help learners to grasp the multidisciplinary conceptual dimensions of 'sustainability' and to enhance experiential learning by focusing on practical skills and concrete collaboration amongst various stakeholders, on projects such as UA. It is characterised by broader learning experiences, amongst various types of stakeholders all engaged in the co-creation of their cities, through physical as well as online networks.

Whilst this research project has gathered evidence that Urban Agriculture can greatly contribute to the sustainability of a city, work now needs to focus on both deepening research on the evidence between the contribution of UA and the achievement of food security. Besides, most effort will focus on creating learning platforms that will most appropriately facilitate territorial learning.

To do so, building on the lessons drawn by educational projects such as that experimented on with university students in the Jakarta Metropolitan Area by Kinoshita et al. (2019) will be most useful. That educational programme focused on city sustainability, fostered five key competencies: systems-thinking, anticipatory, normative, strategic and interpersonal competencies. The learning experiment was based on a fictional narrative describing sustainability issues, in which the protagonist was the head of the local urban planning bureau. Materials were developed in the Case Method style (it reflected real-world issues and various perspectives on them), and students were required to address the problems that the protagonists face. The programme also focused on hypothetical scenarios regarding land-use patterns which addressed high uncertainty in urban future development and the respective impacts of various courses of action (Albert et al., 2015). Working on the scenario-based approach helped students to increase their anticipatory competence (Albert et al., 2015) and the production of cognitive-map was expected to bolster the normative and strategic competencies by tackling conflict resolution and the building of trade-offs. Additionally, workshops improved interpersonal competencies by encouraging communication among participants from different backgrounds (Brundiers et al., 2020).

Because food systems and sustainable cities are complex issues involving a multitude of stakeholders with different perspectives, we also feel that Soft Systems Methodologies (SSM) (Checkland, 1999) could considerably help in collectively building a territorial learning platform involving both educational institutions, urban planners and other stakeholders. As Barboro and Tamborrini (2015: 521) explain, "*Systemic Design approaches open up the possibility of innovative and virtuous business models in which the waste that today is a burden tomorrow can become a resource for new industrial systems offering numerous development opportunities*". In line with the design of systemic approach, we feel that Adaptive Management (AM) will also be helpful in developing territorial learning approaches focused on UA, food security and city resilience. AM is a systems based approach

to environmental and resource management in situations characterised by uncertainty and complexity. AM emphasises communication amongst stakeholders and generates an iterative learning cycle amongst them, which constitutes the basis of a management process that becomes adaptive. Bunch (2003), who combined AM and SSM, applied it to water resources management and described the various steps and techniques he used. Since the pandemic imposes social distancing, the creation of such collaborative workshops will have to be organised and carried out online.

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BIOGRAPHICAL NOTE

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