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Transitory landscapes and urban agriculture: possibilities from urban expansion scenarios in Guaratiba, Rio de Janeiro

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Abstract Urban and periurban agricultural landscapes have been given more attention by academic literature over the past years. Acknowledgement of the importance of agricultural activities in cities has often managed to expand its establishment and maintenance in inner cities and their outskirts. This paper discusses urban agriculture in city peripheries in a scenario of urban expansion, deriving from the concept of multifunctional landscape. Focusing on the Guaratiba neighbourhood in Rio de Janeiro, it argues that the process of urban expansion of the city does not invest in the inclusion of this activity within the socio-environmental dynamics of the area. The paper concludes by stressing that city's fringes present experimental possibilities for new approaches in planning and development through a multifunctional perspective. This is where the practice of agriculture is one of the strategies that can incorporate environmental values and local traditions.

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1 | INTRODUCTION

Urban expansion areas bring specific challenges for urban planning and landscape design. Among these, the relationships established between agricultural practices and their urbanized surroundings are the most pressing ones, since they bring about a hybrid landscape, characteristic of the peri-metropolitan spaces (Farias 2012). In many situations, urban fringes are regarded as transitory landscapes either by the public administration, developers, the real estate, the industrial market, or other agents. Given their relevance, transitory landscapes should receive better attention from urban and landscape studies or practices.

With a very particular dynamics, these areas would need specific planning and design approaches to acknowledge their uniqueness and ensure their environmental and cultural diversities. An important perspective for the research of transitory landscapes would initially be the study of landscape dynamics, taking into account the links between spatial planning, environmental dynamics and daily activities. A number of academic studies have pointed out problems caused by the urban fabric pressure over the agricultural and conservation areas which have been improperly regarded as areas for urban expansion (Bicalho 1992, Hietala *et al.* 2013, Fernandes 2016). As a result, cities and their peri-urban areas suffer with unnecessary losses of the existing heritage and socio-environmental connectivity. This also occurs with agricultural landscapes in many Brazilian cities, including Rio de Janeiro. These landscapes, located at the city's fringes, have been gradually replaced by other urban uses. One of the consequences is that agricultural activities, with their different modalities, connectivity and functions, have been disregarded within the urban dynamics.

This paper presents a discussion on pressures for urban expansion over urban agricultural landscapes within urban fringes, based on the concept of multifunctional landscapes. It focuses on Guaratiba, a large neighbourhood at the city outskirts of Rio de Janeiro. This neighbourhood, which has been a traditional area of food and ornamental plant production, is now under high pressure for development in a scenario of urban expansion. Therefore, the paper is organized as follows: initially it brings the concept of multifunctional landscapes followed by a discussion of the importance of agricultural activities in the cities. Subsequently, the paper looks at Guaratiba and its agricultural landscapes, highlighting its environmental fragilities and the difficulties that arise from the pressures of city expansion. The paper concludes by stating that the process of urban expansion does not value the inclusion of this activity within the neighbourhood socio-environmental dynamics. It also argues that urban agriculture, when acknowledged from its multifunctional aspects, can play a relevant role in the socio-environmental dynamics of urban outskirts.

2 | LOOKING AT MULTIFUNCTIONAL AND AGRICULTURAL LANDSCAPES

Academic literature focusing on urban agriculture usually highlights its multifunctional aspects. They concentrate on the various functions of urban agricultural practices taking place in the urban environment besides food supply function, such as income generation, food security, reduction of inequalities and social inclusion, ecological diversity, reduction of environmental risks, recreation, among many others (Tóth & Ticupe 2017, Viljoen & Bohn 2014, Cockrall-King 2012, Aubry *et al.* 2012, Santandreu & Lovo 2007). From this perspective, this paper brings forth a discussion on urban agriculture practices within urban peripheries through two main approaches: multifunctional and urban agricultural landscapes.

2.1 Multifunctional Landscapes

The concept of multifunctional landscapes is relevant for urban and landscape planning since it reinforces the importance of acknowledging different environmental services that can be provided together from the same landscape but in different scales. Environmental services are complex systems of interaction between nature and culture, in which agricultural landscapes represent an important materiality (Tóth & Timpe 2017). They bring us the challenge of thinking about urban and metropolitan areas on the grounds of an ecological process able to achieve a better quality of life, both for city inhabitants and the ecosystem. Through this process, agricultural landscapes represent an important factor for this socio environmental quality.

Landscapes are naturally multifunctional, as De Groot (2005) observes. However, often human activities tend to transform them into mono functional landscapes. This usually leaves a negative impact on their socio environmental performance not only at local but larger scales as well. It happens, among other reasons, due to the considerable lack of information about the several environmental services that landscapes can provide, leading to wrong design and planning decisions (Naveh 2001, De Groot 2005, Aubry 2012). Working with this argument, De Groot (2005) points out that “once the functions of the ecosystem or landscape are known, the nature and the magnitude of values for society can be analyzed and accessed through goods and services offered by the functional aspects of the ecosystem (p. 178)”.

Through this observation, along with the intention to contribute to the analyses of different planning alternatives, De Groot (2005) organized environmental services according to their functions within the landscape, such as, production, regulation, habitat, information and support. For instance, the regulatory framework, contributes to flooding and erosion prevention, influencing climate conditions, providing natural draining and irrigation systems, to list a few. Subsequently, (see De Groot 2005 p.179-180), the functionalities – which are organized separately for systematization, but are clearly interconnected – are individually outlined, confirming the importance and relevance of the concept for studies of urban and landscape planning. As it will be seen later on in this study, urban agriculture can be regarded as a multifunctional landscape due to several underlying socio environmental functions and services inherent in the activity itself. In an increasingly urbanized world, the idea of multifunctional landscapes brings a malleability that can foster new urban experiences and solutions, particularly considering the connections between environmental and cultural dimensions.

The environmental dimension is one of the two main grounds of the multifunctional landscape concept, which has always been a strategic part of landscape studies over the years, at different scales (Thompson 2014, Yu 2017). Ecology, for instance, is used as a reference for a broader approach that understands landscape as a dynamic and complex web of interdependent environmental functions and services. Notions of balance and diversity, the importance of transparency and visibility of natural processes, connectivity and matrix, as well as resilience capacity are some of ecological concepts used to understand landscape from its multifunctional aspects (Costa e Pinheiro Machado 2012). Planning and landscape proposals that stem from these multifunctional perspectives usually favour natural processes, thus presenting strong reduction of possible environmental costs.

The cultural dimension is another important basis for the concept of multifunctional landscape directly reflecting on landscape environmental structures. Corner (1999) argues that, from a conceptual perspective, the word landscape is a verb – and not a noun. He stresses on landscape’s interactive role as an agent for multiple cultural interpretations, since it reacts with or against human

actions. Multiple different cultural groups constantly interact with landscapes, adding a number of meanings, values and functions over the years. Landscape transformation is thus a continuous process driven not only by natural dynamics, but also through multiple cultural interpretations and appropriations (Thompson 2014, Vick 2017, Yu 2017).

The recognition of the multifunctional aspects of landscapes is thus of paramount importance for a discussion of urban expansion over city outskirts. Not only to preserve different environmental values, but also to maintain a diversity of cultural uses, including agricultural practices. Lovel (2010, p.2500) suggests that “urban agriculture should be evaluated based on a framework of landscape multifunctionality, which accounts for the many services or benefits that can be provided by agricultural land uses”. This is also a relevant argument for the conciliation of agricultural uses and urban expansion. Aubry *et al.* (2012 p.430) argue that “territorial sustainability is strongly determined by multifunctionality: when urban dwellers and planners recognize that, in a given area, agriculture makes a contribution that cannot easily be replaced by other land uses, they may be inclined to protect it against urbanization.”

2.2 Agricultural Landscapes

The different agricultural practices in the city public and private spaces are urban experiences that can contribute to a critical reflection about the concept of multifunctional landscapes, mainly in expansion areas. Urban agriculture is carried out in public or private urban spaces, in central areas or within peripheries of the city. Generally, the cultivation – being food, medicinal or ornamental plants – is for personal use or for commercialization at a small scale in local markets or it may even be for bigger markets at medium or large scales, done through associations or distributors. Thus, it is an inter-scale urban activity with different spaces for production, distribution and consumption.

Compared to its rural counterpart, urban agriculture demands less space and can be found in a broad range of typologies and locations: from large agricultural parcels in urban peripheries to yards, porches, vacant or empty lots, green roofs, squares, parks, planted terraces and walls, avenues, riversides, wetlands and many others (Santandreu & Lovo 2007). This diversity of typologies and spaces introduces a complexity maximized by contradictions in scales and forms of occupation. It demands new approaches about the uses and functions of open spaces and, therefore, about its form and design. It discloses new opportunities to look at green urban areas and their role in reducing socio environmental impacts, along with opening opportunities for social inclusion and accessing community needs (Donald & Blay-Palmer 2006, Napawan & Burke 2016, Connolly 2017).

Brand & Muñoz (2007) and Coutinho & Costa (2011) provide an interpretation of the multiple functions of agriculture in an urban space based on the understanding of three city concepts: the ecological city, the productive city and the inclusive city. These categories will help understand the directions of contemporary discussions on this subject, as along with emphasizing the importance of understanding the relations between urban landscape transformation and food production.

The concept of an ecological city is particularly important for studies that stress on the importance of urban agriculture from the perspective of expanding urban biodiversity, typologies of public or private green areas, and reducing disease vectors, among others. They share the vision of a city with a predominantly ecological context, where the dichotomy of nature x city is contested. Although authors such as Brand and Muñoz (2007) and Coutinho e Costa (2011) localized this approach from the 1980s onwards, the landscape architect Ian McHarg (1969) had long before advocated the

importance of understanding natural processes in city and territorial landscape design and planning. In addition, Nasr *et al.* (2014) point out that Ebenezer Howard, Le Corbusier, and Frank Lloyd Wright considered urban food production in their visionary urban diagrams and plans.

Productive city, on its turn, is a concept that advocates the idea of a city capable of generating income from the production, distribution and consumption of food - not just vegetables and fruits but also small animals. In addition to open spaces, disabled or obsolete architectural structures could be used for this purpose (Cockrall-King 2012). Here the dichotomy of the rigid differentiation of roles between city and country is challenged. The idea of a productive city argues, among other issues, that it is possible to organize and manage urban space so that public or private open spaces, through a multifunctional perspective, can also produce food on a local scale, in order to be included and considered in the economic dynamics and public policies of the city. Coutinho and Costa (2011 p.85) argue that the idea of a productive city recognizes it as “a plausible alternative to serve the marginalized and undernourished urban population in the contexts of several crises.”

Finally, the concept of an inclusive city contributes to highlight the potential of urban agriculture as an “element of social inclusion as long as local knowledge and initiatives become valued and considered as building elements of cultural identity” (Coutinho and Costa 2011, p. 85). In fact, several studies highlight the importance of urban agriculture as one of the social inclusion strategies of several social groups with lower possibilities of social inclusion, such as low-income population, refugees, immigrants, among others, since food is a human right (Aubry *et al.* 2012, Nadal *et al.* 2018)

These multidisciplinary aspects of urban agriculture, exemplified and discussed in the three city concept, expand theoretical approaches able to deal with the production of food in cities and their surroundings. Besides, this “argumentative flexibility” (Brand and Muñoz 2007) of the conceptual and practical constructions of urban agriculture allows it to be appropriated and discussed by several fields of knowledge.

Mougeot (2000) argues that urban agriculture differs from the kind that is practiced in rural areas because it occurs in the city, and mainly because it is defined and established from its integration and articulation with urban economic and ecological systems. Coutinho and Costa (2011) follow this point, adding that the differences between rural and urban agriculture are therefore more complex than the simple differentiation of locality. It can also be included the specific spatial, socio-cultural and political specificities of cities which, when added to the previous ones, certainly contribute in highlighting the role of urban agriculture in the processes of reinterpretation and transformation of the urban and peri urban landscapes.

Studies on urban agriculture in Brazil (e.g. WinklerPrins & Oliveira 2010, Vidal 2009, Santandreu & Lovo 2007, Ferreira & Castilho 2007, Coutinho & Costa 2011, Sperandio *et al.* 2016) or in other countries (e.g. Donald & Blay-Palmer 2006, Han & Pieschel 2009, Viljoen & Bohn 2014, Tóth 2017) stress on several positive aspects of importance to the study of landscape transformation in the city outskirts. They include the socio-environmental contributions of urban agriculture as being important. With regards to the social approach, it was emphasized that poverty reduction can be achieved through food production for personal consumption or for commercialization at the local scale; recreation and leisure as occupational activities; and the strengthening of popular culture through local production of food, medicinal and ornamental plants, to quote a few examples. From an environmental perspective, studies also point out the reduction of the gap between food production and its consumers, the formation of micro climates and biodiversity maintenance, the promotion of a better water infiltration in the soil, the prevention against rats and other vectors of diseases in sites

that were once abandoned, and other environmental services. From a conservation perspective, agricultural areas of the city outskirts can become buffer zones, protecting and separating conservation areas from urban expansion. Therefore, its multifunctional character becomes very clear. Above all, in the majority of situations where the landscape was once rejected, underutilized and non-productive, it started to be appreciated when it became a productive landscape in its broader meaning.

In an important study about the practice of urban agriculture in Brazil, Santandreu & Lovo (2007, p.19) identified more than 600 initiatives in metropolitan areas around the country: "it is a reality that encompasses a large variety of contexts, presenting a broad capacity for expansion and the possibility of consolidating itself as a multifunctional activity". They argue, among other issues, that urban pressures for city growth do not usually consider the potentialities of urban agriculture in public policy making, which can compromise the many socio-environmental opportunities that the activity offers. In Rio de Janeiro, this research demonstrated the importance of the aforementioned practice to enhance existing experiences, promote dialogue among different knowledge, break the social isolation, and fight poverty.

All the territory of the city of Rio de Janeiro is considered totally urban by the city's 2011 Master Plan. This perspective brings a number of problems concerning public policies in terms of recognition, support and appreciation of urban agricultural activities, notably of family agricultural activities, primarily localized at the western part of the city. The systematic and constant loss of agricultural areas for other urban uses, such as housing and industry, is one of the most serious problems. It is important to note that agricultural landscape in Rio has its own tradition of food production, such as cassava, banana, khaki, and ornamental plants, that are the most important ones. Therefore implying that, socio environmental heritage needs more public visibility and valorisation (ver Bicalho 1992, Prado *et al.*, 2012, Fernandes 2016).

These losses and their consequences regarding the transformations of urban fringes in Rio de Janeiro are already being discussed in several studies. Over the last few years, the city has been presenting systematic replacements of agricultural areas by industrial and housing developments. This is mainly the result of the small producers selling their plots due to the economic pressures from these sectors, in addition to the lack of public policies. Farias (2012, p.238) is one of the authors that raised awareness in relation to this phenomenon, through his discussion about the metropolitan space in Brazil. He points out to the risk of the socio environment matrix in metropolitan regions becoming "a privileged source for the real estate money".

Bicalho (1992), in an important study about agriculture in Rio de Janeiro, not only described the decline of these areas almost 30 years ago but also identified the reduction of agricultural properties in the west fringe of Rio, which was lost for other urban uses: housing, trades and services, especially because of the presence of waters from the rivers in this region, the key for agricultural activities. In fact, rivers and streams are relevant contact points between urban agricultural practices and landscape environmental structures.

Food supply system in cities and metropolitan regions, including the places where urban agriculture can be found, is not fully visible. This is the major argument presented in a seminal study by Pothukuchi e Kaufman (1999), bringing one of the most important contributions for better understanding of the relations between the food system and city planning. The authors advocate that food production and distribution are not seen as urban matters – by the government and the population – to the same degree as housing, transportation and jobs. They argue that issues related

to food in the urban context need to be visible, which can be done through planning efforts. The starting point of the whole system is the acknowledgment of city sites where food production occurs. This is the only way for the integration and value of it in the urban dynamics, which is a decisive issue when dealing with the role of urban outskirts within this context.

Urban agriculture practice means more than the cultivation of edible plants in community gardens or in private backyards. It has to do with finding and implementing new ways to optimize the web of city open spaces in a spatial system which can operate with socio environmental connectivity, resilience capabilities, green infrastructure supplying a variety of environmental services, on top of which, they are able to play an efficient socio-cultural role.

3 | METHODOLOGICAL APPROACH

This study is part of a broader research that looks at different experiences in urban agriculture in Rio de Janeiro, addressing how people have fair access to the benefits deriving from their landscapes. One of the frameworks developed by the research is the relationships between cultural and environmental values and their consequences in the city landscape, in which Guaratiba study is inserted.

The methodological approach for Guaratiba study included a variety of methods, besides literature review and archival research. These involved site observation, interviews with local residents and workers, public authorities and stakeholders, in short, people with interest or participation in food and ornamental plants production. In 2017, we appointed Guaratiba as the area for the design studio activities at Universidade Federal do Rio de Janeiro (UFRJ), when the same methodology was applied. That was an important opportunity for the students to identify and evaluate the complex web of human activities and interests in a fragile environment, as well as the relevance of the concept of multifunctional landscapes when looking at urban agriculture in the city outskirts.

4 | AGRICULTURAL LANDSCAPES IN GUARATIBA

The West Zone of the city of Rio de Janeiro, comprised of Santa Cruz, Guaratiba, Pedra de Guaratiba and Campo Grande neighbourhoods, is one of the city's urban fringes, regarded as an important region for urban expansion. Guaratiba (Figure 1) is one of the neighbourhoods that still hold a large amount of vacant areas (Figure 2). This is due to a variety of reasons. Besides holding a large number of conservation areas (Figure 3), to some extent, current urban legislation had managed to refrain from real estate speculation. Easy access and connections with other parts of Rio de Janeiro had also been a major problem due to the range of mountains that physically separate Guaratiba from the rest of the city.

Over the last ten years there were efforts to improve major infrastructures of access in order to reduce the physical isolation of the West Zone: roads duplications, implementation of high capacity transportation system, and the construction of a tunnel (Giannini 2014). As observed by Fernandes (2016), the inauguration of the tunnel was one of the factors for a conclusive integration of Guaratiba within the city of Rio de Janeiro urban fabric.

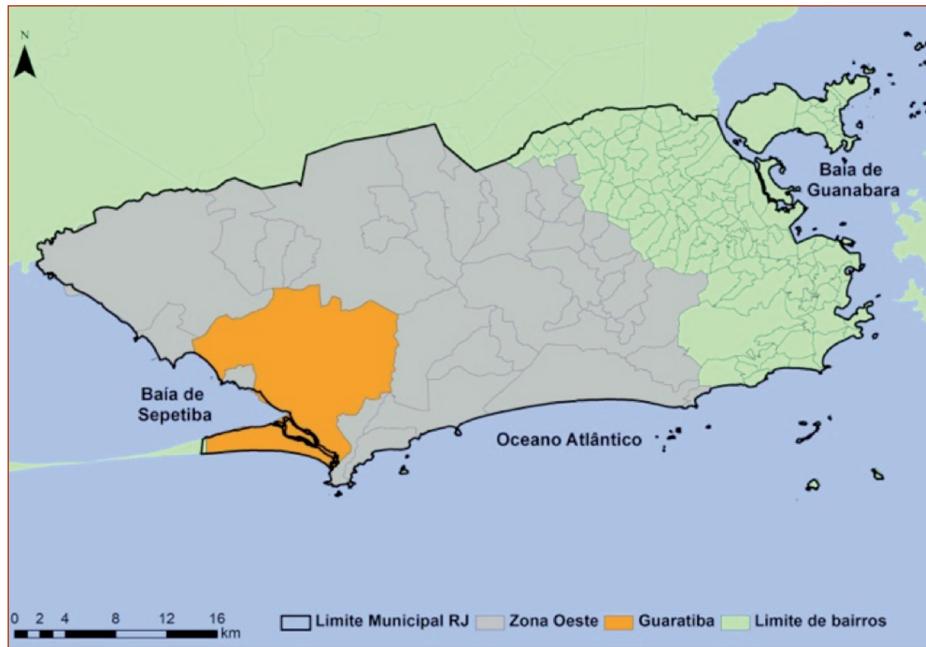


Figure 1 Map of Rio de Janeiro neighbourhoods, indicating Guaratiba



Figure 2 Aerial view of Guaratiba – Source: photo M. Gianni



Figure 3 One of Guaratiba's conservation area, Restinga de Marambaia – Source: photo L. Costa

The occupation of the West Zone started with agriculture. In the XVII century, sugar mills contributed to supply part of the city consumption. Afterwards, sugar mills were replaced by coffee production, followed by fruit production cycles, such as banana and orange. Throughout these cycles of agro production, the properties were being gradually divided, thus, setting the beginning of the urbanization process, with the creation of the first urban parcels at the start of the XX century. The construction of roads and railways were very important for the development of the region, concerning both urbanization and agriculture (PCRJ/IPP 2004).

During the 1930s, when Rio de Janeiro was still Brazil's capital, a green belt was created at the West Zone, comprising parcels of ten hectares. This typology was also implemented in Guaratiba, establishing the agricultural character of this region of the city. During the 1940s, the Rural University of Brazil and research institutes in the region were created, in order to support agricultural activities (PCRJ/IPP, 2004). Throughout the years, the transformations of Guaratiba landscape have incorporated the different cycles of the agricultural practices, besides other land uses.

5 | LANDSCAPE TRANSFORMATIONS IN GUARATIBA

Currently Guaratiba, as other neighbourhoods at the West Zone, is going through an intense irregular occupation and suffering heavy pressures from the real estate industry. This pressure increases with the decline of agricultural activities, with the allocation of federal investments in large transport infrastructure specially to connect strategic ports located at the city bays and in low-income housing complexes; and the presence of large size enterprises such as shopping malls (Fernandes 2016).

It is necessary to consider the consequence of these processes the specificities of the environment in this neighbourhood. Guaratiba's environment dynamics is very fragile, particularly due the presence of water in different formats – rivers, streams, marshes, mangroves, among others, all connected in watersheds and with the nearby sea. The two major topographical structures of the west Zone, the mountain range and the marshy coastal lowlands, also define the occupation of the

territory. The lowlands are gradually being altered and occupied where the soil is dry (Figure 4). The occupation has not reached the slopes, but the parcels in the coastal lowlands present serious problems due to the flat and marshy land (PCRJ/IPP 2004). These characteristics make Guaratiba a region of environmental fragilities where design and planning must be systemic and careful (Figures 5 and 6).



Figure 4 Occupation of lowlands near river Cabuçu/Piraquê – Source: photo M. Giannini



Figure 5 Coastal sea water marshes in Guaratiba – Source: photo M. Giannini



Figure 6 Family farming in Guaratiba - Source: photo M. Giannini

The attribution of an area in Guaratiba for the realization of a religious event in July 2013 has revealed its environmental fragility. A strip of land near a river bank was chosen to be the site of a vigil and Outdoor Mass during Pope Francis visit to Rio de Janeiro, as part of the World Youth Day celebration. The site was prepared for the event in a short period of time, with landfills and temporary structures. The lack of knowledge about the water systems and soil characteristics of the region, combined with moderate rainfall for several days, lead to floods in the site and prevented it from being used during the scheduled event. The vigil and the outdoor mass celebrations were quickly relocated to Copacabana Beach. There was a lot of money wasted in the preparation of the terrain and infrastructure, in draining and cleaning the channels, and by the local inhabitants and commercial establishments. This fact made public the environmental fragility of the region and forced the City Administration to propose the creation of a conservation area in this site, which is still under study.

As discussed in a number of studies (see, e.g., Giannini 2014 and Fernandes 2016), land occupation in Guaratiba is dramatically changing the specific characteristics of the neighbourhood, simply turning it into an extension of the city. Guaratiba's current development is recreating the same typical environmental and social problems that exist in other Rio's urbanized areas, in this case worsened by the lack of infrastructure.

One of the cultural identities of Guaratiba is its agricultural activities (Figure 6), as well as plantations and commercialization of ornamental plants (Fernandes 2016). However, there is a great pressure imposed by the real estate sector for development and increase of population density in the neighbourhood. Although current planning legislation foresees, in great part of Guaratiba, areas of rarefied occupation that could respect the agricultural vocation of the region, municipal public policies discourage traditional agriculture activities in the region. Prado *et al.*, (2012) argue that

agriculture in the city of Rio de Janeiro suffers from being invisible to the Public Administration. The authors note that this problem is being tackled by NGOs and other sectors of society, but with poor results in the face of real estate speculation.

The mapping of Guaratiba's plants phytophysiognomies and uses identifies areas for agriculture, the category of which includes greens, vegetables, fruits, aromatics, ornamental and spice crops, among others (see www.sigfloresta.rio.rj.gov.br). The space distribution of agricultural areas is scattered, segmented and of little importance when compared to other identified uses of the land. Fernandes (2016) points out to the importance in Guaratiba of the existing orchards and greenhouses for ornamental plant production – a direct influence of the work of the famous Brazilian landscape architect Roberto Burle Marx in his homestead (Figure 7), who launched and consolidated this activity in the area during the 1950's. Fernandes (2016) observed that the culture and commercialization of ornamental plants became stronger since the decline of vegetables and greens production in the region.



Figure 7 One of the greenhouses at Sítio Roberto Burle Marx in Guaratiba – Source: photo L. Costa

Vidal (2009, p. 20) describes and discusses several actions taken by the city's administration to support agricultural activities in Rio de Janeiro and points out that, even so, the Municipality "is facing many issues that prevent the spread of agricultural practices, mainly because of commercial bias". In fact, a survey carried out with the residents of Cabuçu/Piraquê river valley in Guaratiba (Giannini 2014), representing part of the local producers, revealed the lack of support for agricultural activity in the region. The hard conditions of rural producers who have to face the inexistence of a rural zoning plan in the municipality of Rio de Janeiro, implying no access to rural credit and other benefits; and eviction from the area due to urban growth. Even more, the inhabitants also demand that the government foster agro-ecology education for family farming activities and proper planting methods.

Agricultural landscapes and practices in Guaratiba, although important, are slowly losing space for other urban uses over the years, and carrying many socio-environmental losses. Agricultural

landscapes provide great possibilities for integration with other urban and spatial dimensions as well as support for creating public policies that validate the landscape and agricultural practices in urban settings, basically by gaining visibility and connectivity with the other urban systems. A multifunctional approach to confront problems related to urban agriculture is not only necessary but also provides important strategies for its design and planning process.

6 | CONCLUSIONS: IMPLICATIONS FOR URBAN EXPANSION

Guaratiba brings a common issue to other neighbourhoods at the fringe of Brazilian cities: they are regarded as transitory landscapes, sites waiting to be occupied by the natural expansion of the city, without having their cultural and environmental singularities being accounted along the development process. Academic studies have shown that, when the interests of the real estate capital act in a space neglected by public policies, urban peripheries replicate or intensify the models of land use from those of consolidated cities, with serious losses concerning local life quality.

In fact, Guaratiba teaches us that urban outskirts landscapes hold possibilities for experimentation of new approaches in design and planning within a multifunctional perspective, where agricultural practice is one of the strategies that can incorporate environmental values and local habits. As previously pointed out in this study, the contributions of urban agriculture are countless, since they are productive landscapes that can provide several socio-environmental services.

In recent decades, cities have also been recognized as sites where food can be cultivated. There are many challenges that come from this acknowledgement, particularly those concerned with disciplines that look at the study of urban landscape transformations through urban expansion. The quest for innovative spatial solutions and structures that facilitate and foster urban agriculture practices is one of these relevant issues. It is also necessary to study the connections between collective and private spaces in order to offer opportunities for alternative uses assuring their multi functionality.

Relationships between environmental and cultural dynamics also reveal different typologies and spatial characteristics where agricultural landscape flourishes in cities, as well as their relationships with other urban systems. Their identification and mapping is important to bring about a visibility that can produce critical assessment of the existing multi functionalities and connectivity, and to propose strategies for planning and valuing of their permanence within the urban fabric.

The presence of urban and peri-urban agricultural practices represents more than the planting of vegetable gardens in public or private spaces. It is related to finding the means of introducing new ways of optimizing the city's open space web into a spatial system that should acknowledge cultural and environmental dimensions, offering a variety of environmental services and playing an efficient socio cultural role. City fringes present experimental possibilities for new approaches in planning and development through a multifunctional perspective, where the practice of agriculture is one of the strategies that can incorporate environmental values and local traditions. This should be considered as a starting point for urban expansion strategies.

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