

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

4,800

Open access books available

122,000

International authors and editors

135M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Urban Agriculture: The Allotment Gardens as Structures of Urban Sustainability

Rute Sousa Matos and Desidério Sales Batista

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/55892>

1. Introduction

This reflexion comes from a look over the city, particularly the relationship between the built and the open spaces that constitute it. In this look we came across the enormous importance that the system of open spaces has and has always had on the construction of the city, its balance, its identity and its experience. On a closer approach to the system of open spaces of the city, we were confronted with the existence of typologically qualified spaces and of spaces without any typological attribution but that are, by no means, less important than the former. Open spaces, interstices between the built fabric of the contemporary city, that present a certain continuity and that allow the flow of air, of water and matter, simultaneously with the flow of residents or casual users. Sometimes, besides that flow, an informal appropriation of these spaces as spaces for fun, games and socializing is verified, emphasizing the enormous potential presented in the structure and cohesion of the city as support of the urban experience, of social interaction and, of the development of the sense of community. About these spaces, several questions have been raised concerning its quality and diversity, namely its lack of integration in a recognized urban typology and all the consequences that this determines. However, we considered that this fact, on its own, does not constitute a negative factor, but a distinct reality determined by the ever-accelerating rhythm of the technological, economical, social, cultural and demographic changes.

The need to understand the presence of these spaces leads us to a study and analysis of the evolution of the city and of the transformation process that has been occurring, not only in the conceptual and ideological point of view, but also in morphological terms determined by different social-economical and cultural contexts.

During this project we verified that the characteristic discontinuity of the suburbs was the result of an urban model that, since the 60's of the 20th century, has given birth to a new concept of city and, in a disorderly growing process, allowed a landscape of problematic

suburbs to arise, anarchically, in an unqualified territory. The interstices over which we lean are the consequence of this extensive growth of cities and its suburbs.

Aware of the existence of these unnamed *intervals*, in the city, the open space continues, frequently, to be called *green* and to, still, play a secondary role on the construction of the urban landscape. Despite its high potential in the structure and cohesion of the city, these spaces – the interstices and the *greens* – and the attitude of indifference that has been verified towards its qualitative definition tends to reduce them to nothing more than another index in the city's statistics.

Thus, it is necessary a new understanding on the urban condition of the interstitial spaces and on the importance of the quality of the landscape. We consider fundamental to implement an intentional and adequate use of these spaces, as a vital condition to its defense, in a positive way, guaranteed by its comprehension and enjoyment, recognizing them as the true potential to the development and experience of the city. They should, then, be acknowledged as spaces of urban cohesion, fundamental and complementary to the built space and its articulation with the surrounding, ecologically, aesthetically, culturally, socially, economically and technologically.

With the purpose of obtaining a bigger understanding on the quality of the landscape, and based on the idea that this should appear as a fundamental structure and a cornerstone on the qualification of the city, we leaned on its inherent multifunctionality.

From here starts the conscious notion that the landscape is a recent conquest in the western culture, being considered as such from the moment Man inscribes it in a determined culture and epoch. Intrinsic to the concept of landscape come the concept of multifunctionality to which the concepts and the practices of production, leisure and protection have always been associated. However, this dimension and multifunctional look are lost with the modern movement where, the sectoral zoning does not allow the coexistence of several roles thus appearing the vague concept of *green space*, that stretches throughout the entire city homogeneously, amorphous and residually.

It becomes, then, urgent and primordial the return to that concept of landscape. Several authors, searching for new strategies that lead to the multifunctionality of the landscape and its understanding, defend that in the open spaces of the city it should be implanted a continuous and structuring fabric where landscape would appear as a fundamental structure of this *continuum*, having as a principle the systemic vision of the landscape, long implicit in practice and in the philosophy of landscape architecture, from the continuous system of public parks designed by Olmsted, to the concept of *continuum naturale*, introduced and developed, in Portugal, by Professor Caldeira Cabral, in the middle of the last century, covering all the projects that include the concepts of green corridors and of green or ecological structures, all of them essential, since they allow the occurrence of ecological processes, fundamental to the growth and sustainable development of the city.

As well in the recent current, designated as *Landscape Urbanism* (1996), that appears with the rekindle of environmental and ecological concerns, such as the growth of tourism and the questions connected with it, with the sense of oneness and entity, as well as with the impact

that the massive growth of cities has over the rural space, the landscape is proposed as model to the urbanism, and it is recommended the integration of public landscapes with the infra-structural systems, formalizing and leading the urban development, similarly to what happened with *Central Park* in New York and the continuous system of the Boston Parks by Frederick Olmsted, where the landscape lead the process of the formation of the city.

In this search for the lost multifunctionality it is frequent the reference to the aesthetic, social, ecological, economical and cultural components and consequently, the role of protection, production and leisure.

It then begins to take shape, in this study, the idea of production associated with leisure as a fundamental component of landscape that structures, qualifies, and gives continuity to the urban fabric through its interstitial spaces, open spaces and suburbs, all the way to the countryside, promoting an articulated relationship between this *old city-countryside* dichotomy.

Our main purpose is the proposal of a new project approach that provides the creation of a multifunctional structure of landscape dedicated to production and leisure in an urban context. In this perspective, the interstitial spaces, object of this study, can and should be a current expression of the landscape *continuum*, given that it allows the occurrence of the ecological processes and of the fundamental biological cycles to the harmonious and balanced development of the city.

This desideratum is accomplished, or can consubstantiate itself, through urban agriculture, which is perfectly compatible with recreational and leisure activities, as has been long advocated by Ribeiro Telles, and it is even proposed in his “Plano Verde de Lisboa” - Lisbon's Green Plan [1]-, and how it has been proved by the “quintas de recreio” (recreational farms), in Portugal.

Although urban agriculture refers, in general, to activities connected to the production of fresh vegetables in the city, it does not mean that it has to be strictly related with production; urban agriculture is also fundamental on including ecological, cultural, recreational and aesthetic concerns, related to the landscape. This means, urban agriculture can integrate, and be, a structuring *continuum* that assures the occurrence of the processes and flows of the various systems that constitute the landscape. This structure should be ecologically justified, as well as it should be developed according to the holistic view that the landscape demands in and for its understanding. In it, there should be present the ecological, aesthetic, social, economical and cultural components and from it there should result spaces and economical, social, cultural, aesthetic and ecologically balanced structures.

Urban agriculture can be based in the ecological principles of life and on the necessary space to process its actions, reactions and interactions. It can be considered, even, as other elements of the urban infra-structure: wide and complex, and demanding planning and design, management and maintenance. This means, it is perfectly compatible with the holistic concerns of landscape architecture.

In this sense, urban agriculture is considered, in this study, in its several dimensions – ecological, cultural, social, economical and aesthetic – as a constituent of the natural and

cultural continuous that structures the urban and suburban fabric, through its open spaces and interstices, making the articulation and establishing an inter-relationship with the countryside.

We consider that this option is based on three pillars: one with a historical and temporal character – the multifunctionality (promiscuity) of the Mediterranean landscape, from which the meridional Portuguese landscape is a part; another of a conceptual and practical character, that concerns the theory and the *praxis* of landscape architecture and of the *landscape urbanism*; and lastly, in our own opinion, the answer that may be given by the urban agriculture to the global crisis situation and to the growth of the estimated urban population (already felt) in the next decades, which lead us to approach the theme of urban agriculture in a more general way.

According to *Food and Agriculture Organization* (FAO) (2009), for the first time in the history of humanity, there is a bigger concentration of population in the cities than in the countryside. This urbanization process determines big challenges to the planning, management, maintenance and conservation of the urban areas.

In the beginning of the third millennium we inhabit a world with an unprecedented number of population. There are currently around 6.3 billion people, a number that it is expected to rise to 9 billion, in 2050 (FAO, 2009). Around half of the world population lives in cities, and this estimation is expected to rise to two thirds by 2030. A great number of cities grow over agricultural terrains, a fact that certainly reduces the capability to produce a considerable amount of the food necessary to the auto-sustainability of the city. It is estimated that if the developing countries follow the western lifestyle – in terms of the usage of food, forest and energy products – three whole planets will be needed. It is, then, of crucial matter that the city becomes much more efficient in the way it utilizes its resources, which includes, obviously, the production of food. Urban agriculture constitutes, in this case, a fundamental contribution to the auto-sustainability of the city. Moreover, urban agriculture will be a practice that won't compromise uses or future options, thus becoming a guaranty of soil preservation, a scarce and fundamental resource.

This chapter is centered on the theme of urban agriculture, namely its definition, identification and characterization, emphasizing three of its typologies based on relevance and inclusion in the objectives of this study. They are: the urban allotment garden, the *continuous productive landscapes* and the *urban field*. In this context, we leaned over its relevance and the need in the contemporary city when facing the current social-economical crisis and the estimated urban growth in a near future. The benefits that can be brought and the obstacles that can occur are presented, either at a food and nutritional safety level, either at a health and local development level, or even at a social-cultural and urban environmental management level. The politics that regulate urban agriculture in its social, economical and ecological dimensions are addressed, and how it has influenced its practice, as well as the economical issues associated. We considered fundamental the study of agriculture throughout history and its evolution in the city, its relationship with the countryside, as well as the possibility of its integration in the interstitial urban spaces and,

consequently the relevance of its contextualization, in the *landscape urbanism*, something that it is not the happening today.

Lastly, we concluded with the proposal of integrating urban agriculture in a new approach to the landscape design in an urban context, but also in conceptual terms. And, with the presentation of strategies to the development of a sustainable urban agriculture, in order to contribute to a return to the multifunctionality of the landscape, which promotes the existence of a structure of continuous landscape where the recreation, the production and protection should be present and inseparable, thus contributing to urban sustainability.

2. Materials and methods

The clear relevance of the presently discussed subject, namely the existence of open spaces in the city, and the need to revitalize its periphery, the multifunctionality of landscapes, the concept of landscape as structure, and the pertinence of agriculture through the creation of allotment gardens, has led many authors from different fields to produce literature, critical studies, and research on these important matters. Our theoretical support are those authors who consider open spaces and urban voids as work material, full of potential and value for the creation of new socially, culturally, economically, ecologically, and aesthetically viable spaces, as well as those studies centered on the best tools to act on the urban voids, as urban resources. The rigid building fabric rejects these manageable, flexible spaces, which are highly adaptable, in constant change, and well articulated with the different systems of city, and its design.

In recent years, there have been some studies both on the importance of landscape in urban spaces, and on the ecological systems and their associated aesthetic issues. Some studies and projects have also been done on urban agriculture and its pertinence, ecological integration and significance as network, system, and infrastructure.

Therefore, this project is based on a bibliographical review of theoretical studies about the themes we seek to develop, and about the proposition of *Plano Verde de Lisboa*, which includes many interventions on the landscape architecture integrating the design of the development of allotment gardens.

3. What is urban agriculture?

Where human beings exist, there is an associated food market. To the eyes of planners, architects, politicians and investors, to practice agriculture in the city was considered all over the world, and mainly in the previous century, a practice not to be done or to be simply ignored. However the production of local food was always quite popular appearing, frequently, in confined spaces given that those with access to land and water would do it, independently of the political restrictions. Recently, researchers, politicians, urban planners and landscape architects have given it a growing importance – turning a neglected activity, in the last seventy years, in a great potential to create forms of sustainable subsistence.

If we look to the history of agriculture, in the European context, many have considered agriculture and city in a different way. However, according to several authors this does not correspond to reality.¹

Urban agriculture always existed. As we know, the first human settlements are located near fertile and arable land to assure a close food source. As cities grew, they were occupying those agricultural lands, necessitating, consequently, of more sources of food.

The definition of urban agriculture in [2], classical and widely used, refers that “urban agriculture is an industry located inside or in the outskirts of the city, the growth of which, processes and distributes a diversity of food and other products, widely re-utilizing human and material resources, products and services found inside and in the outskirts of the urban area, and providing, in turn, material and human resources, products and services to that urban area”.

This definition articulates production in confined spaces, related economical activities, localization, destination markets (or just for the consumption inside the house) and the types of products made in a dynamic interaction that may vary from one urban area to the other. Urban agriculture does not only present research associated to the natural sciences (agronomy, pollution, water and soil quality, among others), but also important questions of social and economical nature (land markets, migration from the rural space to the urban and social integration among others.)², not counting the questions associated to urban planning and the architectures.

Also according to [3], urban agriculture can be defined as the cultivation of plants and the raising of animals with food purposes, inside and around the cities including, even, other uses and activities related such as the production and the delivery of *inputs*, and the processing and commercialization of the products. Urban agriculture is located inside or in the outskirts of the city and it comprehends a variety of different production systems, different from the subsistence production, processing, at the level of the aggregate, a completely commercialized agriculture.³

This activity is generally characterized: by the proximity to the markets, by a high competitiveness for the land, by being a limited space, by the utilization of organic resources namely solid organic residues and residual waters, by having a low degree of organization, by its products being mainly perishable, and by having a high degree of specialization, among others. Due to the provision of perishable products such as vegetables, fresh milk, and poultry products, urban agriculture complements, to some extent, rural agriculture and heightens the efficiency of national and regional food systems.

¹ Henri Bava, Joaquin Sabaté, Pablo Arias Sierra, Pierre Donadieu and Ribeiro Telles, among others, argue the coexistence and the simultaneous development of both.

² Currently, the research on urban agriculture is also applicable to the study of politics and is offered as an answer to the technocratic vision of the way of planning and legislating.

³ The population capacity to generate income is necessary and profoundly satisfactory. Using the surface, and the land itself, is one of the most ancient ways of generating income, mainly under the form of food production. It also allows the so much desired work in and with natural conditions.

In [4] is referred that the most important characteristic that distinguishes urban agriculture from any other kind of agriculture, is not so much the location, but the fact that it constitutes a part of the urban economy and the ecological and social systems: it utilizes urban resources (land, work, solid organic residues and water); produces for the citizens; it is strongly influenced by the urban conditions (politics, competition for the land, markets and urban prices) and causes an impact on the urban system (the effects on food safety, poverty, ecology and health).

Also in [5] urban agriculture may have place in any part of the city – in spaces of different topography, defined, or undefined typology, *brown-fields*, *green spaces*, parks, roadsides, highway slopes, in wide spaces or hidden corners.⁴ It can appear wherever inside the urban context, leading many cities to stimulate their multiple use keeping the spaces, inside the city, simultaneously valuable and free of buildings. In most cases it is high yielding allotment gardens where fruit and vegetables grow and, if the economical situation is tough, it can include small animals and/or aquaculture.

Peri-urban agriculture is the agriculture that occurs in the urban-rural borderline or in low density sub-urban areas, similar to urban agriculture despite the size of the allotment being frequently bigger. Despite this vast coverage of urban agriculture, typologically and spatially speaking, we want to make reference to three theoretically distinct types, although perfectly compatible and complementary in morphological and practical terms.

- The first referring to urban allotment gardens, protagonist typology of the urban agriculture in the city, and that is why it stands out, and which importance should be crucial on a productive, economical, ecological, social, and recreational point of view.
- The second refers to the concept of *Continuous Productive Urban Landscape* – CPULs for its analogy with the concepts of *Natural Continuum and Cultural Continuum*, perfectly inclusive of landscape architecture in Portugal and it seems important to us from the point of view of a possible design strategy of landscape to the urban space.
- The third is the concept of *urban countryside* of Pierre Donadieu that implies a duality between ecology and identity, constituting necessarily an urban rurality, similarly to what succeeded with the Quintas de Recreio (Recreational Farms) in Portugal. In this concept is implied a project intentionality that we consider fundamental as a strategy to be implemented.

3.1. Allotment gardens

Allotment gardens are a unique contribution to urban space. It's a contribution challenging the conventional notion of urban space and of open space design. These spaces are an echo, and a memory of how the countryside might have been – a humanized *landscape* but with a peaceful feeling, a shared space with a touch of inner silence.

However, urban/rural conflict has been a consistent source of difficulties for urban designers because it contradicts imposed rankings of what is, or should be the urban space –

⁴ The *Continuous Productive Urban Landscapes* - CPULs may appear in any space of variable shape, dimension and scale.

expressed through particular notions of order and control, purity of shape, and clear limits. Still, the users and the public in general seem to prize this contradiction of rules. The feeling many people have about living, working, strolling, and bicycle riding through allotment gardens is an evidence both of their vital, psychological and physical value and of the need to involve more people in the debate about the future of these spaces.

3.1.1. Brief historical evolution

Food production is linked to the history of cities, since their origins [6]: the lack of an efficient transportation system and of sophisticated food preservation techniques before the Industrial Revolution inevitably meant that the population had to grow vegetables near their place of residence. In the 18th century, allotment gardens acquired a deliberate social character to compensate the rural population that had migrated to the city. The purpose of those allotment gardens was to provide a nutritional and economical safety net against unemployment or, to supplement reduced incomes. The necessity of urban allotment gardens quickly rose, occupying the city. At this point, the display and the supply of the allotment gardens was widely private and *ad hoc*.

At the end of the 19th century, the power and the rising responsibilities of the local governments reflected in the appearance of the first law to urban allotment gardens, in England, that required local authorities to provide allotment gardens to the workers that showed economical needs. Similar proceedings occurred in other parts of Europe, for example, the introduction of the *Schrebergarten* in Germany [5].

Until the third decade of the 20th century, the urban growth of food meant an important part of the city's consumption. The fresh products, legumes and vegetables came from the allotment gardens along the streams and rivers of the city. The importance of these rural-urban bonds transcended the merely economical plan and the environmental issues that today we are faced with.

The former allotment gardens' zones started to be occupied with highways, residential areas, railroads and other infra-structures necessary to the growth of the city.⁵ Throughout the ages transformations to the agricultural activities in the urban areas occurred as a result of the new industrial culture of the cities as well as of speculative interests associated with the improvement of transportation that allowed a quicker and more economical supply of the central markets. At the same time, the contamination of the waters of the rivers by the industry represented one of the greatest ecological catastrophes resulting in the abandonment of the agricultural activity in urban areas.

⁵ Metropolization is the major cause of the loss of agriculture in the city. Attests to the supremacy of the tertiary function: commercial, financial, of decision and of command; it depends on a modality of urban growth founded under the automobile, under the consentment of the urban public administration and, consequently, under the form of local government. A second series of motives is related with a negative view for sanitary reasons and public health. A third series has to do with the disadvantages to which the farmers are subjected (the incompatibility of tractors with the urban traffic, lack of irrigation water (...)) [7]

Between 1900 and 1945 the bigger stimulant to the production of food in Europe was the War: the real threat of famine caused by the blockages originated campaigns to increase the local food production, a lot of which was coming from urban agriculture.

During the First World War, with fear of harming the citizens' morale, the British government's campaign to increase food production, as well as the rationing, started from 1917. Despite all this, the results of the campaign were outstanding. In [5], the number of 250m² allotments increased, approximately, from 450 000 to 600 000 in 1913, and from 1 300 000 to 1 500 000 in 1917, having been produced 2 000 000 tonnes of vegetables.

Between wars, the public's interest in allotments and in other forms of urban food production declined in Europe, although to levels never lower to those recorded in 1914. The mass unemployment, verified since 1920, revived the interest in allotment gardens as a valuable means of social-economical aide. Philanthropic Groups of the most varied origins, namely the *Society of Friends*, in England, developed plans providing fertilizers, seeds and tools. Currently, similar supporting mechanisms are used in Cuba, in its national program of urban agriculture. During the Second World War the production of fruits and vegetables inside the cities of the UK was shown to have an important value in times of need. The production in family allotment gardens, making use of gardens in public and private places, exceeded more than 10% of the country's total needs in terms of fresh vegetables [8].

According to the data in [9], during war time, not only the agricultural activities but also the livestock and poultry production reached high values. In 1942 there were registered, in urban zones in England, more than 90 000 poultry farmers with a production of 16 000 000 specimens. In 1944 the allotment gardens, alongside gardens and other portions of land including parks transformed into agricultural fields, amounted to a total 10% of the country's food needs and half the fruit and vegetable's needs. The end of the campaign *Dig for Victory*, in England, was followed by a harsh decline of the urban food production. The recent state of well-being, the existence of jobs and a rising prosperity, made that the food production was no longer a necessity. Also an image problem had a negative effect on the allotment gardens: people associated them to war, and a time of austerity that no longer was in line with a time destined to the scientific progress [5].

Among progress and setbacks, in periods of crisis, the strategic value of allotment gardens has always been emphasized. The 1970's were a turning point for allotment gardens, with the emergence of new production means. This seemed to be due to a new environmental ethics, developed in the 1960's as an alternative lifestyle, and a notion of self-sufficiency based on renewable energies. After the crisis, the urban dynamics of developing societies brought new freezing techniques, allowing the possibility to find any product regardless of the season and at a minimal distance. Nevertheless, old urban markets inside the cities are very significant as a means to re-establish the citizens' natural links with nature [10]. This requires a redefinition of the methods and purposes in the design of open spaces within the cities, with new roles and goals allowing *new urban activities*.

It is evident that the new diffuse city carries, in a way, a certain desire of a relationship between the citizen and nature and, it seems clear that in this context, it is physically easier to establish this bond through urban agriculture.

It is also to be noted that the settlements from where the great metropolitan areas arose, in the west, came from rural areas. The will to maintain this old cultural heritage had important effects in certain working suburbs, in big urban areas not only European, but also American [8]. The ethnic and cultural variety in the European Union, made of populations that came from rural cultures and that made sure that, in certain suburban areas, the *patios* and the open spaces of the house were used to their full potential with the cultivation of vegetables, keeping the bond with their origins and, at the same time, helping the family's economy. This practice can be considered an example for the open spaces of the city that, frequently, with their *standardized* treatment, keep the citizen and the city with their backs turned against nature.

In Portugal, the strong migration movements from the 60s and 70s, of population coming from rural areas towards the big cities [11], lead as well to the appearance of certain ways of urban and suburban agriculture that answered to a new type of *urban space*, called in [12] as a *third space*, that showed a bond from the new industrial population to the memory of their old rural habits.

Still today, in our great metropolitan areas, there are small agricultural explorations in the interstitial spaces, or of difficult use, in suburban areas that, inside their precariousness, have an exceptional interest as a sociological phenomenon, and that we believe to exceed what would be a mere mechanism of transition as an adaptation of migrant populations to the new culture of the urban space⁶.

The sub-metropolitan allotment gardens appear in the big cities (take a look at Lisbon) as very representative places, even from the sociological, geographical, and anthropological point of view, which has been studying them with obvious interest. These studies show us what they mean as an expression of a way of understanding the urban space as the *habitat* of Man: the sub-metropolitan allotment gardens mean more than just bridges towards adaptation, being the expression of what the city could be in its definitive form and that that form is both easy and possible to be accomplished.

In the case of the metropolitan area of Lisbon, the important peri-urban agricultural areas that had some significant production capability, since the 60s of the 20th century, started to progressively lose importance as a consequence of the destruction of the agricultural soil, not only due to the new industrial and residential developments that invaded these peripheral spaces, but also due to the construction of powerful infrastructures and networks of services that destroyed the productive space of a primary sector that, on the other hand, was also losing its manpower, given the new employment opportunities.

Nowadays, it is frequent that the nature and origin of those allotment gardens, either because of where it came from, or because of its situation, do not have a relationship with

⁶ Institutional areas (belonging to hospitals, schools and churches), riverbanks and road edges, parks, terrains under high voltage power lines, areas that can not be used for construction and its surroundings constitute a great part of municipal terrain. The planning of the use and exploration of these spaces requires the record of the localization, as a first step, and then the evaluation of its potential. It is important to evaluate the availability of the land for urban agriculture in a certain city in a short, medium or long term. The land may not be available due to the rapid growth of the city and the expansion of built areas [3].

the conventional agricultural activity that existed or still exists in a determined area. They are, often, activities done outside the commercial circuits, in small allotments or allotment gardens that justify themselves, as an activity, with their own reasons more linked to the urban world, than to the rural one. On the other hand, the agricultural practice by the working class has survived at the expense of the low cost food available.

Currently, urban agriculture continues to be useful as a means of providing some food and financial income for the citizens, as well as having some other important benefits [13]:

- Social (leisure, fomenting local groups, therapy for individuals with special needs, rehabilitation of youngsters).
- Environmental (renewal of abandoned urban spaces, diversification of the usage of urban land, increase of biodiversity, preservation of the water, soil and air cycle, reduction of the carbon footprint).
- Human (promotion of sociability through the encouragement of personal qualities such as altruism, the improvement of the quality of life through social interaction, health benefits through physical exercise, better food quality and bigger diversity)
- Economical (stimulus of the local economies, creation of employment and wealth, directly or indirectly).
- Emotional (due to the pause that it can provide to the monotonous and gray everyday of the citizens, allowing them to realize the real dimension of time).

In England and in Northern Europe in general, a community allotment garden or an urban farm, are local projects run by and for local community groups. Sometimes they are run in a partnership with the local authorities but, its main characteristic is the strong local involvement. These allotment gardens exist mainly in densely built areas where its creation has been the answer of the community to the lack of a project and/or adequate management to and of the open spaces.

The urban farms are also known as pedagogical farms or community farms. The agricultural allotments are not generally run by a community, but there is a rising movement for the formation of an association of groups of parcels with the objective of practicing a decentralized management from the Local Authority that will move from the *statutory* sector (although with legal protection) towards the *run by the community* sector. Inside the movement of the allotments it is verified as well that there is a rising number of groups that are consciously establishing work run by the community with innovative schemes to obtain more community support [14]. The majority of the projects is centered on food production activities, formation courses on the area, field trips from schools to community allotments and the undertaking of community businesses related to the urban agricultural practice. Some advance with the proposal of recreational and sporting equipments, of free time activities and vacation schemes.

The community allotment gardens⁷ and the urban farms are extremely flexible and adapt to the requirements of the local community. They have in common the encouragement of

⁷ Relatively to their location and marking of the allotment it is necessary to bear in mind if its objective is therapeutic or recreational, commercial, for self-consumption or mix use. The gardening allotments are of the most popular for

social participation and of the creation of sustainable communities. The projects contribute directly to the development of the community generating social participation and promoting urban regeneration through:

- More open spaces built from living materials (water, soil, vegetation) in the urban environment;
- More educational, formal and informal opportunities;
- More pedagogical information concerning food and animal production;
- Adult formation in a series of subjects, namely gardening, horticulture and livestock;
- School field trips and educational, didactic and pedagogical activities;
- Preschool activities;
- Gaming and sporting activities;
- Leisure occupation and vacation schemes;
- Integration of people with deficiencies in learning and/or other special needs;
- Development of the practice of community companies, such as cafes, markets of horticultural products, horsemanship centers, gardening centers and/or other community businesses.

In [15] is considered that the expression *agricultural allotment* should be replaced by the concept of recreational gardens because the first one has an historical stigma of low yielding and relative poverty. Additionally, the tracing and localization of the allotments should consider not only the individual parcels, but also the community areas, shelters, recreational areas and even some occasional spaces for orchards and groves. The *recreational gardens* should be strategically placed near the requirements and as far way as possible from sources of known contamination, such as old railroad tracks and some empty spaces resultant from polluting industries.

In [16] is understood the presence of these sub-metropolitan allotment gardens as the result of a marginal occupation of soils that comes as the result of problems due to the crisis and of the industrial stop that in the decade of 1970 affected the working economy. The exploration of these small parcels serves to grant some additional funds to the families' economies and to give jobs to young unemployed people with no expectations whatsoever.

This diagnosis, as to the origin and justification of existence of sub-metropolitan allotment gardens, is not entirely shared in [17] after deeply analyzing the sociological components of the existing allotment gardens in suburban areas of the city. In [17], the origin of the metropolitan allotment gardens can not be related to the issue of industrial deactivation, given that the origin of the allotment gardens is prior to it. Thus, its origin has to be explained in variables of some other nature.

It does not seem valid, as well, to relate these allotment gardens with factors of economical benefits to their cultivators. In fact, the greens and vegetables produced do not enter in any kind of commercialization. The only gains are the occasional family consumption or the satisfaction of offering the products to friends of acquaintances.

leisure reasons and spare time in England. In fact the management of the allotments is considered by many as a leisure activity more than a means of producing food.

The same author refers that the cultivated parcels lack market value. They are precariously occupied with their owners aware that they can be evicted at any moment. These terrains were never bought or sold and, if those who cultivate them can no longer enjoy them due to the age or any familiar reasons, they give them to those that show some interest in cultivating them. Also, it does not seem common the presence of youngsters in the cultivation of the allotment gardens; those who work there, occasionally, are men, of mature age, from 50 to 70 years old, in their majority retired, that use their free time, to fill the emptiness of their leisure. This dedication is never too intense, nor has any economical expectations, a fact almost impossible due to being a low quality piece of land, to using elementary tools and to not having the adequate support.

3.1.2. *The reality in Portugal*

Relatively to the Portuguese reality, in 2004 the Culturgest issued a challenge for the attribution of urban allotment gardens in Lisbon. The contestants were all (or almost all) retired people and migrants in the city. According to the Commissary of Town Hall of Lisbon (CML) to this contest, the Landscape Architect Rosário Salema, the children of the contestants would not carry on this activity, simultaneously productive (because they sell the products they cultivate) and recreational. Relatively to the community allotment gardens, it was verified that they covered technical staff (qualified active population), at least in the medium class neighborhoods, for example Telheiras.

According to the Landscape Architect Maria José Fundevila, current commissary for the legalization of community allotment gardens, the Town Hall of Lisbon, the *Heritage and Investment Division* of the CML is finally making a record of urban allotment gardens, with that information still unavailable. Relatively to the age groups and professional situations of the farmers, it would depend on the areas in question: in the more marginal zones, socially speaking, you have a wide variety of farmers being hard to establish a global pattern for the urban allotment gardens – the allotment gardens are very connected to the social and economical aspect in the city, at least that appeared spontaneously, so that they are directly related to the social typology of the area in which they are inserted.

The Commissary referred two distinct examples: Quinta da Granja, in front of the Colombo Shopping Center, and the Parque Hortícola de Chelas, near the J Zone neighborhood in Chelas: in the first one there is a predominance of retired people, at a 60 to 70% rate, that have cultivated the area for a long time. The oldest one has done it for 38 years and is 97 years old today. In this case, the number of people that initiate the cultivation already in retirement is really low. Many have occupied these areas for a long time and have, meanwhile, retired. The main reason to cultivate the allotment gardens is the fondness for the cultivation of the land as well as the distraction it provides and the leisure occupation.

In Parque de Chelas the situation is completely different. The age group ranges from 30 to 70 and here, predominate the professionally active individuals or, at least, in this age group, given that many are unemployed. Here, the main reason for the cultivation of allotment gardens is the complement to the family income. These farmers sell their products illegally,

unlike those from Quinta da Granja that cultivate solely for themselves. In this case a severe problem arises which is the watering of the allotment gardens, in the summer, with residual waters from domestic or industrial origin, and that are improper for such use. They are, however, ready to be initiated the works of the first phase of a horticultural park, in this area, that consists precisely in endowing the area with accesses and water for irrigation.

As for the municipal politics, in Lisbon, lately there have been promoted the urban allotment gardens, which until now, had not yet happened, despite all the continued effort made by some, trying to rekindle this practice.

About six years ago, a Commission was created, with the purpose of legalizing urban allotment gardens. It was then proposed a regulation that legitimates the existence of these spaces conferring some safety to the farmers that, in the last 12 years, have already received two eviction notices. This proposal has not yet been juridically seen but, however, it is already being applied. It consists basically in a classification, in order to protect the economical and social allotment gardens that correspond to 90% of all of the existing allotment gardens.

Aside from all the economical expectation, the suburban allotment gardens have an indubitable interest as an urban phenomenon given that it is an activity situated besides the *space offer* that the city provides to its citizens. They signify a way of *passing time* that the city had not foreseen. In this sense, they constitute an *in between* space, between their homes and the cafe as a place of reunion and leisure for the inhabitants. As it was already referred, in [12] the *third space* is considered interpreting allotment gardens as a place of leisure, with no equivalent in what is offered by the cities in a *standard* way.

In [17] those allotment gardens are linked to the transition of the rural to the urban space, as a manifestation of the persistence of a rural-agrarian encysted in a urban *habitat*, understanding that they constitute a symbol loaded with values, rooted in the interior of the new citizen. In this sense, they put it inside resistance and protection against hostility schemes that the city transmits to ethnic groups or cultural misfits. This assimilation of the sub-metropolitan allotment gardens in the context of the slums does not seem well-thought to us. The underlying problem in these urban-rural spaces is not only the creation of a *safety space* of reunion with their own identity and with the land of origin. It is also the expression of a will of permanence, an intention to integrate in the urban space something that, with no apparent reason, disappeared from the city.

Ribeiro Telles, that in Portugal has always been a fervent supporter of the existence of the urban allotment gardens, says that the new *city farmers* bring an intelligent message, in a spontaneous and naïve way and, without dogmas nor impositions, show the evidence of the possible, achieved without political support or public demonstrations. The new energy and wisdom sap, that the urban context brings, is the result of not only remembering rural values, but also of recognizing and feeling the urban needs. The suburban allotment gardens are not ways of socializing that are contradictory and opposite to the urban lifestyle, instead they are paradigms of the needs that no longer justify themselves in the urban space.

The in-between space, halfway from the domestic and the pure leisure, considered in [12], is something that the city has had, in some way and, today, the new neo-liberal city of the post-modernism has definitely lost allowing as the only option the commercialization of virtual gadgets. But this *third space* of life is not commercial nor a mere alienating hobby, having as a background everything that the city and Man need from Nature. This means the relationship Man/Nature and includes the understanding of the landscape with all of its multifunctionality.

In [17] is warned that there is a confrontation between sub-metropolitan allotment gardens and planning policy. The insensitivity of the planning about this space is something more than just ignorance: it is the result of the fear of the same foundations that rules planning, an image of order, from the social, functional and also aesthetic point of view. The allotment gardens have little meaning in today's virtual world where the way of existing and of connecting, given that the understanding of the city-nature does not have a market value.

3.1.3. Other concepts related to the allotment gardens: Continuous Productive Urban Landscape (CPULs) and Urban Countryside

Continuous Productive Urban Landscape (CPULs)

Viljoen introduced the concept of Urban and Peri-Urban Agriculture and with the concept of CPULs – Continuous Productive Urban Landscape (CPULs) ⁸ in 2005, and it sounds quite interesting to us given the proximity of concepts with the concepts of *Natural Landscape Continuum* and *Cultural Continuum*, profoundly rooted in landscape architecture in Portugal and with concepts of the current landscape architecture: it consists in a coherently planned and conceived combination of *Continuous Landscape*⁹ with *Productive Urban Landscape* ¹⁰.

⁸ *Continuous Productive Landscape (CPUL)* is a concept of project design that advocates the coherent introduction of productive landscapes. Crucial in the concept of CPUL it is the creation of a network of multifunctional open spaces that include urban agriculture as a complement and support of the constructed environment.

This concept grew in the project design investigation and explores the role that urban agriculture may play in urban design. It was thought and articulated for the first time in 1998 by *workshop Bohn and Viljoen – Architects*, followed by a publication of the book *Continuous Productive Landscapes: Designing Urban Agriculture for Sustainable Cities*. This concept was the center of international attention and is, currently, part of the contemporary speech project. André Viljoen and Katrin Bohn are currently developing this concept in Brighton University – Faculty of Arts, through the said workshop.

⁹ *Continuous Landscape*, similarly to the concept introduced by Caldeira Cabral, in Portugal, in the 50s – *Continuum naturale* – it is a current idea in the theories of architecture and urbanism that has already started to be implemented, not in a global way but partially, in some cities of the world. It consists in a network of open spaces, predominantly porous and made of vegetation, namely parks, or inter-connected green spaces, oftentimes referred as an eco-structure or infra-structure. They are free of automobile circulation, allowing pedestrian movement in the urban open space. They are an alternative to the use of the urban open space if we compare them with the existing spatial qualities of the utilized and underutilized disperse parcels of the urban open space. They should constitute an enormous (infra) structure of walkable landscape that runs through the city. Example of this continuum is the green corridor of Monsanto.

¹⁰ *Productive Urban Landscape* is an open space made of vegetation and run in an economical way and to be ecologically productive, for example, providing food through urban agriculture, the absorption of pollution, the refreshing effects of the trees or the increase of biodiversity in the *green corridors*.

It corresponds to a non-built and urban landscape, economically, social-culturally and ecologically productive, situated in a landscaping strategy to a metropolitan scale, built to include living and natural elements; thought to encourage and allow the urban inhabitants the contact with the activities and processes normally related to the countryside.

Overlapping the sustainable concept of *Productive Urban Landscape* with the spatial concept of *Continuous Landscapes* it is possible to propose a new strategy of urban design that will change the appearance of the contemporary cities towards the understanding of the city as a natural system, similarly to what is pretended with *Lisbon's Green Plan* and its *Green Structure*.¹¹

The CPULs will divulge the productive landscapes economically, social-culturally and environmentally. They will be inserted in the concept of landscape on an urban scale and, in the current context can be transposed to a territorial scale, offering the city a variety of advantages, lifestyles and few, if any, inconveniences or unsustainable aspects. This system of continuity shall cross the city through the built space, connecting all the open spaces inside it articulating them, finally, with the surrounding rural space.

In [19], the CPULs will expand to the countryside, enriching the urban fabric and the lifestyles and actively contributing to the resolution of environmental and urban problems. Either being different or similar, these productive landscapes will exist on pair with other urban open spaces. The CPULs will function as a strategy of urban design, hence, being able to act as moderators between the wishes of the local users and the strategies for urban planning; between social and economical feasibility; between sustainable ideas and urban productivity; between short term advantages and long term benefits.

Formally they can be very similar to the urban parks given that they both present a materiality and spatiality predominantly built with living and natural structures and elements, and are design with determined spatial criteria, formal and functional. They are as well, for several reasons, similar to urban forests. The urban parks and groves, being agriculturally less productive allow, however, a bigger freedom on the utilization of the space, given that there is not the protection of the cultures condition. In what refers to countryside, the CPULs can be considered similar to gardens given that they both follow the same sequences and patterns of plantation.

In comparison with other open kinds of urban open space, in reference [19] are referred three criteria that cover the most important qualities of a CPUL:

- The time and space amplitude – as heritage, legacy and identity;

¹¹ Included in the Urban Green Structure, Magalhães [18] defends, the existence of an Urban Ecological Structure, in which it is pretended to assure a bigger biological richness and to safeguard the fundamental systems to the ecological balance of the city. With this Structure it is pretended the creation of a continuum naturale integrated in the urban space, as it was congratulated in the Environmental Bases Law, providing the city, in an homogenous way, of a system constituted by different biotopes and corridors that connect them, represented either by natural occurrences, either by existing or created spaces for the purpose, that serve as a support to wildlife. To this ecological structure we add a productive structure, also a subset of the Green Structure.

- Utilization – as the present reality;
- Ecology – as its gift for the future.

The amplitude describes the space, in its extension, its width and breath. It means more than size, but the dimension is its basic element, its beginning. There is no qualitative judgment connected to dimension¹². The size is considered influential in the designation of the space and in its capability to proportion certain programs and occupations. The sense of openness¹³, given that it is connected to the size, reflects this manipulation providing a much more sensitive measure for the qualitative success of the urban open space.

The utilization/occupation of the space is one of the first concerns when planning the contemporary open space. It means, frequently, to put in perspective the success of the new project with designs with criteria, also quantifiable, as for example, the cargo capacity, or the financial volume obtained by the offer capacity of the place (leisure centers, stores, restaurants, spas, among others). A more holistic vision of the current occupation of the open spaces may include more stable and qualifying criteria, namely education, health, the potential for integration or enrichment of the self, the satisfaction over individual actions and its importance to a wider urban community¹⁴.

Ecology, in this case, gives importance to the open urban space for the connection of the present drawing project to the program of a more desirable and sustainable future, proposing, as well, a strategy for the management of this process. The ecological concept of gradient, in particular, clarifies the idea of gradation in the process of formation and transformation of the shape, and of the natural processes, of the organization of the materials in nature according to a stricter set of rules following the formal creative device, but coherent with the ecological limit principle. A second type of movement is that of the misfit, that continuously changes the shape, position and appearance.

The Urban countryside

In [20] is introduced the concept of *urban countryside*, in which is accepted as valid the definition of the French rural code, which defines as agricultural every activity of control and management of a biological cycle of either plant or animal nature, together with the activity developed by a farmer in the prosecution of the act of production or sustained by the companies. The concept of *urban countryside* puts itself in the relationship of movement

¹² A small open space is not a bad open space, neither is a big open space for that matter. They are valued for being open, exterior, non-built.

¹³ Although related to the place, the sense of openness reflects manipulation promoting a qualitative measure more consensual to the success of the urban open spaces. It is related to the occupation and function of the space as well as with its position in the urban thread, reinforcing the importance of the open space in the urban net. The potential to this movement encourages occupation and the occupiers as well as it models the shape and appearance of the urban open spaces. It also introduces change and renovation in the space, offering with that a particular visual stimulus. The stimulus can be extracted from a number of sources (events, activities, movement, etc.), but it is, predominantly, connected to the material and natural processes: the vegetation submitted to a seasonal variation, to the growth and change of plantation patterns, to water, wind, sun, rain, etc.

¹⁴ Depending on their programs and the tolerance to change, an open space providing social interactions will certainly accommodate a great variety of occupiers that seem less interested in the dimension of the space or its location, than in its potential to integrate and participate.

between process and product, between agriculture of the urban space and *desagriculture* of the rural space.

Considered as a social project, capable of improving the urban life conditions, the urban countryside is not reduced to a social-economical process that varies according to the greatness or richness of the city. Not wanting to renounce to its goal – to feed the citizens – it is a part of territory of the city without necessarily transforming into a *green space* or *natural park*, unless the park takes on the content and duties as an experimentation place of the *urban countryside*. In this case, we talk about an urban rurality – different from the agricultural rurality – similarly to *Quintas de Recreio* (recreational farms), in Portugal, where the population does not waive the agriculture but that should be coherent between two possible paradoxes: to lose agriculture but not the shape of the allotment garden, or to keep the field with no agriculture similar to the idea of a garden that evokes the agricultural image, without producing.

Urban countryside (campagne urbaine) – coined by Donadieu in 1998 and title of one of his most well-known works – two words that seemingly oppose and create movement fighting the sedentariness of the thought. But, *urban countryside* are also two coordinated words in a single concept through which it is easier to promote the project and an action.

The countryside space infiltrated in the disperse city may be a part of the urban space taking on rules for the contemporary city project from the new cultural, ecological and social values that build an inhabitable society. In [20] it is not proposed as an unprecedented space typology, as a new *standard* for *green*, but is aspired to create an inhabitable space, given that, together with agriculture, a new ecology is proposed, new myths and new symbols to share with their inhabitants – a new landscape.

The goal of Donadieu is that the peri-urban agricultural space, which will tend to be more extensive in the coming years, never again has to be subjected to the fatality of a next transformation, but that it shall be a witness of the history, given that it will outlive it. This countryside, inhabited by a society that combines the practice of the city with landmen from several origins, asks to participate in the definition of the urban space given that their inhabitants do not want to let go of the city, confirming a life choice where a bigger contact with nature is privileged¹⁵.

The hypothesis that the new city of the *urban countryside* organizes itself around an habitability project, or better put of sustainable urbanity, can be put. However, for this new countryside to become a landscape and, consequently, to acquire a relative perpetuity, it is obvious that it should be created with the quality that it does not currently have¹⁶. It is the

¹⁵ The risk that the peri-urban society takes is alienation, the loss of an horizon of meaning and the feeling of belonging to a community confused with the place, the attribution of a social category to a stable and immutable context.

¹⁶ In [21] is emphasized that, without the cultural scheme of landscape, the citizen can not understand the countryside: “How can you understand the agricultural logic if you are unacquainted with the subjects of fieldwork and livestock? And looking to the ecological thought, how can you accept that absolute protection allows the conservation of biodiversity, when everyone knows that the second *natura*, once abandoned, can leave the place a lot less diversified than what ecologists think? And how not to protest against the horticultural academicism that proposes to cover countries and cities of flowers, to produce nothing more than commonplaces. What the aestheticians say, without

job of a landscape design – to build and design the landscape structure that will build the Eco-symbols. The innovation will consist in associating the agricultural and the built spaces, in a project that binds them forever. The inhabitable city will be constructed at the expenses of creative imagination, over the ruins of conformism and preconceived ideas. The multicultural concept of nature and the new attribution of the natural sense to the natural objects can create the foundation to the political project of the *urban field*.

According to Donadieu the realistic utopia of the *urban countryside* voluntarily attributes to the space a spiritual condition, more than reducing it to a lifeless support of equipment and social practices. Some will participate and will recognize themselves in this project; others won't, because the constructive tension of the project is that same source of social differentiation, adhesion, expectancy or denial.

As for us, we consider that the challenge of territorial appropriation is remarkable: first it includes in the social territory in question, some spaces exclusive for the inhabitants given that, through a work that involves major actors – farmers, associations or municipal staff – it questions the ideal of social organization and discusses that aesthetic job. The virtues of the dialog are certainly known but, its achievement depends, majorly, from the capability of society to recognize their own mythical horizons, be them ancient or modern.

It is indispensable to reclaim the myths of nature that, in the *urban countryside* project, send us to the founding values of society. The myths and rites keep the group together, gather it when it falls apart, be it a problem of public order, be it of collective health or of the future of the planet. Acting in such a way, the interlocutors of the project gather around rites – meetings, expositions, media messages – indicating the symbols, spaces or objects, land or agricultural products, stimulating the processes of socialization where individual dispersion is the rule.

To say that the habitability of a territory passes through the social appropriation of the public and private places, mean to enunciate a necessary condition but probably not enough because the creation of social legacies through founding myths – as solidarity or health benefits – makes the social-political regulating system to recognize the collective project and to accompany it; otherwise it won't be nothing more than pure fantasy. In [20] the communal administration should, for example, buy agricultural fields to guaranty the continuity of the cultivation, to systematize leisure routes in the agricultural parks or to subsidize the farmers in case of prolonged price fall. It is not rare that local administrators subscribe to the common opinions, making their own the aspirations of society: living in the countryside, for example, is a *slogan* that accompanies the farms' policies and local revivalism.

compromise, is that the ecological sciences should concern themselves about the natural processes, inventory and environmental sustainability and living species, while nature and landscape pay attention to the perception of this environment and its representation."

The countryside is, in fact, the second nature made a show, in territory where urbanity and rurality are intimately connected and still opposed. In [20] the countryside is a concept we need to keep mentally representing to be able to reach reality.

Localization can be enunciated under the form of a paradox: the more social groups find in the *urban countryside* the attributes of nature, the more complex should the social and technical processes be to produce this way of *nature* connected dialectically to the central urban area. The more the countryside becomes inhabitable, offering pleasure and comfort to its users, the more the collective myths should be renewable.

We can then consider, as being of general consensus that, although it may be placed inside urban agriculture, given that it refers to activities related to food production in the city, being able to occur in several situations, the *urban countryside* allows other activities besides this one, namely new social and economical practices (ponds, rural tourism, sale of quality food products, horse raising, among others) carriers of an innovative proposition of sustainability and of new ways of spatiality. The *urban countryside* can be that of a more urban and rural city that will result from the articulation of the *natural*, urban and rural systems, that will result in turn in a new idea of space where its appropriation makes it inhabitable and of identity.

3.2. Why allotment gardens?

Nowadays, half the world population lives in cities. According to the United Nations Human Settlements Program – UN Habitat 2004, *State of the World Cities*, in 2030, this proportion will be of 60% (UN-Habitat, 2004).

Many cities cannot stand this massive population growth. Authorities face many challenges: creating enough employment; providing basic services, such as water supply and sanitation, health care, education; planning and maintaining open spaces; managing urban waste and sewage; decentralizing and creating a new efficient local autonomy

Poverty accompanies the urbanization process, gradually affecting urban areas [22]. This is an indication that cities are quickly becoming the focus of intervention and strategy planning to eradicate famine and poverty, as well as to improve subsistence means, which requires new ways to encourage local economies and strengthening nourishment and food safety. We think urban farming is one of those strategies.

The growth of urban poverty, famine and unemployment, as well as the special opportunities that the city provides to the farmers¹⁷, have stimulated the development of a diversity of production of the agricultural systems inside and in the outskirts of the city, frequently specialized in perishable products like fresh vegetables, milk, eggs and meat, taking advantage of the interstices inside and in the peripheries of the cities. Even though some ways of urban and peri-urban agriculture are based in a temporary use of these empty spaces, urban agriculture is a permanent characteristic of many cities, either in developing countries, either in the so-called developed ones. Also, the meaning of urban agriculture inside the contemporary open space varies according to the city in question. The environmental benefits of urban agriculture have only recently been identified and

¹⁷ Namely the rising demand for food, greens and vegetables, the proximity to the markets and the availability of cheap resources, namely the urban solid residues and residual waters.

recognized, with very different meanings in the developing countries and in the developed ones. In the developing countries, urban agriculture is largely oriented around the economical needs, as in the developed countries it provides, mainly, answer to wishes and social and recreational needs. Besides the social reasons presented, urban agriculture reflects and comprehends the multifunctional dimension intrinsic to the concept of landscape.

In Europe the interest on urban agricultural exploration – whatever the typology – has constantly been increasing in the last few years resulting in an upwelling of food production in the urban space.

In [23] agriculture tends to define itself as a *bottom-up* activity, a movement of timeless roots to the *top-down* elitism of landscape design professionals. The policies – the questions and practices – whatever the perspective in which they are seen, require *top-down* and *bottom-up* initiatives. To free or reclassify the land for urban agriculture requires more than a simple desire of holding hands and planting vegetables. It requires a *top-down* intervention, by the planners and local authorities. If urban agriculture is seen as one of the various ways to make an environmentally productive landscape inside, and around and out of the cities, then the professionals of the field of the urban project – open spaces and built fabric – are vital allies in this project.

The urban agriculture in Western Europe can not be reproduced in the same molds as in countries like China, with a much more rooted and generalized connection to the traditional agriculture, or even in the United States, with its new immigrant population, that come from agricultural economies. For urban agriculture in Western Europe to be a part of its own city-countryside, it needs a wider coalition in the groups of interest: it needs not only to be tolerated, but to be welcomed. Any interest in the promotion of more complex models of development already introduced by Geddes and McHarg should pass by finding a place for urban agriculture.

As it has been referred, urban agriculture never stopped being present in the city, adapting to the different situations. The inhabitants of the cities have developed different strategies to improve their subsistence having urban agriculture been one of them.

In [3] urban agriculture answers in three ways to the urban dynamics:

- The first is the answer of the economically disadvantaged and unemployed population to urban poverty, to food insecurity and malnourishment. Sometimes, it is due to a temporary crisis like for example a natural disaster, a war or an epidemic. However, many of these problems related to famine and poverty have become common and structural showing that urban agriculture will have a much more extended expiration date as a social safety net for poor urban aggregates and at disadvantage.
- The second is the answer of the economically disadvantaged population, as well as of other social classes, to the opportunities and relative advantages that the urban environment provides to farmers.¹⁸ Direct access to the points of consume and markets,

¹⁸ The cities accumulate nutrients through the concentration of human population and their organic residues, be it solid or liquid. These nutrients may frequently be acquired without costs or at a low cost and can be converted into edible

availability of cheap *inputs* such as urban solid residues and residual waters, proximity to the institutions that provide information on the markets, credits and technical advices and new urban solicitations, among others.

- The third adaptation of urban agriculture is a direct answer of the urban farmers to the urban policies and programs, stimulating and enabling the urban agriculture to fill in certain requirements for the sustainable development of the city namely: the balance of the water, air and soil cycle, local economical development and food supply, as well as the recycling of residues, the promotion and maintenance of urban open spaces, the promotion of recreational and leisure services, social inclusion of minorities.

While some of the functions can be financially evaluated, others will have a tough time such as the emotional and aesthetic values. The sustainability of urban agriculture is connected with this multifunctional dimension. Urban agriculture adapts and develops together with the city according to the wishes of its users that represent the different functions. So, new ways of government, institutions and policies need to be implemented through processes that seek synergies and involve different actors [24].

Other city dynamics namely the urban and industrial traffic (that take a negative toll on the quality of the soils and irrigation waters), the new demands of the citizens (the need for recreational spaces and new products), changes in urban planning, in its norms and rules and, changes in the urban work market, among others, directly influence the development of urban agriculture and the way and where it is practiced.

These dynamics take place in a world increasingly open and global but that at the same time, searches for a bigger local focus, a greater decentralization and a larger maintenance of the social-cultural identity [22]. Both tendencies influence urban agriculture – globalization leads to new products entering the market, to more available information, in a general way, and to transformations in the consumer's preferences, which leads to an increase in the consumption in supermarkets; the focus on local tendencies leads to the preference on locally produced fresh food and to direct relationships of producer/consumer.

Since 2005 the prices of food items have skyrocketed to alarming values. Several values have contributed for this situation namely: the idea that agricultural products appear as an alternative fuel source; the rising need of food from developing countries, like China or India; a bigger cost for the transportation of the products; and the floods and droughts. The attention given to urban agriculture has increased considerably during the last two decades. The number of activities to promote urban agriculture internationally, nationally and locally, rose, but urban farmers still fight, in many cities of the world, to have their main strategy of survival recognized by the municipal authorities. Also the demand, by politicians and local practitioners, of inspiring examples of policies and successful actions is increasing.

products, vegetable or animal. On the other hand, while cities develop, there is an increasing demand of habitation buildings and of services that compete with the agricultural space. The producers need to adapt to these increasingly awkward conditions, while trying to maintain productivity through intensive production techniques.

Farming influences a great variety of urban themes, being accepted and used as a sustainable development tool for the city. Today, farming faces the challenge of being part of the city planning and of being easily accessible so that urban citizens can enjoy its multiple benefits [3].

The rising attention of political deciders and local and national practitioners is also reflected in the rising demand (to the members of – *Resource Centres on Urban Agriculture and Food Security – RUAF*) for inspiring examples of policies and successful programs at the level of urban agriculture, as well as practices and co-financing of programs of investigation. This fact can be attributed to several factors, namely:

- To the quick urbanization process and to the discovery that both urban poverty and insecurity about urban food are increasing. The consumption and waste landscapes, resulting from fast urbanization processes have created big problems to the urban authorities. The majority of the cities were not capable of creating enough job opportunities to its population leading to a fast development of informal occupations from which urban agriculture is a part.
- To the rising investigation staff in urban agriculture that provides data on its presence and persistence in the cities, its importance for the safety of urban food and, in the future to the urban economically disadvantaged classes. Since the beginning of the 90s, the *Cities Feeding People Programme* has encouraged an action of investigation in urban agriculture. In the beginning of 2000, the international research organizations that belong to the *Consultative Group on International Agricultural Research*, included urban agriculture in the investigation agenda and initiated a broad investigation program, the field of urban agriculture, under the name of *Urban Harvest* with activities in several countries. From that point, several research organizations included urban agriculture in their regular programs (Argentina, Kenya, Senegal and Nigeria).
- To the crescent attention given to urban agriculture and urban food safety by the international organizations such as *Food and Agriculture Organization (FAO)* and the UN – Habitat, and the crescent attention given to these subjects in International Summits. In 1996, forty international organizations involved in urban agriculture created the *International Support Group on Urban Agriculture (SGUA)* to establish a joint agenda and coordinate activities. The *United Nations Development Programme (UNDP)* and the UN – Habitat, included urban agriculture in the *Urban Management Programme* (in the Latin America section) and have been working with regional town halls to integrate urban agriculture in urban policies and planning. Recently, this initiative was also undertaken by the *African Network of Urban Management Institutions (ANUMI, 2005)*. FAO has also integrated urban agriculture in its agenda and created an inter-departmental work group about urban agriculture and food safety (now called *PAIA Food for the cities*).
- To the increasing capabilities, locally and regionally, of thinking about urban agriculture. The RUAF established regional research centers on urban agriculture and food safety that have been crucial on adjusting interests and on disseminating the increasingly bigger corpus of knowledge in this matter, facilitating networking and the developing capability in terms of the city and region.

As a result of these developments, as well as of the pressure of the economically disadvantaged local groups, urban farmers, the Non-governmental Organizations (NGOs) and several municipal authorities have recognized the potential of urban agriculture and are collaborating with other actors in an effort to maximize the benefits of urban agriculture while reducing the risks associated to it [3]. In [5], food production where food is being consumed, establishes a sustainable and healthy balance between production and consumption. It's an effective, practical, and beneficial way to reduce the energy currently being wasted in Western food production. This energy reduction in food production is vital for many reasons: that energy — mainly non-renewable — is currently used in the conventional food production; for instance, Europe greatly exceeds the energy use in the consumption of the food it produces. The unlimited daily use of non-renewable energy makes a significant contribution to the reduction of global resources, through the emission of greenhouse gases that generate global warming.

3.3. The benefits of allotment gardens

Over at least the last 50 years, *green* policies have been opposing the city growth, or limiting its disadvantages, through the preservation of *nature* spaces within the city. In Europe, those policies have safeguarded untouchable spaces in the green belt, as an expression of an ever growing interest for farming spaces for the services they render the city. On one hand because their public management costs less than that of parks and gardens, and on the other, because citizens seek specific goods and services — fresh produce, pedagogic centers, urban waste recycling capacities, and a healthy living environment.

Considered as a social project capable of improving the conditions of the urban life, agriculture is not reduced to the economical processes that vary according to the wealth of city, but has important motivations to convince the constructors and organisms of city management of the third millennium. Urban agriculture can and should feed and nourish the citizens bound to be increasingly numerous. However, it is not the same in every country¹⁹. In the developing nations it is not necessary to show the importance of this function, conditioned, however, by the real-estate pressure that puts farther and farther away from the urban centers the productive agricultural belt of the gardens, allotment gardens and orchards. The agriculture practiced in African cities withstands even the competition from rural agriculture and of the mass markets.

In the developed countries, on the other hand, besides rural agriculture, indifferent to the city, are appearing in new ways of horticultural production, orchards and flower cultivation that answer directly to the needs of the citizens, in particular to the demand of buying fresh food products, with known provenance and quality, or of searching for ornamental products, especially trees, perennial plants and seeds. These are new urban lifestyles.

¹⁹ Urban agriculture is frequently tabulated by western *standards*. In the totality of Chinese cities, 85% of the consumed vegetables by the residents are produced inside the cities – Shanghai and Beijing are self-sufficient in vegetable production. This information may seem irrelevant to the rich European countries. However, the attitudes relative to food production are based in cultural aspects more than in health aspects as, for example, the Hong Kong case demonstrates. There, the vegetables to satisfy 45% of local demand are produced in 5-6% of the total land area [23].

This is the fundamental difference between rich and poor countries. Once satisfied the feeding needs, it gives way to a new question: the quality of the individual and collective lifestyles that should have never been separated. That is, it creates urbanity in the sense of better living the city.

Urban farming has many significant benefits, such as improving the environment and helping develop ecologically balanced areas, as well as at the social and economic level, for the community, and in terms of health.

Allotment gardens frequently connect areas with different occupations, establishing a visible physical link between two spaces. In this approach, they frequently define *hidden* or forgotten spaces within the city that may undoubtedly react to the landscape's multifunctionality.

Urban agriculture also gives *scale to landscape*. The way these farming surfaces are changed to accommodate planted surface links and gives visibility to the underlying topography. The dimension of crops and cultivated fields offers another standard from which to measure landscape, allowing people to locate and position themselves within a particular territory. This capacity to read the landscape, and locate oneself becomes critical, as contemporary globalization produces more uniform, compact, and timeless landscapes.

Despite the undeniable existence of these benefits, the positive impact of urban agriculture in the character and quality of the landscape is not shared by everyone. Landscapes that result from urban agricultural projects tend to share some common characteristics that are not included in the dominant approaches to the project design of the urban space held by landscape architects, architects and urban planners.

These characteristics include a subtlety, an introvert character and frequently non-planned and the constant transformation of the landscape. To some they are understood as detractors of the quality of the urban landscape. But to others they are some of the most desired and necessary landscapes.

It is a fact that urban agriculture is crucial to the existence of several poor cities in the world. However, just recently, the wealthy industrial nations of the world and its politicians started to consider the potential benefits of urban agriculture. Nowadays, in all European cities, food production faces a severe competition with the other uses of the land, namely habitation, commerce and industry that frequently have a high profile and financial payback.

While a great quantity of information on the design of low energy consumption buildings is available, including examples that take into account the impacts in the life cycle due to the embodied and operational energy, little bibliography is commonly made available relatively to urban agriculture. It is not that surprising that professions connected with the built environment have so little to do with urban agriculture. If the planning is supposed to be related with the coordination of the use and of land development and public interest, then the value of food production needs to be more publicized and, even included in the curricula of studies related to this theme.

The contribution of urban agriculture to food safety and healthy nourishment is, likely, its most important point. Food production in the city is, in many cases, an answer of the urban poverty to an inadequate, irregular and insecure access to food, as well as to the lack of purchasing power. In the urban areas the lack of income translates itself more directly in a lack of food than in the rural areas (the economical income is necessary to buy food). The costs of supply and distribution of food from the rural areas to the urban ones, or the import of food to the cities, are constantly rising and its supply in the cities is irregular. As a consequence, urban food insecurity will continue to rise [25]. To add to the reinforcement of food safety and nourishment in urban farmers [26], urban agriculture produces large quantities of food to other sectors of the population. It was estimated that 200 million urban residents produce food for the urban market providing 15% to 20% of the food in the world [27].

The improved access to fresh food is directly linked with health improvement. The production of food in the cities can and should help improve the diet of the population allowing it the access to fresh fruit and vegetables, particularly that population with low income. To add to the diet, urban agriculture can provide an useful way out for the quantity of regular exercise that health professionals argue to be necessary to avoid health problems like obesity. Also the practice of gardening or horticulture has been widely recognized for its beneficial effects in the treatment of mental illnesses.

Urban agriculture is an important income source to a substantial number of aggregates. To add to the income of the sales of the surplus, the families of the farmers save in household expenses when cultivating their own food. Given that the economically disadvantaged classes normally spend a substantial part of their income in food (60-80%) [4], the savings can be substantial. Urban agriculture also stimulates the development of micro-companies for the production of the agricultural *inputs* needed (forage, compound and worms); to the processing, packing and product marketing and other services (animal health services, commercial accounting, transportation). In the developing countries it can proportion an orientation for the economical life.

The economical value of urban agriculture can not be simply compared to the type of financial flux caused by the exchange of money for agricultural products in supermarkets. From a small or medium production, preferably organic and seasonal and with aim at the local market, urban agriculture is a different approach to life and food that, more than to compete, supplements the already existing products in the supermarkets.

Urban agriculture can function as an important strategy for the attenuation of poverty and social integration of the disadvantaged groups (like immigrants, families affected by AIDS, people with deficiency, aggregates lead by women with children, elders without pensions, youth without jobs) providing them with a stronger way of integration in the urban network, a decent subsistence and preventing social problems [28]²⁰. The urban and peri-

²⁰ It is a merit that the inhabitants attribute to the neighboring agriculture of the city, the permission for the existence of family gardens, the integration of social marginal groups, for example immigrant workers or unemployed people. In

urban farms can also have an important role having a leisure and educational play in for the citizens, having a role in biodiversity and landscape management, a bigger proximity with the natural cycles, as well as with the perceptive development of a different dimension of time.

Also emphasized in the urban agriculture related bibliography is its importance in terms of community development and as an agent for social regeneration, reducing the discrimination, fighting crime and generating economical benefits. In terms of urban regeneration, one of the strong points in urban agriculture, identified both in the Europe and North America related bibliography [29], is its capability of making a highly visible and practical difference in the life of the population.

The waste elimination has become a serious problem in several cities. Urban agriculture can contribute to solve this problem turning urban waste into a productive resource through the production of compound, worm culture and irrigation with residual waters.

Urban agriculture and forest can also have a positive impact in the open spaces of the cities, in the improvement of the urban micro-climate (windbreakers; dust reduction and the existence of shadow) and in the maintenance of biodiversity as well as in the reduction of the carbon footprint in the city with the production of fresh food near the consumers reducing, consequently, the energy consumption caused by transportation, packing, refrigeration, etc.

Investigation developed in Holland showed that the existence of agricultural spaces, and thus built with vegetation, near the houses, has a positive effect in people's health [3].

3.4. Policy and allotment gardens

Due to the multifunctional and improvising nature of allotment gardens, policy development and planning actions must involve many sectors and disciplines: agriculture, health, waste management, community development, nature and parks management, and others.

On the other hand, urban farmers, as well as the organizations supporting them, must be involved in the planning process. In [30], the most important thing in strategic planning is the involvement of the underprivileged populations in the assessment of the situation, property definition, and the process of action planning and enforcement. These advisory processes result from development policies and planning actions, not only comprehensive, but also sustainable. These facts are increasingly acknowledged and included in urban planning approaches, as planning methodologies of the many players adopted by the *Agenda 21*, and by the *Sustainable Cities Programme*.

Public power has many reasons for wanting to keep farming spaces and farmers in urban areas. First of all, for food safety reasons in countries with scarce farming areas. Then, for

these domestic allotment gardens, original ways of socializing are developed, particularly on weekends and holidays. You go to the garden, mainly for food reasons, but also for the regular rendez-vous with other people and, with their families, bonds are created, talk, trade and invite.

civil safety reasons (fire hazards due to dry vegetation). There are also economical and social reasons: the producers' geographical distance (due to costs, and also to local food safety in a crisis situation), requiring short commercial circuits; the diversity of farming products and their geographical origins, leading public power, for instance in Europe, to distinguish quality brands in defined territories — registered designation of origin (DOC), factory products or organic products; farming tourism also plays a significant role spreading these products.

There are other environmental and landscaping reasons: landscape design, multifunctional use, and identity preservation, amongst others. Under controlled conditions, urban farmers should recycle a part of urban water and organic waste. Farming landscape structure, such as productive farmland plots, wind hedges, wells, channels, supports, routes — these are all ways to break the agglomerate density of buildings. There are other vegetable or water surfaces, which also help purify urban micro-climate; farming spaces are leisure areas. Most of all, they offer the population public recreational spaces kept by farmers, so long as the safety of goods and people is guaranteed. Matching Donadieu's *urban field* [20], this image is not spontaneously born but comes from the collective action of farmers, the population, and urban public power.

These spaces are emerging as farming parks in South Milan, as orchards by Palermo, vegetable gardens and orchards in Baix Llobregat, in the Aubagne community not far from Marseille, in Delft, Holland, and as system of farming parks in Almada, also projected in *Estrutura Verde* and *Plano Verde de Lisboa*. This happens in all cities re-acknowledging the multifunctionality of landscapes.

Despite the already referred relevance of the existence of urban agricultural practices, its integration in the contemporary urban economy is still a flaw in the urban policies and planning.

Urban agriculture is an economical activity practiced for commercial reasons, by an estimated number of 200 million people and informally by 600 million people around the world. The innovative book *United Nations Development Programmes (UNDP), Urban Agriculture; foods, jobs and sustainable cities*, identify three economical benefits in urban agriculture: employment for the future generations and business development; the improvement of the national agricultural sector and the supply of urban food; and the economy of land use.

Even though urban agriculture significantly contributes to the feeding necessities of several urban populations, the United Nation's Food and Agriculture Organization (FAO) informed that, in the future, the 12 mega-cities (with more than 10 million inhabitants) will experience an increased difficulty in their feeding. (FAO, 1998).

The land portion necessary for the urban agricultural activities that are commercially viable will depend of a number of factors that include [31]: the quality of the land; the use of natural and artificial micro-climates including greenhouses and polyethylene tunnels; the type of crop growth; the combination of animals and plants, the prices of the products in the

markets, including the products from rural and overseas areas; its *inputs* including work and fertilizers; and the distance from the place to the urban markets.

The urban producers can obtain a bigger efficiency with the utilization of underutilized resources in the cities such as the interstitial spaces, the city compound and the labor coming from unemployed people. The productivity of urban agriculture can be 15 times bigger than that of rural agriculture although the incomes can suffer some *inputs*, and insufficient municipal support (FAO, 1998).

The macro-economical effects of urban agriculture can be improved on the level of food safety and of a reduction in food prices, inducing the increase of employment and contributing to the industries related to the activity. It is presented as a way out for the current social-economical problems.

3.5. Allotment gardens in the periphery

The rapid urbanization process, verified along the last half of the 19th century, has led to a continuous expansion of the city towards the rural suburbs, leaving big areas under the direct influence of the urban centers. However, the current problem of the peri-urban space, understood as a new way, a disperse way, of the construction of the city, corresponds to a phenomenon that started developing two centuries ago²¹.

The process of progressive democratization brought the destruction of the traditional system of symbolic value and the continuous collocation of new values and references in the collective imagination. Relatively to the urban space, to its periphery and the diffuse territory of the city, democracy brought not so much the destruction of the places or their context, as it brought the trivialization of the shape of the public space and the repetition and reproduction of the shape of the private space, favoring the appearance of a separation of the idea of common good²².

It's common knowledge that cities go through a constant process of construction and decadence. Open spaces are filled with buildings and their formal or informal temporary uses are eliminated. Meanwhile, degenerate areas are demolished, creating new open spaces that can stay empty for a long while, until they're given a new use with the corresponding investment. These new spaces are often occupied by urban investors [3].

²¹ To be noted that even walled cities looked to, however they could, integrate inside them an area for that purpose only. For example, the *Fernandine wall*, in Lisbon, built in the 14th century, covered a wide area (a little bit over 100ha), to assure some supply autonomy in case of prolonged siege.

Also the Ebenezer Howard model, about the creation of new cities, predicted that each one of them would integrate a surrounding agricultural zone.

However, if we consider that it starts in the search for the countryside by the citizens we can say for sure that it has always existed, not only for the needs of agricultural supply, but also for leisure and contact with nature and, for sanitary and health reasons [32].

²² A perspective of the defense of the common good is particularly worthy when we talk about the Mediterranean landscape, especially the coast, where the need for a social solidarity is stronger and an environmental valuation policy without the reconstruction of a civic tradition that establishes a connection of society with that place is unthinkable.

As for this crescent peri-urbanization, some say that, “the city-countryside dichotomy should give way to spatial integration, which process must not be seen as the countryside urbanized or as the city ruralized, but as a new way of social reorganization, that should reflect complementarities”²³.

In that same sense – of spatial integration and social reorganization – Secchi [33] revalues peripheries, stating that it is less and less certain that the periphery is the place for subordinated activities of degradation better representing the best place for exchange between the city and the rest of the world.

Such opinions reflect from the start the reality of the city-countryside relationship that, with the increasing dispersion, occurs in the urban surroundings. This new territorial localization and the specific social relationships to it associated indicate a new way of organizing the city. In its surroundings dynamic zones in expansion are seen, zones of interaction between the urban and rural areas.

This peri-urban interface [34] is characterized by rapid transformations in the use of the land and in the way of living of the populations. The traditional systems of local agriculture and land distribution are interrupted by new citizens looking to acquire land²⁴ leading to a raising in its price.

As an answer, some *traditional* farmers give up their activity²⁵ and sell the land looking for more profitable and lucrative activities²⁶.

The interdependence between urban areas and their rural surroundings creates the need of the existence of approaches of integrated development appealing to rethought areas of interest, institutional changes and innovative planning approaches [35].

None of this happens in the peri-urban space. The old inhabitants will still have some connection to agriculture, an increasingly smaller one, and shall keep social relationships of proximity, but the new inhabitants are essentially urban ones. Many of these come from the city, of collective habitation areas; they work in the city, in the services or in the industry and live car-dependent; their leisure and realities of reference are based on television and superstores; perhaps practicing some gardening; they value individuality and establish few neighborly connections; sometimes relationship problems occur between younger and elder residents.

The economical, social and demographic decomposition of the rural space makes the countryside increasingly oriented towards and by the city. The countryside around the city is, almost always, the most unstable place of the territory and more propitious to processes

²³ Carvalho [11] p. 189.

²⁴ To speculate: to the exploration of sand and stone, to the development of infra-structures, to the construction of installation of more urbanized types of agriculture.

²⁵ The general devaluation of agriculture is a fact and Portugal is an example of it.

²⁶ Jobs in the city; the intensification of their agricultural systems of production to a bigger adaptation to the new urban conditions – cultural changes, market orientation, the use of new technologies, namely greenhouse production, direct market, use of urban waste or residual water, among others.

of transformation – the soil of the future periphery, conditioning of the next votes in the process of real-estate valuation, of highways, interstitial area hard to interpret. In most cases, the destiny of the fields is the one of being defined by the dynamics of transformation of the city [7]²⁷.

The relationships of the new residents with the space that they occupy, little has to do with rurality (although they can feel sympathetic about it). Even the older residents, with the crescent abandonment of agriculture, new jobs and displacements, will eventually be turned into citizens of this *wider city*, of this *city territory*. The peri-urban space, presented as a return to the field is, before anything else, a new process of urbanization.

This peri-urban interface is defined as land in an advanced state of transition from rural use to urban use – land in construction, land to which the plans for subdivision have been approved – in the end, land where there are little doubts about its orientation to and conversion into urban uses, where it is not predicted a multifunctional use of the landscape, but where it is fundamental [36].

Oftentimes the urban periphery is referred more as a phase than as a place [37]; the rural activities are considered as activities to disappear in the next few years, while urban activities are simply understood as precursory of the city. The substitution of a rural inclusive space for a completely urbanized area is stipulated and, the disordered landscapes of the periphery, characterized by a mixture of rural and urban activities, are regarded according to this determined succession and established as places in transition that are soon bound to disappear²⁸. The notion that urban development is the best use of the non-urban land is written in the lexicon of any urban planner or politician. The ignorance of the concept of multifunctionality and of the concept of landscape lead to the transformation of a the scenery of periphery and the notion of *no place* that accompanies it, turned into a battlefield between the efforts to preserve the rural soil and the ruthless forces of urbanization.

Periphery can then be characterized, by many, simply as the grave to the countryside and a birthplace to the city, while the intermediate phases of the landscape and of life have been ignored. The periphery landscape, complex and sometimes chaotic is merely described as a temporary void. Due to the landscapes in transition being neglected and simplified according to the urban-rural conflict, the transforming side of the landscape is put aside or severely reduced²⁹.

These hybrid spaces of the city and the countryside, or *spaces outside the order* are common in the periphery [37]. Vast areas of the periphery are waiting for projects, often for a long time,

²⁷ When the contemporary city breaks the rules of construction of its growth interrupting the continuity and adjacency with the pre-existing urban fabric, it simplifies the rules of construction of the boundary space, the *in-between* space, isolating the new settlements inside a landscape less and less recognizable as countryside, but already altered by a transformation which objectives will be real-estate valuation, a goal to which the owner aspires be it farmer or citizen.

²⁸ In [38] is referred that the periphery of the city has been, for a long time, the destination of the rural landscape of the periphery of the city, the natural material to the subdivision for residential and industrial lots and trailer parks

²⁹ In [39] is referred the artificial division between urban and rural as the primary reason for the existing difficulties when running the periphery.

that contribute for the qualification of the landscape. The planning, the development, and the rehabilitation of spaces are part of the contemporary society; an intermediate phase of abandonment is an inevitable stage of the contemporary city, as well as of the countryside, that also is transformed [40]³⁰; the peri-urban territory is clearly in the process of social rehabilitation.

The use of similar definitions, that refer the transition/indecision of a rural/urban use (and often the conflict between farmers and the population of the disperse city) have been long referred to in literature on planning, as well as the discussion around the old question of considering this as *urbanized countryside* or *ruralized city*.

It is certain that in both definitions it is included the idea that this space should contribute to the supply of food to the city. It is an obvious reality in developing countries, but much more complex when around the western city, where there is a type of agriculture that supplies to the big supermarkets and shopping centers, with which urban agriculture can not compete. In the peri-urban agricultural spaces there are many diverse ways of agriculture, from the intensive one to the extensive, from commercial to productive, from traditional to hobby.

This abundance of ways is quite positive because it indicates that, independently of any global project, these are the differentiation processes that are happening and that farmers are reacting to the demands of the new markets. The rapid advances of agrifood technology and modern rural economy management allowed to obtain benefits capable of transforming and making competitive the peri-urban space as a way of organization of the New Diffuse City. This new generation of dispersion landscape is related to the territory of peri-urbanity. In this figure, through discontinuity, a new agricultural space is introduced with unprecedented form and function. If we consider this space as a part of the new landscape, then territory and landscape must converge towards an innovative notion of values, non-measurable as trading values or economical goods, but as use values, that attribute weight to pragmatics implying a familiarity through the places they inhabit, carrying rhetorical and aesthetic values, as a premiss to an identity construction or the symbol of a renewed society.

The resistance of the farming space to the absorbing pressure of the neo-liberal city will depend, almost exclusively, on its own means and on the management of its resources and possibilities, as well as on the revitalization of its equipment levels and on the effectiveness of its means of transportation.

The enhancement and the creation of new techniques, as well as, in many cases, the farming units fragmentation, also beyond the commercial aspect, as in the case of the *Hobby Farm* movement and of some family vegetable gardens, generate a dynamic in which *part-time farming* includes a double occupation as social and economic reality. This generates a stable relationship between farming spaces and urban space economy. On the other hand, besides economic matters, this relationship between farming spaces and urban spaces has also come

³⁰ Witness of this process are the hesitations of local administrators, the disbelief of the farmers, the pressure of the new inhabitants and the different *lobbys*, as defended by ecologists and hunters.

to imply social motivations rooted in certain urban population sectors with smallholdings and small family vegetable gardens. These are often marginal and not profit oriented, which indicates to a tendency to recover connected ways of life, contrary to what we have now.

From an ecological point of view, nowadays, this proximity between farming and urban reality may be the most efficient vector to achieving a sustainable city, capable of giving a better use to waste production and to the growing energy consumption.

A policy of maximum reduction of agricultural exploration uncertainties, under the dominant influence of the urban space, does not connect well with a new neo-liberal culture utilized as convincing proof of little solidary attitudes. Nevertheless, the maximum reduction of these uncertainties on agricultural explorations is in the recommendations of the OCDE. Before this organism agriculture must assume a decisive role in the organization of the peri-urban areas.

The management of European space policy inscribed in the European Spatial Development Perspective – Postdam 1999 – had the merit of putting between the primary objectives the orientation of the territorial community strategy towards a balanced urban system, reachable through new ways of city-countryside relationship, aiming to the integration of the poly-centric urban space of the metropolitan areas and peri-urban agricultural space, opposing to the union of the built fabric. The challenge of the contemporary city should start from the peri-urban agricultural space, which surface varies according to the greatness of the city, and which urbanity is more reinforced the more the urban center presents itself as a cohesive space, getting closer to the peripheries, including sections of field.

The peri-urban field landscape, for a long time seen as productive agriculture, can become again, as in the image of the English countryside of Humphrey Repton and Capability Brown, a place of new symbols and renewed aesthetic values, with no nostalgic intention and innovative activities, be it from the city, be it from agriculture, that do not refute the city but embrace the advantages of this closeness and its inter-relationship-. The urban periphery can simultaneously be a space of predominantly rural use that assumes some urban functions without losing its sense and its agricultural economy. Transformed space that had and has, almost permanently, the necessity to adapt to technological innovations and the increases in production being in this improving capability its shot at survival. In this sequence, it can include not only small or medium explorations but also those of bigger dimension that have been and is protagonist of the *metamorphism* of the peripheries, important to understand its evolution in time.

The history of peri-urban agriculture shows that, in the beginning of the 19th century, it was responsible for the production of food of the city. In the end of the said century with the big developments in transportation, peri-urban agriculture was responsible for the production of food of the city and neighboring cities (golden age of the horticultural periphery).

In the European market of the 60s of the 20th century, an enormous real-estate speculation takes place with the peri-urban agriculture. From the end of the 90s, the peri-urban agriculture painting varies a lot from region to region, with a bigger concern in this sense

due to, in part, the enormous increase of the urban population and the economic crisis that is globally felt.

The peri-urban space is today, without a doubt, the most representative landscape of our post-industrial culture, setting a new expression that, in Europe, occupies almost the totality of the cultivable spaces, as it were the already natural form of expression of the agricultural spaces that need a high technological level and acquaintanceship with certain populations and activities [8].

The city demands a new culture concerning landscape. The expectations rural spaces create as to the location of activities already surpass peri-urban situations and the debate city/periphery/rural space, revealing a growing recovery of the landscape's multifunctionality, and implying a new understanding of their possible meaning as urban space support. What matters most is to *surpass* the notion of dependency of the rural space relatively to urban space. We believe that viewing the farming space as equal to any other soil use is the greatest contribution our time will leave as a legacy for the city's future.

Just as the proposition of *landscape urbanism*, concerning the relationship between the landscape and the city — landscape as an (infra)-structure determining urban planning and development — Donadieu, and also Ribeiro Telles, suggest — instead of trying in vain to control the city's growth through grids, belts, front sides, and green spaces — building the urban fabric from the farming and forest space.

Like many other authors — namely Corner, Donadieu, Hargreaves, Waldheim, and others — Marot [41] also says contemporary context has put landscape architects in the convergence of farming and urban traditions. This means they are at the core of an awareness directed to both viewing public spaces (urban projects) as landscapes and viewing landscapes (rural extensions) as public spaces and consequently as the projects' possible goals.

3.6. Allotment gardens in urban voids

The process of city growth, almost always over the rural space, has produced new peripheries, hiding with new urban fronts the view over the countryside, introducing in it the city vocabulary, the houses, the roads, the infra-structures, substituting the agricultural parceling for the regular strokes of pathways, for a hard and waterproof surface that overlaps the irregular, porous and topographical surface.

The roles played by the countryside in their proximity to the cities were canceled, modified or appropriated accordingly to meet the necessities of the city, often conflicting with the diverse logic of space occupation and urban methods, nature regulators.

The environmental question that appeared in the second half of the 19th century, in the sequence of the industrial city, was, as we have seen, target of thinkers like Howard, Unwin, and Geddes, that re-elaborated an innovative culture of inhabiting, finding inspiration in the *poetic of the green*.

The modern society interrupted the dialog with the territory introducing the notion of *void* understood as the abstract plan of the urban stereometry, imagined isolated in a space regarded as isotropic. Newton was the motivator of the space of modern society – the space of abstraction, with no time, a space that is already between the filled ones but that is neglected. But the sanitarian question, after the First War, with the valuing of the free area and the sun that, paradoxically inspired the spatiality of the modern city nullifying the values of composition that are preponderant still today in many cities, or at least parts of them.

The theory of modern movement on the relationship between the city and the countryside was often misunderstood. With the image of the *tabula rasa* ended an articulated reflection that proposed the recovery of the *urban green* as a social value of rurality.

The word play *country-cities in city-countries* with which Walter Gropius pretended to rebuild the urban city in the countryside; the carefree workers that found job in the countryside; the meticulous design of the cultivation of Adolf Loos's allotment gardens in the houses of Siedlung Huberg in Vienna³¹ ; the socialization programs of the *urban green* aiming at the auto sustainability of the family centers promoted by Leberecht Migge and of the *Gartenkultur* to the attribution of terrains attached to the house; the narrow complementarity between the urban thread and the agricultural space thought by Fritz Shumacher to the metropolitan area of Hamburg and Köln; these are just some examples that show the poetical roots of the *garden-city* in the modern movement knocking down the traditional relationship of dependence between the center and the periphery.

The possibility of food supply of the citizens in the planning of the countryside in the margins of the *Siedlungen* rediscovered the rural space as a part of the city and the allotment garden as new urban material.

The contemporary city recomposed the separation between the city and the countryside occupying the territory again, densifying the chosen places by the rich bourgeoisie, in the last century – the vacation houses, the sea, the lake, the mountain – appropriating itself of the rural space, building an enormous new city in the countryside, continuing to leave empty great portions of land in which the contemporary city project can and should take advantage of the potentiality of these empty interstitial spaces reestablishing their historic and topological value, comprising them inside a new urban space [43]. The discontinuity of the new urban territories can start with the reconnaissance of the genesis of these interstitial spaces that can be transformed to any use.

As it was referred, the category of the interstitial space has been an emerging problem to contemporaneity: the interstitial void renegades urbanization, it is not inserted in a project, or becomes a new product, or it is rejected by the countryside and becomes a non-cultivated and abandoned space. It results, generally, from the neglect that derives from the uncertainty of the way and the indefiniteness of the composition, left to an arbitrariness of a

³¹ "It is necessary to start from the garden. The garden is of almost importance, the house is secondary." In reference [42] (p. 109).

flexible pretense made infraction from the collective interest point of view and of a mono functional vision. The interstitial space calls for a vacant spot, the abandonment, being able to contain, however, the promise of valuing.

Similarly to the *Third Landscape* by Gilles Clément, ecology approaches the interstitial space as a space where nature applies its projectuality, returning to the uncultivated the evolutionary dynamic of a natural *habitat*, more effective if it is near or inside the city, enabling the existence of a series of species of urban flora and fauna that encounter some *naturalness* in the inhospitable urban environment.

The theory of Gilles Clément has the merit of keeping the spaces *empty*, regardless of its destiny of use, dissociating the value of the space from its functionality, *rushing the nature* in the abandoned area and educating a new strategy of the uncultivated.

Also, the studies of urban ecology indicate the importance of safeguarding margins and interstitial areas, contributing to define rules and fundamental principles, namely to the construction of the *urban countryside*³² [20] or of the CPULs.

The emerging city is developed through multiple places of life, public or private, where the pulsating of the natural systems constitutes a third dimension of the city.

The hypothesis of construction either of the *urban countryside*, or of a CPUL (underlying the practice of agriculture) can found over the new idea of emerging city, given that it invites to consider the interstitial void as a positive property of the space and, consequently to favor every means of occupation that will provide value to this void, assuming it as a structuring element of the landscape and integrating part of the urban fabric. To the citizen, *nature* is first of all, the desire of a non-city or of another city, of a providential refuge, of a break. The *city-nature* project implies that the countryside turns into city, that the *nature-countryside* urbanizes itself and that the city naturalizes itself or ruralizes itself.

Outside of the built space, the emerging *city-nature* territory is composed by the three *naturas*, bound by singular ties, and that haven found over the centuries, namely in the roman *villae* and in the Portuguese *Quintas de Recreio* (recreational farms).

Interpreted according to this model, the voids constitute the interstices of the city and can be considered an evolutionary and reversible system, where its natural shape assumes a spatial and social importance that varies according to the production of the space, of the local policies and of the users – for example the family garden becomes, sometimes, the frontier of transition between the second and the third *natura*; the open space that is along the road network depends, almost always, of the urban functionality and the public parks are, often, stage of decorative intention.

³² Urban countryside or rural city? Two different points of view to two complementary and inseparable concepts – city-countryside and countryside-city: a countryside that is built with the city or a city that takes form with the countryside. The peri-urban countryside should provide the city. In the urban countryside a multiple activity should be developed (multifunctionality) that satisfies simultaneously the agricultural needs of the city provisioning and the recreational activities necessary to the quality of life of the populations.

It is reinforced the idea that urban interstices are ideal spaces to include open spaces' projects that may contain urban agriculture and, simultaneously, spaces of ecological and social multifunctionality that are characterized by the continuity, polarity, differences in gradient and social diversity.

As it has been referred, *urban agriculture* is a term that refers to a description of what is pretended to be done but, can be, as well, quite conditioning. In an apparently radical idea it continues the western tendency to create meaning and to make decisions through the creation of opposite binaries [23].

Urban agriculture is innovative given that it is in contrast with rural agriculture. The interstices are left out of this opposition – the exterior rings of the cities, frequently neglecting and rudimentary, as well as the suburbs besides them, are often underutilized, producing a feeling of restlessness that guaranties, once again, the garbage deposit, the persistence of industrial parks with low rent warehouses, of abandoned allotments and of the existence of underutilized and insecure urban parks.

If we are capable of thinking in these interstices and other spaces as intense as, if not as more intense than, than consolidated areas with which they are related and connected, then the urban agriculture becomes one of the several intensification strategies, without being necessarily exclusive. It is one among many interventions of landscaping architecture.

The chances of building a productive landscape infra-structure may be based upon the new idea of an emerging city, for it invites us to view urban voids as a positive property of space, and consequently, to favor all occupation means valuing that void and setting it both as a structuring element of landscape and as part of the urban fabric.

Therefore, the notion that urban voids are the perfect spots for open space projects allowing urban farming and, at the same time, ecologic multifunctionality spaces characterized by continuity, polarity, gradient differences, and social diversity is strengthened.

In order for these allotment gardens to be successful, it is vital to create simple regulations ensuring that society will protect the value of natural processes, and itself. At the conceptual level, these spaces will provide an open space source essential to metropolitan areas, given the absolutely irresponsible way urbanization has been occurring (concerning natural processes and their values), generally, through the increase of the density of buildings inside the cities and extension to the peripheries, always at the cost of open spaces.

3.7. Allotment gardens in the context of *landscape urbanism*

Despite the strong structuralism potential offered by the design of allotment gardens, the matter of urban agriculture is not included in the *landscape urbanism* debate. The most frequent typologies of this current concern the rehabilitation of old infra-structures and *brownfields*, favoring leisure and recreational activities for the benefit of users, and a deep ecological rehabilitation of these spaces.

However, given the potential of farming practices in urban space and their strong capability to support a conceptual structure, the subject of landscape design, *reference* must be made to allotment gardens, and to their inclusion in the scope of *landscape urbanism*.

We must also emphasize that, although this current does not include the productive dimension of landscape, and always keeping in mind our present goal to include the productive landscape system of urban space as well as, above all, the recovery of the landscape's multifunctionality, it's important to consider it in this project, for many different reasons:

- Because some *landscape urbanism* projects have successfully resisted the private sector's speculative mindset and the highly bureaucratic and technically oriented public sector.
- Due to the relationship between landscape and infra-structures being promoted.
- Because the strategies of *landscape urbanism* have given a voice to the territories' restoring of social and cultural formations — and the landscape's evocative power.
- Due to the criticism of *landscape urbanism* concerning the compromise of the classic design of urban project and planning and the need for an alternative to a new urbanism.
- Because *landscape urbanism* has emerged from landscape architecture, which explains its concerns extending to processes that include both the cultural and historical scope, and the natural and ecological scope [44], an idea that the emerging concept of *ecological urbanism* aims to enforce and potentiate [45].
- Because emerging practices involving *landscape urbanism* concepts teach many lessons to urban project design authors who wish to connect specific structures and flows of the population, activities, building materials, and time [46].
- Because it offers a complex program, at different levels filled with environmental, urban planning, social, cultural, ecological, technological, functional, and logistical mechanisms, and framings [47].
- Because it requires a new model of flexible and framed public spaces, caught in the web of social political, economical, and ecological currents in which they operate [48]
- Because these projects have the potential to unite the gap between ecology, creativity, and project design, so persistent since the impact of Ian McHarg's work.
- Because it opposes the random and opportunistic space composition that often rejects the landscape's organic structure.
- Because *landscape urbanism* identifies urban voids as urban space potential [49].
- And also because, in our opinion, *landscape urbanism* is a promising alternative available for the emergence of urban project design in the next decades, despite Diedrich's opinion [50] that considers that the development of the city from the landscape constitutes a practice to highlight in Europe, reason for which European landscape architects have never felt the need to, maybe wrongly, emphasize and utilize the concept of landscape urbanism.

The most clear proof of this are the countless prominent international landscape architects who coordinate projects proposing a great scale development in which landscape assumes ecological roles and is both a cultural authority reference and an identity mark. Among

these *landscape urbanisms'* examples, we can refer Adriaan Geuze, Christine Dalnoky, Florian Beigel, James Corner, Joaquin Sabaté, McGregor+Partners, Michel Desvigne, Philip Christou, and Teresa Galí.

The landscape design appear as an essential motor in an urban and regional sustainable development and, the landscape architects, through their holistic and synthetic attitude, should appear as the major actors in an emerging approach to the system of spaces of collective use. In these spaces the landscape architect recognizes their organizing and structuring skills and their qualities, that can be flexibility, reversibility, inclusiveness and, above all, multifunctionality.

From the above mentioned principles we can therefore say that, nowadays, open space projects respond to a great variety of wishes and programs, and their themes do not vary as much as their users — occasional or permanent —, culminating in a multitude of approaches and solutions. Urban space has many different types of open space: fantastic new and old squares, urban parks, riverfronts, forests, and urban beaches. Nevertheless, the idea of a *productive and continual structure* is rare [5]. However, both, as well as other urban agriculture models, namely urban allotment gardens, community or pedagogical gardens, allow a centered approach in the management of urban spaces in a notable way.

In [20] is referred that the fact of describing urban space as an urban surface does not mean that it is relative only to the spaces between buildings, namely parking lots, plantation areas or residual spaces. Nor just the so-called urban parks, the neighborhoods or the few remaining natural spaces.

The landscape present in the urban space corresponds to the living and energetic structure that organizes and supports a vast range of fixed and transformable activities in the city. The landscape is dynamic and literally makes events happen in time. In this sense, the urban surface can be considered similar to an agricultural field, assuming different roles and geometries, distributive regimes and appearances, as the circumstances demand it. This adaptability will be conditioned, in part, by the topography, for a smooth and uninterrupted continuity to be achieved, but also for the equipment and services existent. This way, if the purpose of the project design of the urban surface is to increase the support and diversify activities in time — even activities that could not be determined from the start — then one of the first strategies of the urban drawing is to broaden its continuity while it diversifies its range of services. That is, fewer project design as passive improvement and understood more as an active accelerator, establishing and creating new conditions to the uncertainty of the future.

For the character presented by urban agriculture, for its potentialities and its pertinence we think that we can consider the agricultural space, in the broadest sense of the term, as a *natural infra-structure of public interest*, in the same level of roads, dams, or electrical networks; in the same level of public or private woods, for social, economical and ecological reasons. The structure of the agricultural landscape, namely the productive allotments, the hedges for the wind, wells, canals, pathways, vegetable and aquatic surfaces, are other ways that break the mineral compactness of the agglomerate, contributing to the purification of the urban micro-climate, among many other benefits.

The agricultural space creates the necessary voids to the comfort of their inhabitants or to their safety in case of a fire, for example. Its reversibility allows, mainly, the possibility of an open project, making available public opens spaces for leisure purposes, with the condition of being guaranteed the safety of people and their goods. It makes available a cultivated area from which the citizens can make a collective use, in the same way of a public park, that still produces food, offers walking routes and pedagogical services to the schools; and allows to recycle urban residues, namely a part of the water and urban organic garbage.

If they are not coordinated, these uses and utilizations are not spontaneously compatible and may even exclude one another. It is important to think in articulating them and accepting a juxtaposition by exclusion. The concept of *spatial agricultural infra-structure*, *CPULs*, or, we can say, of *urban countryside* – as it is understood by Pierre Donadieu – is not spontaneously born, it requires involvement and joint action of public administration, farmers and inhabitants. These services provide collectivity with a price that should be paid proportionally to the objectives of public interest, of private companies that provide it and of the farmers. In practical terms, the public and private services play a complementary role to keep this *infra-structure* in time and, mostly to attribute the one function deemed as a priority by the administrators: natural area, leisure space, agricultural terrain, etc. To be able to persist, the cooperation between public organizations and communities should be integrated in a contract.

For us, agriculture and less dense urbanization, together with the ecological and infrastructure tendencies, are part of the landscape architecture's contemporary discourse and, in this sense we corroborate the thoughts of Michel Hough, Richard Forman, Denis Delbaere and Pierre Donadieu, among others. The agriculture and gardens analogy is linked to an underlying quantifiable and infra-structural support, in which cultures follow the movements and dynamics of energy transfer demands, ever since the comprehensive and integrative conception of landscape architecture. This agricultural analogy shares similarities with *landscape urbanism* that can be very interesting at the theoretical and practical level.

4. Results

4.1. Allotment gardens as a new approach to landscape project in urban space

The lack of a clear reference to urban agriculture as a way to establish a clear relationship between production, safety, and leisure, and the fact that it is an essential activity in the face of the present and expected future energy and food crisis, has led us to see urban farming, not only as a production factor, but also as having a great recreational potential, under a social, economical, ecological, cultural, and aesthetic point of view. As such, we see it as an essential structure in the re-conceptualization of urban space project.

The project of the urban whole, an extensive metropolis, from which emerge small forest or rural islands, and the project of the city's strict containment facing a dying and inanimate countryside, are no longer sustainable nor realistic. The old utopia of the garden-city no longer promises Mumfordian functionality, and the city in the countryside reflecting

rurality adapted to the urban need of leisure is no longer an attraction. There's an alternative based on two compromising and not very changeable tendencies — on one hand, the urbanization of Western culture and its *need of countryside* as an alternative to urban environment; and, on the other hand, the farming economy diversification in response to an urban question not exclusively connected to food.

A project such as this generally and effectively contradicts the principles of open space planning that usually eliminate agriculture in urban areas, replacing it with public parks and gardens. In addition, it contradicts the principles of a planning that divides urban spaces in many specialized areas with apparently incompatible roles (farming production, leisure, industrial and commercial activity, among others). To make things worse, local entities are always less capable of sustaining the high costs of the creation and maintenance of new *green* spaces, and the social damages of urban planning zoning are very clear — space segregation, social ghettos, functional inconsistencies, urban identity crisis, among other.

We firmly believe that allotment gardens could and should integrate a continual structure of production and recreation. The arguments to give planning technicians and managers favoring a city with farming areas in an assumed form instead of a dense urban center, should present farming spaces, in a broader sense, as a *public interest natural infra-structure* at the same level of roads, dams, or electrical networks, and of public and private forest, for social, economic and ecological reasons [20].

The concept of *farming spatial infrastructure* requires cooperation between public administration and farmers. The price of these services to society from private companies supplying them, and from farmers is set according to public interest goals.

In practical terms, public and private services should assume a supplementary role to keep that *infrastructure* in time, and most of all, to confer the role privileged by administrators: natural areas, leisure space, farmland, etc. In order to last, the cooperation between public organizations and communities must be ruled by an agreement.

Both the concepts of *urban field* in [20], and of *continual productive urban landscapes* in [5], are included in this concept of *farming spatial infrastructure*, in turn approaching the concept of *landscape urbanism* and, consequently, of landscape architecture philosophy and practice.

Although the implementation of productive landscapes can start at a small scale, the goal is to develop a productive and continual urban city. At the largest scale, it should include a network of open spaces throughout the urban fabric, which in turn includes farmlands in the continual landscape, as suggested in *Plano Verde de Lisboa* (Figure 1).

Mainly following models of gardening centers, and gardens, and influenced in the last 20 years by the concept that links the ecology paradigm, open spaces, and the system they form, they should be now the tissue and the net on which the organization of *continual productive urban landscapes* or *the urban field* are based [20]. Not as inert spaces, but as living farmland, and forests, in a slow or quick, cyclic or continual future. The tool to build that future is the landscape project capable of mobilizing the people's community in that sense [52].



Source: Lisbon City Hall (CML)

Figure 1. Lisbon's Green Plan - Strategic masterplan for the open spaces.

4.2. Practical examples — *Plano Verde de Lisboa*

Presented in 1997 by the landscape architect Ribeiro Telles [1] and now set in motion, *Plano Verde de Lisboa* is a system of corridors connecting recreational and production areas seeking the establishment of a *continuum naturale* (Figure 2).



Source: Lisbon City Hall (CML)

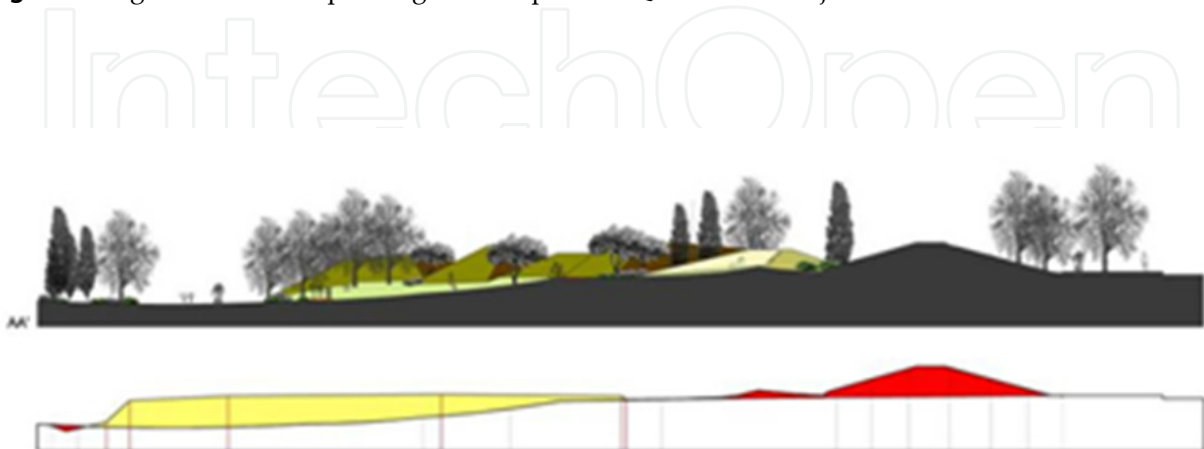
Figure 2. Lisbon's Green Plan – Articulation between pathways and open spaces

This plan makes it possible to obtain a continual landscape in which the productive aspect is strongly considered with the inclusion of existing urban vegetable fields and suggested farming parks, namely Quinta da Granja (Figure 3 and 4) and the Parque Hortícola de Chelas (Figure 5 and 6). This productive side is articulated with recreation and circulation, in a structure of open spaces extending all over the city.



Source: Lisbon City Hall (CML)

Figure 3. Figure 3 - Landscape design masterplan for Quinta da Granja



Source: Lisbon City Hall (CML)

Figure 4. Section of Quinta da Granja landscape design



Source: Lisbon City Hall (CML)

Figure 5. Landscape design masterplan for Horticultural Park of Chelas



Figure 6. Section of Chelas valley

In the first stages of the implementation of these *landscapes*, a series of interventions leading to a network of linked spaces were made. In time, this approach will create a sense of opening inside the urban space that would otherwise be uniformly occupied by buildings. The implementation of this strategy makes underused and/or abandoned spaces become active and used in a socially and environmentally productive way. A new meaning and sense of opening are locally introduced through the definition of *outward* sights and great panoramic views, as opposed to the series of isolated, disconnected, and largely underused land plots they would form.

The benefits occur regardless of the intervention scale. Linear spaces can provide routes connecting different public or private spaces. Making that connection visible encourages movement among them. The relationship between the routes and the landscape can be seen as an intervention emphasizing it and highlighting. In Quinta da Granja and in Parque Hortícola de Chelas, daily routes become adjacent to spaces where food is grown (Figure 7).



Figure 7. Pathways on Quinta da Granja

Each walk among cultures accentuates the experience of seasonality and intensifies the notion of time, due to the density of space where nature is experienced. Time is intensified — more *nature* for its time.

Productive urban landscapes will be part of the idea of building from the *natural*, like parks and gardens, which are frequently understood as *natural*. Allotment gardens in particular will represent the idea of countryside, of rural life, and through that image, *nature* is also represented.

One of the most important characteristics of these landscapes is the way in which a great variety of occupations occur simultaneously, such as gardening, farming, sports, and leisure activities (Figure 8), practiced by many occupants, that can be articulated with one or more occupations found. The variety of possible permutations between an individual occupant and their activity, or the several activities or occupations is generally larger than in many public types of facilities, namely leisure centers. *Continual productive landscapes* combine the peaceful qualities of a park with physical activities. They expect to be occupied, both by someone looking for a place to relax and read, and by someone who wants to practice physical exercise.

The economical profits of land use can be measured in two ways: first, by the direct quantification of economical benefits, resulting from new jobs and companies; secondly, and following an argument that becomes more relevant in the long run, by measuring the reduction of environmental degradations through the action of *productive urban landscapes*. These benefits result from the reduced environmental impact and cut future costs of environmental correction work.



Figure 8. Pathway and sitting on Quinta da Granja

Farming practices can generally be used as part of a strategy to increase development. Consequently, the increase of development will combine economical and environmental strategies. Those strategies are acquired by surveying, planning, designing, and articulating urban voids, parks, and recreational areas.

The introduction of these *landscapes* will increase the number of *habitats* for animals and, therefore, biodiversity — an example of ecological intensification. At the same time, the development of composting systems as the base of organic farming will improve the soil and reduce the traffic of cars. Therefore, the improvement of biodiversity will reintroduce the chirping of birds, the buzzing of insects, and the sounds of nature in general.

4.3. Implementation strategies

The open spaces of a city *embracing a continual productive landscape infrastructure* will change the physical landscape and its occupation. Superficially, farmers will sculpt a new urban infrastructure, constantly changing, but always familiar, as crops come and go (Figure 9).

At the same time, a landscape of circulation and movement, and multifunctional, emerges as the populations move and interact in and with the farming landscape. Theoretical studies and practical applications will be adjacently rediscovered, not to destroy the city or let nature be conquered, but to enhance both sides through the acknowledgment of their interdependence.



Figure 9. Allotment gardens on Quinta da Granja

In this context and in order to assure and increased the chances of success, farming in urban spaces requires:

- A considerable organization to acquire adequate lands and its farming, so as to allow lands not used or underused to be turned into areas with environmentally productive uses, namely the production of bio-fuel. The essential prerequisite of any attempt to change in that sense is to start understanding the city, the periphery, the suburbs, and the countryside as part of a *continuum* extending from the more densely populated areas but still ecologically active to the less densely populated areas and therefore more ecologically active.
- Simple regulations ensuring the safety of the community and of the values of natural processes. In a well-thought way (the lands where those processes occur) will provide a source of open spaces for the metropolitan areas. Ideally, the metropolitan area should include two systems — on one hand, the natural process preserved in the open space, and on the other hand, urban development. The fusing of these two systems could satisfy the provision of space for the population [53].

Although urban farming is conditioned by many social and political circumstances and political regimes, urban legislators and support institutions may make a substantial contribution to the development of a safe and sustainable farming through:

- -The creation of a guiding environmental policy and the formal acceptance of allotment gardens as an urban feature;
- The strengthening of the access to urban voids and to the safety of farming use;
- The strengthening of productivity and economic viability of allotment gardens, by improving the access of urban farmers to training, technical advice, and credit;
- The support of the establishment and the strengthening of urban farmers' organizations;

- Measures preventing environmental and health hazards associated to farming.

As we have already seen here, and contrary to the common belief, in densely urbanized areas a surprising number of urban voids can be found and used for farming on a temporary or permanent basis. City governments can ease the access of urban farmers to these interstitial spaces by several means:

- Surveying the number of the city's urban voids and studying their farming potential;
- Creating a *Municipal Land Bank* connecting those who need farmland to the landowners who need to give a temporary or permanent use to their properties.
- Encouraging the owners of urban voids (including institutional owners) to offer their lands in a mid-term concession to organized groups of farmers, with tax benefits.
- Creating regulations to organize the (temporary) use of voids in the city.
- Granting the use of municipal urban voids to organized groups of farmers.
- Taking steps to improve the availability and the conditions of the land (for instance, removing debris or providing access to drinkable water for irrigation).
- Defining areas for allotment gardens in a permanent basis and integrating them in the city planning. Those areas will usually be more sustainable when located in lands not destined for construction or not adequate for construction, namely wetlands, under high voltage lines, and in parks and nature conservancy areas. Effective guidelines should be created with the active involvement of farmers, including management practices to be adopted by urban farming in several locations.
- Giving assistance to relocate urban farmers, especially those who are not in a favorable position and, therefore, who are exposed to serious health or environmental hazards.
- Including space for individual or community gardens in the new public housing projects, and upgrading plans for poor neighborhoods.

Government organizations and the private sector should be encouraged to provide training, technical advice, and services to urban farmers, with a strong emphasis on ecological farming, adequate health risk management, farming development (for instance, intensification and diversification), company management and advertising. Cost sharing systems (among farmers, local authorities, sector organizations, and private companies) will be needed to ensure the system's sustainability.

Municipalities can also encourage the city's universities, non-governmental organizations, and community organizations, to actively support farmers' organizations, their development capabilities, and their connections to other groups of farmers, private companies, consumption organizations, and support organizations.

The municipalities and other local participants can communicate the research and technology development needs of their urban farmers to research institutes and to the national government. On the other hand, there should be a better promotion of the coordination of research institutes, farming organizations, non-governmental organizations, and urban farmers groups.

An increasing number of Portuguese cities are creating urban farming policies and programs, with the establishment of multi partnerships in planning approaches to find

effective ways to integrate it in urban planning and sector policies and to promote the development of safe, sustainable and multifunctional farming practices. An example of these initiatives is the regulation made by Lisbon's City Council legitimizing the existence of its vegetable gardens in order to safeguard them from political whim.

Besides measures such as these, we think it's necessary to explore the relationship between urban agriculture multifunctionality and sustainability. This involves the positive or negative study of environmental roles, as well as their collective impact. In [3], it is also important for the effectiveness of farming in urban spaces: to research and develop subjects such as land ownership, legislation, and planning, concerning urban land use; to develop work methodologies with all the participants, namely research actions with urban farmers or planners to include agriculture in planning (as part of green belts, city parks, and open spaces); to create new institutions or institutional structures, such as urban and peri-urban institutions; and to create means of support (commercial and of subsistence) for horticulture, aquaculture, and systems involving animal raising.

Such research and development actions require an institutional framework providing allotment gardens with an institutional foundation, and involving active direct or indirect players in the formulation and implementation of urban farming policies and action programs.

Once accepted, urban farming will become sustainable and adapt to the ever-changing urban conditions, and to its demands, strengthening its productivity and diversifying its roles in the city, while reducing the associated health and environmental hazards. This is the way to win political and social acceptance. In certain parts of the city, the typologies of the existing farming practices can fade away or drastically change their methods and actions, while new methods may develop in other parts of that same city (Figure 10).



Figure 10. Organic allotment gardens on Cascais

In the long run, allotment gardens become sustainable through the acknowledgment and the full development of their multifunctional use potential. Their sustainability is strongly connected to the development of a sustainable city, that is, an inclusive city, ensuring food safety, productivity, and a healthy environment [54].

5. Conclusion

In short, urban areas are generally characterized by their organic growth, resulting in a multitude of different public and private open spaces. The design and management of those spaces depend on many factors. Although some have been planned and continue being positively managed, others were *forgotten* in terms of a clear sense of ownership and responsibility, and are left in a natural or artificial wild state, requiring respect and protection. These are transitional, landscapes, made of time, and registering its passage. The past becomes the present, and as the future draws near, acquiring larger and larger dimensions, we see a magnificent and silent presence, which is a kind of empty spot within the storm.

Finding positive uses for these spaces has been one of the challenges facing urban planning from the late 20th century on, with a growing number of architecture, landscape architecture, and *landscape urbanism* projects now proposing the inclusion of urban farming.

We need to go towards more efficient, and cyclic urban systems; a perspective which naturally includes land use within the cities and in their peripheries for food production.

We also believe the inclusion of allotment gardens in landscape projects reflects a new landscape, new symbols, and renewed aesthetic values, setting new patterns reaching from the memory of the past to the future, where nature, culture, leisure, and production are present, mutually complementary, and giving birth to public spaces with a strong involvement of the population. The development of these spaces may be suggested as a reference illustrating a seemingly contradictory response to contemporary callings, and which is both the cultural strengthening of the truthfulness of humanization processes, and the creation of a nature that is simultaneously wild and familiar, near and distant, planned and spontaneous, dangerous and comfortable, tedious and ordained, alive and waste free.

Our approach to urban design is founded on a global and multifunctional concept of landscape, through the fulfillment of the idea of *cultural and natural continuum*, and its intermingling with the built space, materialized in a complex and dynamic landscape, structured both by technological networks, and by heritage, ecological, continual, productive, and active networks. Therefore, it matches a global design inspired by *nature*, culture, and landscape, with the fundamental goal to recreate the city-countryside unity, to reinvent the landscape multifunctionality, and to develop forces allowing life, in the sense of an ever-growing biologic activity of systems integrated in the landscape, and responding to the aesthetic restlessness and to current social and cultural needs.

In urban configurations, and the resulting landscapes, through an active interpretation, the system of urban voids and the city peripheries matches the genuine *infrastructure* of the city,

through which it's structured and organized. Those spaces are no longer considered fragments, residual elements, or discontinuities, and are acknowledged as spaces that being part of the new model of organization and territorial management, unite, interconnect, create continuity and articulation. They're active.

Therefore, the strength and vitality of the urban void and the periphery emerge, not as abandoned areas — a residual space of buildings and urbanizations — but as continual, adequate, felt, and experienced spaces with ecological, cultural, recreational, aesthetic, productive and economical purposes, as valuable as the spaces with buildings, articulating different parts and promoting connections in the urban area [55].

Capable of significantly changing current mobility trends, and of integrating the existing urban fabric without causing a great impact, this new approach is directly linked to urban sustainability and to landscape sustainability and multifunctionality. The employment of the sustainability and multifunctionality concept and principles underlying the advised design model implies a process in which the continued use and preservation of resources, the spatial organization and management, and the associated institutional changes are consistent with the goal to perpetuate in time the quality of life and the environment, the cultural heritage, the landscape identity and balance, and the ecosystems' social, and economic roles.

By sharing the idea that the world includes complex, interdependent, and interlinked social and natural systems that, reconciled and sustainable, provide a set of principles centered in the organization of soil uses according to their ecological capability which help preserve natural systems and resources in the long run, and create strong, well-knit social communities, we seek a systemic view of a multifunctional, productive, and recreational landscape, emphasizing the multifunctional landscape. The landscape is transformed into something different: a place sensitive to different transformations that records the movements and the events that occur. An active entity structuring conditions to new relationships and interactions between the elements that constitute it. In this new concept the landscape is no longer based on a naturalist image, suggesting instead a continuous structure where we can operate through the occurrence of different activities. It is not only the space between the two buildings or the platform in which the process of construction is organized, but a true energy field, a sensitive and dynamic membrane. It is constituted of systems that establish relationships, flows and process that occur there [55].

On the other hand, 21st century urban design should start by getting closer to the design of natural ecosystems. We should learn with the natural systems' metabolism, where all waste is recycled in resources for future growth [56]. This is a matter for politicians to deal with, but that also concerns the public in general, because we all need to pressure central and local governments as well as investors to adopt practical views.

Author details

Rute Sousa Matos

CHAIA (Center of Art History and Artistic Investigation), University of Évora, Évora, Portugal

Desidério Sales Batista

CHAIA (Center of Art History and Artistic Investigation), University of Algarve, Faro, Portugal

6. References

- [1] Ribeiro Telles, G. Plano verde de Lisboa. Lisboa: Edições Colibri;1997.
- [2] Mougeot, L. Urban agriculture: definition, presence, potentials and risks. In Bakker, Dubbeling, Gundel, Sabel-Koschella & Zeeuw, (eds) Growing Cities, Growing Food: Urban Agriculture on the Policy Agenda, Feldafing: German Foundation for International Development (DSE), 2000, pp. 1-42.
- [3] Veenhuizen, R. van. Cities farming for the future. Urban agriculture for green and productive cities. Philippines : International Institute of Rural Reconstruction and ETC Urban Agriculture. 2006.
- [4] Mougeot, L. AGROPOLIS, the social, political, and environmental dimensions of urban agriculture. London: Earthscan. 2005.
- [5] Viljoen, A. CPULs, continuous productive urban landscapes – designing urban agriculture for sustainable cities. Oxford: Architectural Press. Elsevier. 2005.
- [6] Southall, A. The city in time and space. Cambridge, UK: Cambridge University Press; 2001.
- [7] Mininni, M. Abitare il territorio e costruire paesaggi. In: P. Donadieu (Ed.) Campagne urbane, una nuova proposta di paesaggio della città. Roma: Donzelli Editore. 2006, pp. 22.
- [8] Sierra, P. Periferias y nueva ciudad – el problema del paisaje en los procesos de dispersión urbana. Sevilla: Universidad de Sevilla, Departamento de Urbanística y Ordenación del Territorio. 2003.
- [9] Hough, M. Naturaleza y ciudad. Planificación urbana y procesos ecológicos. Barcelona: Editorial Gustavo Gili. Coleção Arquitectura y Diseño+Ecologia. 1998.
- [10] Shane, G. Recombinant landscapes in the American city. In: M. Spens (Ed.). Landscape architecture: site/non-site. AD Architectural Design. Wiley InterScience. 2007, March/April. Vol. 77, n. 2, 24-35.
- [11] Carvalho, J. (2003). *Ordenar a cidade*. Coimbra: Quarteto Editora.
- [12] Remy, J., & Voyé, L. La ville: vers une nouvelle definition. Paris: Hartmattan. 1992.
- [13] Cook, H., Lee, H., & Perez-Vasquez, A. Allotments, plots and crops in Britain. In A. Viljoen (Ed.). CPULs, continuous productive urban landscapes – designing urban agriculture for sustainable cities. Oxford: Architectural Press. Elsevier. 2005, pp. 206-216.
- [14] Iles, J. The social role of community farms and gardens in the city. In A. Viljoen (Ed.). CPULs, continuous productive urban landscapes – designing urban agriculture for sustainable cities. Oxford: Architectural Press. Elsevier. 2005, pp. 82-88.
- [15] Thorpe, H. The homely allotment: from rural dole to urban amenity. *Geography* 1975 ; (268)169–183.
- [16] Urruela, E. Dinâmica agrária en la crisis industrial. El microfundio periurbano del Gran Bilbao y las Encartaciones. II Congreso Mundial Vasco de Geografía. Espacios rurales y urbanos en áreas industrializadas. AA.VV. Vitoria, Brasil. 1988.

- [17] Carrasqueno, M. (1996). Espacio urbano y socialidad: un analisis de las huertas submetropolitanas en el barrio bilbaíno de Bolueta. *Ciudad y territorio. Estudios territoriales* 1996; (110) 765-783.
- [18] Magalhães, M. *A arquitectura paisagista, morfologia e complexidade*. Lisboa: Editorial Estampa. 2001.
- [19] Bohn, K., & Viljoen, A. More space with less Space: an urban design strategy. In A. Viljoen, (Ed.). *CPULs, continuous productive urban landscapes – designing urban agriculture for sustainable cities*. Oxford: Architectural Press. Elsevier. 2005. pp. 10-16.
- [20] Donadieu, P. *Campagne urbaine, una nuova proposta di paesaggio della città*. Roma: Donzelli Editore. (Original publication in French, in 1998). 2006.
- [21] Burckhardt, L. Esthétique et Écologie. In : L. Burckhardt (Ed.). *Le Design au-delà du Visible*. Paris : Éditions du Centre Georges-Pompidou. 1991. pp – 53-60
- [22] Baud, I. Coping with globalisation. The need for research concerning the local response to globalization in developing countries. Den Haag: RAWOO. 2000.
- [23] Hagan, S. Plant it: an inclusive approach to environmentally sustainable planning. In A. Viljoen (Ed.). *CPULs, continuous productive urban landscapes – designing urban agriculture for sustainable cities*. Oxford: Architectural Press. Elsevier. 2005. pp. 52-55
- [24] Berg L. van den & Veenhuizen R. van (2005). Multiple functions of urban agriculture. Editorial. *Urban agriculture magazine* 2005 ; (15).
- [25] Argenti, O. *Food for the cities: food supply and distribution policies to reduce urban food insecurity*. Rome: FAO. 2000.
- [26] Nugent, R. The impact of urban agriculture on the household and local economies. In N. Bakker; M. Dubbeling; S. Gündel.; U. Sabel-Koschella; H. de Zeeuw. *Growing cities, growing food: urban agriculture on the policy agenda. A reader on urban agriculture*. DSE/ETC, Feldafing. 2000. pp.67-99.
- [27] Armar-Klemesu, M., & Maxwell, D. Urban agriculture as an asset strategy, supplementing income and diets. A case study of Accra. In N. Bakker, M. Dubbeling, S. Gündel, U. Sabel-Koschella, & H. Zeeuw (Ed.). *Growing cities, growing food: urban agriculture on the policy agenda. A reader on urban agriculture*. Feldafing: DSE/ETC. 2000. pp. 99-117.
- [28] Gonzalez, N., & Murphy, C. Urban agriculture in the city of Havana: a popular response to crisis. In N. Bakker, S. Dubbeling, U. Guendel, K. Sabel & H. de Zeeuw (Ed.). *Growing cities, growing food, urban agriculture on the policy agenda*. Feldafing: DSE. 2000. pp. 329–348.
- [29] Howe, J., Bohn, K., & Viljoen, A. Food in time: the history of english open urban space as a european example. In: A. Viljoen, (Ed.). *CPULs, continuous productive urban landscapes – designing urban agriculture for sustainable cities*. Oxford: Architectural Press. Elsevier. 2005. pp. 95-107.
- [30] Allen, A. Environmental planning and management of the peri-urban interface. In : *Managing the Environment of the Peri-urban interface : proceedings of Conference Rural-Urban Encounters*: London. 2001.

- [31] Petts, J. The economics of urban and peri-urban agriculture. In: A. Viljoen, (Ed.). CPULs, continuous productive urban landscapes – designing urban agriculture for sustainable cities. Oxford: Architectural Press. Elsevier. 2005. pp. 65-73.
- [32] Mumford, L. La cité à travers l’histoire. Paris: Le Seuil. 1994.
- [33] Secchi, B. Urban scenarios and policies. In: N. Portas, A Domingues, J. Cabral (Eds.). Políticas urbanas. Tendências, estratégias e oportunidades. Lisboa: Fundação Calouste Gulbenkian. 2003b. pp. 275-283.
- [34] Brook, R., & Davila, J. (Ed.). The peri-urban interface, a tale of two cities. Bethesda, Wales: School of Agricultural and Forest Sciences. University of Wales and Development Planning Unit. University College London. 2000.
- [35] Sangeetha, P., Brook R., & Purohit, S. Transcending rural-urban boundaries. Habitat Debate (Forum): Cities, Engines of Rural Development 2004; 10 (3).
- [36] Bryant, C. R., Russwurm, L., & McLellan, G. The city’s countryside: land and its management in the rural-urban fringe. London: Longman. 1982.
- [37] Qvistrom, M. Landscapes out of order: studying the inner urban fringe beyond the rural urban divide. Journal Compilation. Swedish Society for Anthropology and Geography 2007 (269-282).
- [38] Hough, M. Out of place. Restoring identity to the regional landscape. New Haven/London: Yale University Press. 1990.
- [39] Allen, A. Environmental planning and management of the peri-urban interface: perspectives on an emerging field. Environment and Urbanization 2003 ; 15 (1) ,135.
- [40] Jakle, J. A., & Wilson, D. Derelict landscapes: the wasting of America’s built environment. Lanham, MD: Rowman & Littlefield. 1992.
- [41] Marot, S. The reclaiming of sites. In J. Corner (ed.), Recovering landscape. New York: Princeton Architectural Press. 1999. p.45-57.
- [42] Gravagnolo, B. La progettazione urbana in Europa. 1750-1960. Roma-Bari: Laterza. (a tradução é nossa). 1991.
- [43] Donadieu, P. Landscape urbanism in Europe: from brownfields to sustainable urban development. *JoLA, Journal of landscape Architecture* 2006; (2) 36-45.
- [44] Weller, R. An art of instrumentality: thinking through landscape urbanism. In: C. Waldheim (Ed.). The landscape urbanism reader. New York: Princeton Architectural Press. 2006. p.69-86.
- [45] Mostafavi, M. (Ed.) with Doherty, G. Ecological Urbanism. Baden: Lars Muller Publishers. 2010.
- [46] Shane, G. The emergence of landscape urbanism. In C. Waldheim (ed.). The landscape urbanism reader. New York: Princeton Architectural Press; 2006. p.55-68.
- [47] Corner, J. Terra Fluxus. In: C. Waldheim (ed.). The landscape urbanism reader. New York: Princeton Architectural Press; 2006. Pp. 21-32.
- [48] Reed, P. Groundswell. Constructing the contemporary landscape. New York: The Museum of Modern Art. 2006.
- [49] Beigel, F., & Christou, P. (cited in M. Mostafavi, & C. Najle, (Ed.). Landscape urbanism: a manual for the machinic landscape. London: AA Publications. 2004.

- [50] Diedrich, L. Hacia el paisaje!. In: Diedrich, L. (Ed.). On Site. Arquitectura del paisaje en Europa. Barcelona: Gustavo Gili; 2009, pp.256-261.
- [51] Wall, A. Programming the urban surface. In J. Corner, James (Ed.) Recovering landscape. Essays in contemporary landscape architecture. New York: Princeton Architectural Press. 1999. pp. 233-249.
- [52] Arosemena, G. Urban agriculture. Spaces of cultivation for a sustainable city. Barcelona : Gustavo Gili. 2012.
- [53] McHarg, I. Design with nature, (25th anniversary edition). USA: John Wiley and Sons. 1995.
- [54] Battle, E. El jardín de la metrópoli. Del paisaje romántico al espacio libre para una ciudad sostenible. Barcelona. Gustavo Gili. 2011.
- [55] Matos, R. Urban Landscape: Interstitial Spaces. Landscape Review 2009 ; 13(1) 61-71.
- [56] Girardet, H. Urban agriculture and sustainable urban development. In A.Viljoen (ed.). CPULs, continuous productive urban landscapes – designing urban agriculture for sustainable cities. Oxford: Architectural Press. Elsevier. 2005. p. 32-39.