Chapter 3
Green Infrastructure in Landscape Planning and Design

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Abstract Landscape and Green Infrastructure are two concepts that have not yet found their perfect fit. In the following pages, we will present some of the methods we are currently trying in order to achieve a smooth coexistence between the two concepts. Actually, in spite of having approaches, tools and methodologies that can be considered well-established, defining 'landscape' still poses a challenge, since many knowledge areas (from geography to aesthetics) adopt this term as one of their own. The same cannot be stated about the Green Infrastructure concept which, after a quick evolution, enjoys a certain consensus. On the one hand, up until now, landscape has been understood as being a part of Green Infrastructure; and on the other hand, the latter has been understood as a tool (a very powerful one, admittedly) for certain landscape studies and plans. This paper argues that both approaches are valid, as long as the specific scale and site situations are considered.

Keywords Green infrastructure · Lanscape · Territorial plannig · Urban design · Structure · Scale

3.1 Introduction: Establishing Green Infrastructure

The different approaches that could be used to relate both concepts were already being critically considered at the I Colóquio Ibérico de Paisagem, the international congress held in Sintra, in a paper titled Infraestructura Verde y Paisaje presented by one of the authors of this text (Fariña, 2018). Essentially, two clearly differentiated

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lines can be distinguished: firstly, that of those who understand Green Infrastructure as the modern way of understanding landscape planning, in which case the three basic principles would be multiscale intervention and planning, sense of place and multi-functionality. This idea supports the interpretation of authors including Hansen and Pauleit and how they recognise the conceptual and practical values of Green Infrastructure. Sometimes other characteristic features are also added, such as strategic planning, or inter- and transdisciplinary features. It could also be argued that within such a discussion that the 'Landscape' is a further example of an 'ecosystem service', which could be used to promote a Green Infrastructure strategy (Hansen & Pauleit, 2014).

The second approach would be the one proposed by those who understand Green Infrastructure as a tool for landscape planning, a particularly important tool, but, after all, subordinate within the corresponding landscape plan. For example, the Valencian Regional Government's Department of Territorial Policy, Public Works, and Mobility state that: 'Green Infrastructure is organised on different scales: One of the key aims of the Landscape policy is to define the Green Infrastructure of the Valencian Community, as an interconnected network made up by the greatest environmental, cultural and visual value landscapes that will become the basic ecological structure of our region' (Muñoz & Domenech, 2012, 30).

For this autonomous community, Green Infrastructure is formed by the network of Landscapes of greatest value in its territory. Tom Turner, when referring to the planning of London's green spaces, goes further, saying:

> And how should this category of urban planning be called? "Green" is almost acceptable if it is used in both senses, but I doubt if this is possible and the word is too descriptive to serve as a planning objective. "Infrastructure" is also a utilitarian word, which is both an advantage and a disadvantage. I think about the activity as "landscape planning", because the aim is to make London a great urban landscape, incorporating a wide range of aesthetic, ecological and functional objectives. (Turner, web Landscape Architects Association, 2017)

It should be noted that Turner is talking about the super-urbanised London. However, these approaches are very general. The text that follows proposes an approach to this relationship based on two basic elements: the scale and the site.

We start by arguing that this relationship cannot be the same in an urban centre as in a biosphere reserve, nor on a scale of 1/500 or 1/50,000. We will see through this paper if this is the case. It is essential to start by explaining the different approaches in both concepts and then move on to examine the relationships between them. So, firstly, we will study those basic elements that define Green Infrastructure and landscape, as we understand them. Next, we demonstrate the different form of behaviour that occurs, according to the situation and the scale when using these concepts. Finally, we discuss whether Green Infrastructure is just another tool for planning the landscape, whether the landscape is just a means to an end for Green Infrastructure or whether, in fact, different situations occur according to the specificities of that place and the scale of planning and/or management.

3.2 Basic Elements of a Green Infrastructure

The concepts of Green Infrastructure and landscape are polysemous ideas. There are vastly different approaches to them, and it is essential to establish, prior to the analysis of the relationship between them, which is the starting point. Green Infrastructure is however a much more recent concept than landscape and could be considered easier to define. Moreover, a certain convergence between the different approaches is being consolidated within thinking on Green Infrastructure (Fariña, 2018).

As we will see, the Green Infrastructure expression has been linked for quite some time to that of 'networked natural areas'. At the end of the nineteenth century and, above all, at the beginning of the twentieth century, ecological awareness began to have a certain social impact (Compte, 1999). During this time, national parks emerged as areas of natural territory to be preserved, as they constituted unique and exclusive ecosystems (White, 1985). The first one to legally obtain a protection status was Yellowstone, which is mostly located in the state of Wyoming, but also in Idaho and Montana (Sanz, 2012). In 1870, Nathaniel Langford and Cornelius Hedges visited this area and noticed its great interest. This interest was threatened by the settlers who, at that time, were spreading over the 'unexplored' areas of the United States. Their proposal was to legally exclude these lands from the possibilities of colonisation (Olmsted, 1865). On March 1, 1872, under the presidency of Ulysses S. Grant, the US Congress approved the declaration of Yellowstone as the first national park in the world. Yosemite had tried it before but failed until 1890 (Culpin, 2003).

This way of preserving a territory, through controlled tourism, teaching and research by the scientific community and trying to reconcile its natural values with its enjoyment by the population, is important because it will be seen how this approach will later lead to a way of understanding nature as a provider of so-called ecosystem services. This can be deducted, among others, from the scientific-technical basis for the State Strategy for Green Infrastructure and Ecological Connectivity and Restoration (Valladares et al., 2017).

As in Yellowstone and Yosemite, and not only in the United States, but throughout the world, an interest in preserving areas of the territory for their natural values became an established, if contested, norm in some locations (Hays, 1959). In this way, a multitude of protected areas emerged: in some cases, such as in the case of parks, with the possibility of use and enjoyment by population; in others, avoiding anthropic interference, as happened in the so-called nature reserves. In this way, significant areas, in many countries, were, and continue to be, legally excluded from urbanisation processes. It soon became clear that the problem was that these areas of nature, as islands in the middle of anthropized areas, behaved like isolated relics, progressively degrading themselves, losing biodiversity, and becoming less resistant to external aggressions. The concept of networked nature areas emerges then from the need for all these nature areas to be physically connected to each other, so they would no longer be isolated islands (Cranz, 1982).

According to Benedict and McMahon (2002), the concept of Green Infrastructure was originally proposed in the United States to address issues of nature area fragmentation and to assist in the management of flooding due to poor stormwater management practices. One historical example of this was in 1879, the Boston Parks Commission consigned F. Law Olmsted to create a network of parks. The result was the Emerald Necklace, a set of urban green areas linked together by connectors (Stevenson, 1977). In 1864 Olmsted had taken part in the commission in charge of organising the natural environment of the State of California once Yosemite Park was ceded to that state (Olmsted, 1865). The fact is, that at the end of the nineteenth century, the concept of Green Infrastructure (although not the expression) began to make its own path, almost at the same time as the creation of legally preserved natural areas.

The network of natural areas for flood control was considered from the outset of Green Infrastructure planning. The example of the Emerald Necklace of the city of Boston illustrates the system ideal via its connected network of urban parks. One of the main objectives of this project was to achieve a reduction in flooding. This approach could be classified as the 'American approach' because it was in North America that all these methods took place and the ongoing focus on water management is most frequently seen in the United States (EPA, 2018). Still today, for the American Planning Association, the concept of Green Infrastructure refers to 'small-scale green systems designed to be urban storm water management infrastructure' (Rouse & Bunster-Ossa, 2013, 22). Even according to Firehock (2010), the first time the term is used was a century later, in 1994, in a report delivered to the Governor of Florida containing the idea of expressing that natural systems are only a part of our infrastructure.

However, the concept of networked nature areas and parks, which (among other uses) has a utility for flood control, has now been superseded by the introduction of 'ecosystem services'. In a 1997 publication entitled *Nature's Services: Societal Dependence on Natural Ecosystems*, Daly proposed an approach that makes possible a very didactic understanding of how ecosystems contribute to the possibility of urban life (Daily, 1997). There are quite a number of definitions of this concept, but they are all contributions which argue that the natural environment adds to our quality of life, place and environment. Ecosystem services for many authors have, as a consequence, become a basic part of the Green Infrastructure core. Thus, in 2013 the European Union, with the Communication entitled: 'Green Infrastructure: Enhancing Europe's Natural Capital', proposed the following definition:

> A strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, Green Infrastructure is present in rural and urban settings. (European Commission, 2013, 3)

This European vision of Green Infrastructure is important because it is comprehensive in many different aspects. Furthermore, although Blue Infrastructure has already been mentioned as being included but not a primary concern, aquatic

ecosystems are integrated into their thinking. The focus is however not only on marine or terrestrial but also on the continuum of 'rural and urban environments' (European Commission, 2013, 3). This idea would lead to the inclusion of agricultural areas, as well as cities where they are considered natural or semi-natural areas and other environmental elements.

This wide-ranging vision of Green Infrastructure is currently being imposed in almost all parts of the world. However, we also consider the urban setting of green areas as a network, physically connected in other areas. Additionally, peri-urban areas, relatively natural, including those dedicated to agriculture and proximity livestock, are included in this classification and those less anthropized areas far from urban centres. This vision has led us to talk about integrated Green Infrastructure as a system that allows us to consider the entire territory from a more ecological than anthropic perspective and which should condition how we approach traditional territorial planning (Beauchamp & Adamowski, 2013).

Although its relationship with the landscape will be analysed later, at this point it is important to note the sense that there will be confrontational positions on the one hand from the subject, and on the other from the aims that Green Infrastructure can achieve, and, therefore, from the tools to be used. To complete the study of the relations between both, it is necessary to specify how ecosystem services are shaping Green Infrastructure thinking and practice (Viota & Maraña, 2010). There are different classifications of ecosystem services. Potentially the most frequently used is the Millennium Ecosystem Assessment (2005). In this evaluation, additional to the supporting ecosystems themselves, they are classified into the three main classic groups: supply ecosystems, regulation ecosystems and cultural ecosystems.

Supply services are those that contribute directly to human well-being. These are fundamental services because they can include water, both for human consumption and for agricultural and industrial uses; foodstuffs from agriculture, livestock or fishing; also, those foods obtained directly from natural ecosystems; medicines such as those obtained from wild plants; raw materials of geological or biotic origin; renewable energies; and even genetic information used in biotechnology.

The second type of services are those that provide regulatory services and functions. Contributions to human welfare here are indirect, but no less important. Although there are many services, for the purpose of this chapter article, we will just focus on the following: biological pest control; erosion control; pollination; soil fertility; climate and air quality regulation; water regulation (including flood control, which we have already seen was fundamental in the consolidation of the concept of Green Infrastructure); and soil, air, and water purification.

However, the ecosystem services most related to the topic of Green Infrastructure and Landscape are potentially the cultural ones. That is, according to the definition of the Spanish Millennium Survey (EME, 2011, 27): 'those intangible contributions that people obtain through their straight experience with ecosystems and their biodiversity'. These include recreational activities; environmental education; ecotourism; ecological and scientific knowledge; identity and sense of place; and, most importantly in this case, enjoyment of the landscape. On a large scale, it can be argued that all ecosystem services are suffering from significant decline in recent

years, as can be taken from the aforementioned Spanish Millennium Survey. Regarding landscape in relationship with their aesthetic elements, the Millennium Ecosystem Assessment report affirms:

> Demand for aesthetically pleasing natural landscapes has increased their value in line with increasing urbanisation. There has been a decline in the quantity and quality of these areas to satisfy this demand. A reduction in the availability and access to natural areas for urban residents may have significant detrimental effects on public health and the economy. (EME, 2011, 287)

3.3 Different Approaches to the Concept of Landscape

Different approaches to the concept and study of landscape carried out by architects, geographers, ecologists, psychologists and agronomists, for example, reinforce the need to generate intermediate forms of knowledge, which transcend the limits of the various disciplines. Thus, there are multidisciplinary methodologies, where specific elements, ideas or concepts which converge in the idea of 'landscape' are provided. There are also interdisciplinary approaches for which exist a transfer of methods and an organisation of knowledge, towards a shared and hermeneutic interpretation of the landscape. Evidently, the study of landscape must have a transdisciplinary character, linked, according to the European Landscape Convention (Council of Europe, 2000), to policies for its protection, management and planning. All these, using necessarily a comprehensive vision. This holistic consideration of the landscape has gradually engaged with other methodologies that have utilised the subject area in different ways.

Before getting deeper into the different definitions, it is informative to review the concept of landscape itself. According to the Royal Academy of the Spanish Language (RAE), the term landscape comes from the French word 'paysage', whose semantic root is linked to nearby land (pagus, land) and has the following meanings (RAE, 2014):

> Part of a territory that can be observed from a certain place;
> Natural space admirable for its artistic aspect; and
> Painting or drawing that represents a landscape (admirable natural space).

The last two references suggest that the term landscape is mainly associated with natural spaces. However, according to the European Landscape Convention, Article 1, Definitions: 'Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors' (Council of Europe, 2000, 2). In other words, the Convention also covers anthropized landscapes, such as urban sceneries. This idea is reinforced in Article 2, which specifies the scope of action:

> this Convention applies to the entire territory of the parties and covers natural, rural, urban and peri-urban areas. It includes land, inland water, and marine areas. It concerns landscapes that might be considered outstanding as well as every day or degraded landscapes. (Council of Europe, 2000, 2)

This confirms that landscape is not only associated with natural areas, but also with urban, peri-urban and rural areas. In fact, it is not only related to 'admirable natural areas' and exceptional ones, as indicated in the meanings of the RAE, but also to everyday or quotidian, and degraded landscapes, which are very present in our territories.

Another important issue raised from the definition of the Convention reflects on the fact that for there to be a landscape, it is necessary not only for the existence of a territory but also the presence of an observer. This view was outlined by Turri (1998, 14) who noted:

> Where there is no man who knows how to watch and being aware of himself as a presence and as a territorial agent, there would be no landscape, but only nature, mere biotic space, until making us consider that, between the two theatrical actions of man, acting and watching, the second emerges to us as more important, more exquisitely human, with its capability to lead the previous one.

This suggests a high level of subjectivity and describes 'interpretation' as a key component, since it depends on the knowledge and lived experience of the spectator, regarding the landscape that they observe and, in some cases, which they also create and maintain. Moreover, people can, and should, be considered agents who transform territory whilst continuously observing the environment around them, thus promoting close links between contemplation and the transformation of the landscape. Again, Turri (1998, 13) discusses this suggesting that:

> The notion of landscape as a theatre sustains that man and society act towards the territory in which they live in a double way: as actors who transform, in an ecological sense, the framework of life, imprinting on it the sign of their own action, and as spectators who know how to look at and understand the meaning of their procedure in the territory.

In recent decades, landscape debates have been dominated by two clearly distinguished positions. The first maintains that landscape is a cultural construct, so the culture of a specific society is the instrument that shapes the territory over time. In this sense, the rudimentary elements of the landscape are the physical environment; human action, which modifies the environment for a certain purpose; and the specific activity carried out, which is related to life habits, economic activities, culture or beliefs. Back in 1925, Carl Sauer had written: 'Culture is the mean, the natural area is the environment, and the cultural landscape is the result' (Sauer, 1925, 23).

The second interpretation is focussed on a more scientific and physical-biological-based understanding that establishes a holistic approach to answer the complexity of systems and subsystems that structure the landscape. It enunciates the idea of landscape from an ecological perspective, expressed as the 'spatial translation' of a set of interacting ecosystems. Thus, landscape links spatial structures to ecological processes (Forman & Godron, 1986), concepts which are more intricately related to what is currently understood as Green and Blue Infrastructure.

Within this discussion, if we include the definition of the Convention of any part of a given territory as it is perceived by the population, the landscape then could be understood as a set of perceptible components in the shape of a panorama or scene (phenosystem), leaving background as the most difficult complement to observe,

which provides a complete description of the ecological geosystem (cryptosystem) (Fariña, 2001).

Therefore, via our conceptions of the landscape, the existence of the human observer is always implicit, because it is what infuses it with the character of a cultural concept, since observation depends on the personal and collective history of the subject and breakups from the observed object (in this case the territory), which has its own existence. As such, there is no landscape without an observer. In contrast, although there is no human observer, a territory made up of a group of elements and a collection of relationships between them (an ecosystem) can exist, which is the landscape basis, when the observer emerges.

For some years now, in addition to these cultural and scientific approaches to the landscape, there have been others, more related to quality of life and benefits that they provide. In this sense, the landscape is seen as a place where human relations are established, which is also perceived and inhabited and additionally has natural, cultural and identity values which are very relevant to the citizens' health. This process of value attribution was outlined by Menatti who stated that: 'The landscape, then, is not something natural, trivial or simply aesthetic in the classic sense of the word; it is something that dynamically constructs us always' (Menatti, 2018, 60).

Many environmental psychology studies have also demonstrated the positive and healing effects, as well as the reduction of stress, that landscapes produce in people linked to aesthetic quality and naturalness (Kaplan & Kaplan, 1989; Ulrich et al., 1991). This issue, which has also been developed within the medical geography and architecture literature through, for example, therapeutic landscapes and gardens, is causally related to Green Infrastructure and services provided by ecosystems. By the same indicator, a degraded, polluted or abandoned landscape could lead to negative health effects and even a sense of insecurity or lack of identity. Consequently, the importance of environmental restructuring and improvements in the aesthetic quality in a landscape, both natural and urban, serve to improve a community's quality of life.

3.4 Locations and Scales

A set of important queries are raised when we focus on location, both, as a set of individual areas and as connectors. These include: Is it the same concept if we use the expression Green Infrastructure when we refer to an interconnected network of natural spaces that have been vaguely anthropized, or not at all, or when those same spaces that we connect, for example, gardens, are urban elements?

Moreover, would we be talking about the same concept, when we propose a periurban green ring and compare it with the previous situations? As we have seen, one of the basic functions (separately from the support functions, related more to ecological issues) of the Green Infrastructure is the provision of ecosystem services. Using this as a starting point, we could change the previous questions to: Are the

same ecosystem services a priority in the case of highly anthropized areas besides others which are not?

To answer this question, it is necessary to know what those services are. If we start with the case of urban areas, it seems that the different authors agree, as outlined in the "Guide to Green Infrastructure in Municipalities (Spanish Federation of Municipalities and Provinces)":

> 'The work range of green infrastructure is multiscale, it includes the landscape scale at local, regional and national level, and is driven by a public process of wide scope, which converts itself into an operational strategy to protect an ecological network of land conservation, but also to offer other services such as cultural services, especially important in urban environments'. And further: 'Green infrastructure elements in cities and towns provide multiple benefits, including improved health and well-being, shade, thermal regulation, cleaner air and better water quality. Ecosystem services are high profiled and there is growing recognition of the relationship between the use of green infrastructure elements and improved public health and well-being'. (Calaza, 2019, 21)

It seems, therefore, that in the case of urban Green Infrastructure, ecosystem services take on special relevance and, mostly, those of a cultural and health and population well-being nature (Calaza, 2019). At the other end of the continuum are the less transformed nature areas cases, in which the priority issue would be ecological and would be related with biodiversity and resilience. In this case the ecosystem services, such as those of regulation, control, recycling and waste treatment, would have priority and that would be ecological, although those of another type, such as food, genetic or cultural production would also have to be considered, but subordinated to the preceding ones (Constanza, 1997). Biodiversity and resilience issues would therefore be critical.

A different instance would be peri-urban areas that would be in the middle grounds, located between urban and more natural sites and where purely ecological and ecosystem services considerations would depend on each specific situation. In the guide cited above, it can be read:

> In the same way, peri-urban areas represent transition zones with more, natural or agroforestry exploitation areas, which are zones of contact and interaction between different ecosystems elements, ecotones, which are especially important because they work as buffer zones, and where there are a high number of peri-urban forests and parks that provide a large number of services to the population. (Calaza, 2019, 21)

In order to clarify the topic, which one can begin from, there are three basic situations to address in the relationship between Green Infrastructure and landscape in an operational mode. The first consideration would be related to the networking function. This is a key element that cannot be ignored.

For there to be a network operation, the connection between the elements that make up the system is essential. In an urban situation, these connectors may consist of green roofs or walls, permeable strips or even urban tree rows. In many cases, these are unusual connectors that should have been progressively replaced by more ecological ones, allowing genetic exchange and increasing entirety resilience. The connection of the urban elements should be extended to the peri-urban ones, which would serve as an intermediate system for the more natural ones. It can already be

understood that all natural and semi-natural areas should be connected to each other, although the corridors would be different depending on the situation. In the urban corridors, the possibility of genetic exchange would be almost as important as the fact that they would serve for the city residents' traffic. For example, with the aim of being able to do sport or location access, they would be, in most cases, mingled corridors. A different case would be the green roofs and walls, in which this would be an impossible role. In peri-urban areas, the connectors could already (in most cases) be assimilated to ecological connectors or have an important part of their function focused on ecology.

Something similar would happen regarding ecosystem services. In urban areas, there should be a trend to maintain or restore those related to health and culture. From this point of view, landscape and health assessment tools would probably become the most widely used. In peri-urban areas, tools and methodologies related to landscape and Green Infrastructure would work synchronously. Finally, in purely natural (or slightly anthropized) areas, i.e. rural areas, ecological tools would be a priority, although landscape tools would also have their role dependent on those. In this way, the relationship between Green Infrastructure and landscape would probably be less conflicting as the needs of each area would be addressed.

Furthermore, it is critical to understanding the contrast or variation in each place, as this allows planners to address issues of scale more directly. The scale is determined by both spatial dimensions, and by the spatial or land planning instruments to be used. In fact, different scales are used, both in the analysis and in the intervention procedures, according to the different political or governmental levels (international, national, autonomous community and municipality). However, these relationships are not always direct and must show a certain degree of flexibility, as they vary from one country to another and even between autonomous communities or municipalities.

For this reason, landscape and Green Infrastructure studies can be carried out on a wide number of scales, which are also closely related to other aspects, such as their geographical expansion and location: from international, national, regional and county to the local scale. Preferably, the different scales used should fit together, in a correlated and hierarchical way, where each level offers the system features which are relevant to each one of them. This was discussed by Riesco et al. (2008, 229) who noted that:

> The adoption of these referential scales is not a simple convention for classifying what is observed, since, for both the territory and the landscape, it facilitates the interaction between method and object of knowledge, so that, in each area, what is observed efficiently calls the analysis to develop the appropriate sensitivity for the evidence that it can provide.

The competence for the transfer of considerations from one scale to another enriches enormously the understanding of the landscape and the territory. Both, the methodological background of the study and intervention in Landscape and in Green Infrastructure are approached differently depending on the observation scale and even the degree of mobility of the observer. From an ecological point of view,

heterogeneity, and the relationships between spatial patterns and processes can fluctuate according to scale. This supports the Theory of Hierarchies which:

> considers ecological systems as complex systems, that is, it postulates the existence of a relationship between the entity (the object of study in question) and its context (the interrelations with its matrix), so that each hierarchical level has a different set of relationships. (Galicia & Zarco, 2002, 36)

Working at an international, national or even regional level, the scales are generally small (1:250,000), causing generalisation, simplification and reduction of detail, both in thematic and geometric aspects. The objective is usually to identify patterns related to landscape variation, in other words, landscape classification of wide dimensions. These patterns are overlaid on contributions related to large ecological structures and natural factors, to which are added cultural and historical aspects associated with the territory. At these scales, development, changes and trends demand in land management are often very clearly observed. Appreciations of a subjective nature, typical of landscape studies, such as landscape interpretation and sensorial perception, can be difficult to integrate though.

At a county or sub-regional level, the scale increases, 1:50,000 and 1:25,000 being the most common (although some studies use more detailed charting, at 1:10,000 and 1:5000). On the one hand, the definition of territory is related to physiographic aspects, such as geomorphology, vegetation cover, hydrology, climate, fauna, soils, etc., which are in concert with ecological approaches, more typical of Green Infrastructure. On the other hand, it is related to the visual and scenic structure of the territory, with the historical and cultural processes and the socioeconomic activities developed (historical evolution, type of settlements, land use and cover, territorial dynamics, etc.), which are more in line with and related to Landscape studies. It is a scale which goes beyond the municipal sphere, in administrative terms, and, therefore, is widely used in planning policies and management and territorial planning, in addition to other sectorial areas, such as the environment, heritage, and agriculture, where Green Infrastructure and landscape can be considered for all of them in a transversal way, i.e. 'the regional scale is relevant as a geographical sphere of "a landscape with sense" and as a territory for landscape planning' (Mata & Fernández, 2003, 15).

The local scale has the highest level of detail and can diverge depending on the size of the area under analysis (1:2500 to 1:200). It is a scale which, on landscape and Green Infrastructure terms, can be quite conditioned by urban and urbanisation processes. A detailed description of the situations and elements that make up the character of the place is made on it. Given the daily and direct relationship that the analysed areas at these scales usually deal with populations, and their importance in quality of life, health, and well-being, it may therefore be easier to include aspects related to subjective perception in such discussions. It is at this scale, where the weight of landscape tools predominates over those with a more ecological nature (although they should also be considered). These scales, because of the dimensions of the studied spaces, are frequently used in municipal areas, through municipal urban planning and development planning, for example.

3.5 Critical Relationship Between Green Infrastructure and Landscape Structure

Currently, discussions are not only focussed on different professional competences but also in determining the objectives and instruments used by these professionals. From the discussion outlined above, the indicated path is probably a complementary one. On both sides, steps have been taken to align landscape ecology principles that accentuate objectives and instruments which are remarkably close to those of Green Infrastructure. Thus, the connected system approach, i.e. networks and corridors, are supportive of this assessment. Moreover, a consideration is needed for framing landscape as a set of cultural services by and within the Green Infrastructure practice, by introducing the subject as a spectator in the case of the landscape and as an element to be considered in case of identity- and sense-of-place-related questions. This leads us to think about the steps that are being taken in the direction of complementary tools and purposes.

In a landscape, there would be an object, but also a subject which is the main entity, as there is a strong subjective component. In contrast, within Green Infrastructure, the main focus is the object, the compendium of relations and elements in a territory. However, as an ecosystem service, landscape is also important, but in this case, the subjective element is clearly subordinate to the objective values. Therefore, this means that, even though we may want to study the landscape only, we cannot avoid studying the object as well. And, even though what we study is a Green Infrastructure, there is no such thing as Landscape as part of the Cultural Services provided by that infrastructure. But priorities, objectives and tools could be different or, at least, complementary. That is precisely what would differentiate tools and approaches.

It has also been understood that, paying special attention to the location and the scale, although less to the latter, the predominant concept can vary. Although the above discussion has focused on three specific areas (the city, peri-urban areas and natural or rural areas), many other specific situations can take place. It is therefore necessary to carry out a specific study of each case (i.e. studies more focused on the ecological component of Green Infrastructure or on the cultural component, associated with landscape). Finally, we want to highlight that both approaches are necessary even if, depending on the case, one will be more important than the other.

Thus, in urban or more anthropized areas, landscape objectives and, consequently, their methods and tools should be considered as a priority. This does not mean that there should not be a Green Infrastructure in urban areas though. On the contrary, its existence is essential, since without the ecological base and the exchange with other areas, a specific landscape could not be maintained, if, of course, there are natural or semi-natural elements in it, as indicated above. The opposite case is less frequent, but there is a need to consider the lack of ecological resources in anthropized areas. At this point, ecological concerns will be critical. But again, landscape elements should not be ruled out, especially in areas such as parks, where their use for enjoyment by the population is important. Finally, in

those zones which could be described as peri-urban, a specific study of each case would have to be made to see the priority objectives to be achieved.

As a conclusion, it could be stated that 'location' should be introduced as a new element, in both cases, when considering a Green Infrastructure or a landscape, and at a lesser level the scale, which should always be conditioned by the location. Then, an urban Green Infrastructure presents diverse features respecting a non-urban Green Infrastructure, which means prioritising some ecosystem services in case of divergence, without disregarding ecological considerations, which would be at the base of any proposal.

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