

Chapter 2

Conceptual Questions

This chapter analyzes theoretical contributions that serve as a basis for the development of the proposed method.

It is first shown how the system of open spaces has been strategically used in territories throughout history, considering distinct aspects of the growth of cities, and the current tendencies for systems of open spaces. The objective is to recognize the disciplinary background related to the system of open spaces and the structuring of territory, to offer criticism and to present the proposed method in this context.

The concepts of territory, artificial landscape and territorial open spaces are then defined. Later, the attributes of biophysical support and those of the visual perception of open spaces, as well as the relationships established between open and occupied spaces in a fragmented urban context, are recognized as project resources. One can thus create project concepts for the system of open spaces and urban occupation, considering that open and occupied spaces are directly interconnected in the system, as a structuring element of the urban territory. Later, an approach to contribute to the sustainability of the territory is formulated.

2.1 Disciplinary Background

The idea of the system of open spaces, as a guideline for spatial planning, appeared at the end of the nineteenth century, through the work of Frederik Law Olmstead in The Boston Park System (1887) (Fig. 2.1). The system was based on the conversion of Back Bay marshland into a public park, and expanded into a series of parks connected by paths culminating in the Emerald Necklace (1887).

With this proposal, Olmsted aimed to integrate the city with the countryside as parts of the same project, using the system of open spaces. In this way, the open space in the system acquired a new dimension, beyond simply being public parks, because the parks were connected by parkways. These parkways, beyond connecting parks, contributed to a new concept in the design of roadways, allowed better

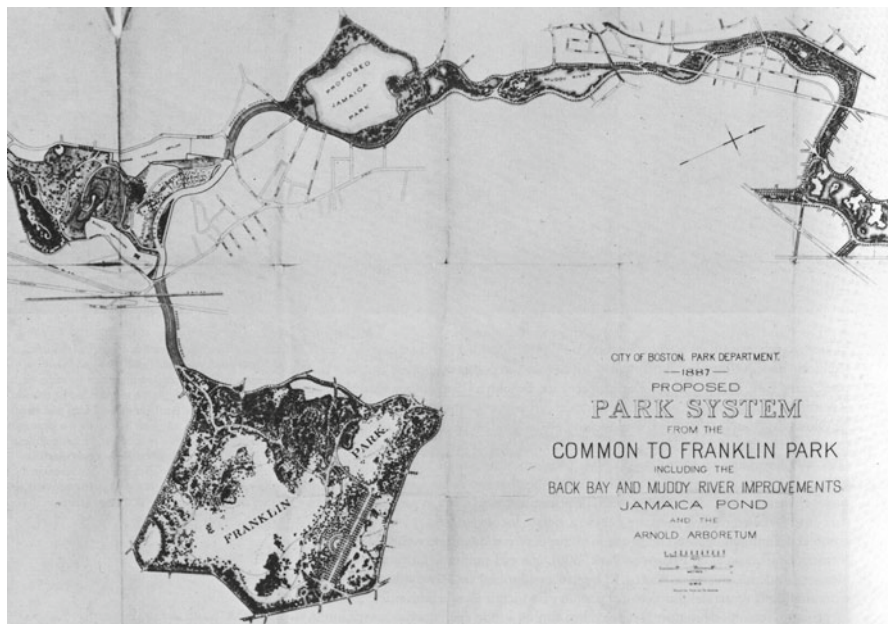


Fig. 2.1 Boston Park System (1887) (Source: <http://www.archives.gov>. Accessed 12 May 2008)

enjoyment of the landscape, and took the form of tree-lined streets, panoramic paths or elements of landscape continuity (Jellicoe and Jellicoe 1995).

These ideas, which were applied at the beginning of the twentieth century in other cities such as Chicago (1909) and New York (1928), demonstrated the desire to introduce nature into cities for public enjoyment by connecting built-up areas with open spaces through a continuous system of parkways, while also beautifying urban areas. The proposals took advantage of simultaneous projects relating to open spaces and roadways and their respective consolidations as guidelines for the construction of a city.

Afterwards, facing the growth of industrial cities, Howard proposed garden cities as an alternative for spatial planning. The project of garden cities sought to avoid urban densification, contamination, social problems, and the abrupt separation of city and countryside. Howard proposed new urban nuclei away from the large traditional city centers and endowed with great operational autonomy, having industries, agriculture and public facilities, and a design that integrated the city and nature in a harmonic form through a system of open spaces (Hall 1996).

In this context, as a city approaches its limits, another newer city emerges next to it, and the cities are separated from one another by their own green belts (Hall 1996). The cities are connected through various types of infrastructure, and the idea is to guarantee the planned occupation of the territory, incorporating respect for nature, although the fundamental issues are more social or aesthetic than ecological.



Fig. 2.2 Le Corbusier's proposal for Rio de Janeiro (1929) (Source: <http://www.fondationlecorbusier.asso.fr>. Accessed 12 May 2008)

Also with the aim of planning the growth of cities and establishing new cities, Le Corbusier pioneered the Modernist Movement of urbanism, which places importance in the system of open spaces, as an alternative to the dense and “dirty” standards of the industrial city. In *Ville Radieuse* (1935), his famous unrealized city, settlements and open spaces occupied distinct spaces, and at the same time, from a functional point of view, land use was specific and not mixed. The city of the Modernist Movement incorporated open spaces, although in an abstract way, as an idealized place and as a “background” for buildings.

In this model, open space appears (1) as a green carpet, either as an accompaniment to roadways (Chandigarh's green linear open spaces, 1950) or as a surface marked by buildings, and (2) as reservations (e.g., natural or agricultural spaces) having landscape characteristics unique to the territory. Neither of the applications of open space considers open spaces as structuring elements, and instead, the applications reinforce the remoteness of open spaces from the spatial conformation of the city, which was based on the guidance of settlements and roads (Jellicoe and Jellicoe 1995). Other examples of this concept are the plans for Brasília (1960) and Le Corbusier's plans for Rio de Janeiro (1929) (Fig. 2.2).

In an attempt to plan the growth of cities, which have grown at a dizzying pace, some urban areas have been the object of general spatial planning, which typically considers the system of open spaces to be important.

The garden city and its logic of location were incorporated into Abercrombie's plans for Greater London (1943), together with the prediction of beltways and green

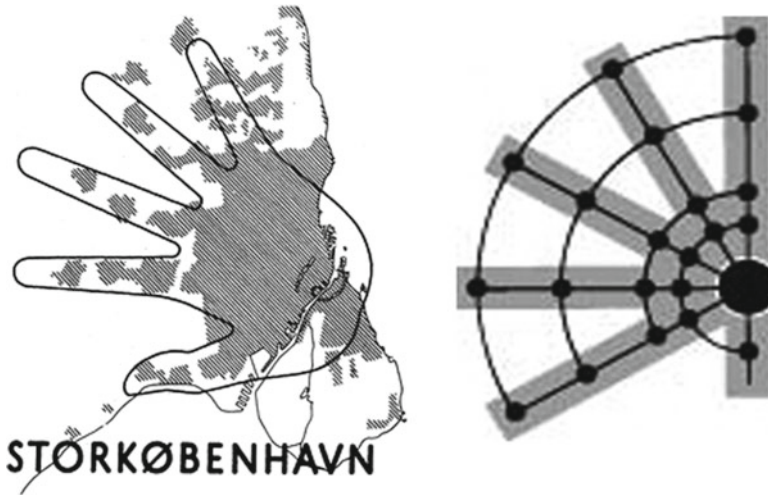


Fig. 2.3 Copenhagen Finger Plan (1947) (Source: <http://www.regjeringen.no>. Accessed 12 May 2008)

belts that separated more or less concentric zones, at the same time isolating the new cities from the historic city center (Hall 1996). As an American concept, green belts and green wedges were also used in the Regional Plan of New York. The green belts comprising rural spaces worked as a break for urban expansion, and the green wedges penetrated the cities and established a more direct link between urban occupation and open spaces.

In this spirit, interest in nature has resulted in alternatives to the introduction of open spaces in urban centers in northern European countries. In the Copenhagen Finger Plan (1947) (Fig. 2.3), “green fingers” following the natural topography invaded the city and allowed for respectful contact between occupied and open spaces, and at the same time, the fingers were the key element in planning the development of new areas. The main objective of the plan was to slow the city’s growth and concentrate the urban occupation around these axes. The same scheme appeared in the Regional Plan of Stockholm (1967), which sought to link the construction of the city to the system of open spaces (Jellicoe and Jellicoe 1995).

However, the explosion of cities, starting in the 1970s, had several impacts: the loss of quality of life in urban centers, the general tendency of the degradation of open spaces and intense uncontrolled growth, which resulted in urban dispersion and fragmentation throughout territories.

Responses to such rapid urban growth began as early as the 1960s, with works oriented towards the collective quality of life provided by public urban open spaces and the value placed on landscapes.¹ Additionally, starting in the 1970s, ecological

¹ The works of Lynch (1960) in *The Image of the City*, of Jacobs (1961) in *The Death and Life of Great American Cities*, and Alexander (1977) in *A Pattern Language - Towns, Buildings, Construction*, are fundamental contributions that call great attention to the relation between settlements, roadways and open spaces in cities.

concerns were raised in, for example, the works of McHarg (1969), the National Environment Policy Act (NEPA) was passed into law in the United States (1969), concepts of ecological planning, landscape ecology and green infrastructure were established in Holland and United States, and other initiatives that sought better integration of the distinct instances of landscape were developed.

In this sense, some works related to landscape urbanism in the last decade have considered the landscape as the basis for the planning and design of territories in a comprehensive manner, where the “natural” and “artificial” realities are thought of as being interrelated in efforts to find alternatives to present problems of urban complexity (Corner 2006).

Governments began to place importance on sustainability at the United Nations Conference on the Human Environment (Stockholm, 1972) and the United Nations Conference on Environment and Development, often referred to as the Rio Summit (Rio de Janeiro, 1992), which tried to consolidate ideas about sustainable urban development, a theme that has been the subject of many conferences since [e.g., Kyoto Protocol (Kyoto, 1998) and Rio + 10 (Johannesburg, 2002)]. The summits have considered sustainable urban development to have three basic components—ecology, economy, and social necessities—resulting in the so-called Agendas for sustainable development.

The search for more sustainable urban parameters in planning urban territories is reflected in many plans, and proposals for systems of open spaces given in many of the plans are representative of a planning mechanism that tries to structure urban occupation and respect for territorial resources.

One can perceive the above tendency in some of the planning proposals that emerged in the 1990s for cities such as Berlin (Fig. 2.4), Paris (Fig. 2.5) and Barcelona (Fig. 2.6). In these plans, the system of open spaces is composed of a series of morphological elements that both rescue past styles and provide new solutions (e.g., green wedges, green corridors, greenways, ecological networks, and biological corridors), while complying to the distinct functions that guarantee the sustainability of the landscape and a closer relationship between open and occupied spaces.

These approaches are important references, in a global context, in the search for solutions to restructure the urban territory and reconcile urban development with a plan to conserve resources, which is fundamental to providing quality of life in cities.

Far from the romantic proposals of closeness with nature of the nineteenth century, and in the way of the proposals that recognize the system of open spaces as structuring element of the territory, the proposed approach claims a central role for the open spaces, in which the system can integrate the pieces of the fragmented urban territory and be planned ahead of time in relation to the future proposals of urban occupation as a guideline, offering resources on distinct scales and instances for the restructuring of the urban territories. In other words, the planning of the system of open spaces can consider the management of both open and occupied spaces and, at the same time, offer concrete project strategies for structuring the system and the urban occupation.

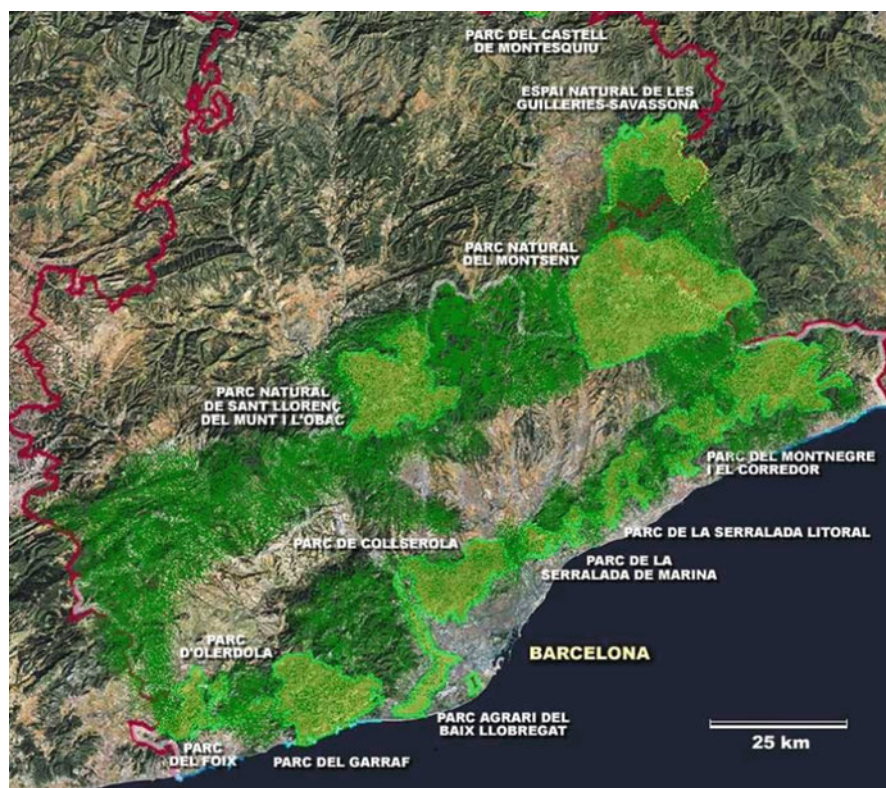


Fig. 2.6 Barcelona Green Ring (1999) (Source: <http://www.diba.cat/parcsn/parcs>. Accessed 12 May 2004)

2.2 Territory, Artificialized Landscapes and Territorial Open Spaces

There is no consensus on the concepts of territory, landscape or open space, or even an exact definition of what they represent, given that they can contain different phenomena. Many references derived especially from urbanism, spatial planning, landscape architecture, geography and ecology, define the concepts in different ways. Territory, landscape, and open space, in their plurality, have various connotations, and each highlights the most adequate characteristics for the analysis that one wishes to perform, which allows us to say that they are, mainly, instrumental concepts.

One could say that the territory corresponds to the marks of man, which can be called artificial (contradictorily in opposition to natural, because man is part of nature), and that it is the human product or a *human artifice* over nature. Thus, the

territory, which was once the territory of nature, becomes, on a large scale, the territory of man, where the artifice itself coexists with the “artificialized” nature² (Folch 2003).

The territory as an artificialized landscape implies the idea of inhabited space, or space adapted to the necessities of humans and their intentions for transformation. This space, besides its physical configuration, the processes that are established on it and its possible visual perception, involves human reading, as an interpretation of the physical support that enables action upon it (Cosgrove 1984).

In other words, the territory is considered as an artifact constructed by man, upon what was first nature, and the landscape is addressed as an introduction of human interpretation of this artifact. The result of this union, territory + landscape (or the artificialized landscape), would encompass the territory’s spatial construction, its use, its visual perception by man, and interpretation, in a figurative sense, with its own meaning, for each place and for each community. Through the analysis of the artificialized landscape, one can recognize the community practices on it and their intentions of action, in a continuous process, in which the spatial reality involves the witnessing of the past and indications for a future transformation.

The territory as an artificialized landscape would bring together a spatial dimension and a functional dimension, relative to its natural and artificial attributes, which would include its visual perception. The interpretation of the spatial reality of the artificialized landscape and of the functional relations established in it allows for the comprehension of some of the logical bases of its construction that remain in its structure.³ At the same time, the intended interpretation of the artificialized landscape, given the project’s intentions, allows for the transformation of its existing logical bases resulting in the concept of the artificialized landscape as a transformable object where physical space, function and intention converge.

The artificialized landscape can have different possible formalizations, although, finally, all result in an occupied, transformed and colonized territory. In urban territories, the landscape is that adapted to the necessities of humans (e.g., to live, produce, feed, and move) that spatially involve the essential elements that satisfy

² Some authors distinguish nature and artifacts relating to nature as biotic and abiotic resources (living and non-living organisms), which do not need external energy for their development, and artifacts as the anthropogenic environment (urban occupation) and the anthropic environment (exploration of the environment), which need external energy for their development (Bolós 1992).

³ The landscape [as a causal system] is the formal outcome of different physical and biological relationships, a simultaneous consequence of a process and a geological structure, and the result of the actions of elements of the climate, biological occupation and the relationships between different energy flows. In areas heavily occupied by humans, the landscape is largely an artifact, since the natural area has been cleared and plowed, parceled, built on and even irreversibly altered from its most basic natural conditions. In these situations, the landscape is often figuratively compared to a palimpsest, in the sense that it can track and interpret the traces of various historical periods and different human interventions. The landscape has materialized different solutions that different generations, applying different technical specifications, have been given the right to occupy and use. (Zoido 2002, p. 24, translated from the original)

these necessities. Landscape, in this way, is seen through built and unbuilt elements, human mobility, the exploration of the land and its resources that bring together various components of the physical structure: the settlements, infrastructure, and open spaces (Font et al. 1999, among others).

Open spaces have a great probability for transformation in the process of landscape construction. They make up the most flexible component of the territorial structure, whether functionally or spatially. They are also the most fragile places and one of the most promising, taking into account the possibility of restructuring the territory, since they can take on important roles, for example, as places where the ecosystems are, as places that allow the visual perception of the landscape and as places for human occupation.

As places where ecosystems are, open spaces bring together biophysical elements and processes responsible for the ecological quality of the territory, through relationships established between living beings and the inorganic environment (McHarg 1969; Odum and Sarmiento 1998, among others). In this sense, the biophysical elements embody the result, positive or negative, from the causes and consequences of interactions between the natural and artificial processes that are developed in an area, which can involve the vegetation, water, soil structure, and climate.

As places that allow the visual perception of the landscape, open spaces are the visible part of the territory, which allows the establishment of relations between the territorial elements and the creation of an image of the place, through the possibility of recognition and preservation of its specific characteristics and, consequently, of its visual quality. The characteristics of a landscape give it a spatial character, which varies from place to place, and can be identified according to formal components, originating from both natural and artificial processes (Lynch 1960; González 1981; Bolós 1992; Zoido 2002, among others).

As places for human occupation, open spaces provide the opportunity for the integration of the fragmented territory and the structuring of urban occupation. There is the possibility for the conscious management of the physical components of the territory in its construction, which should be proposed respectably and coherently with the dynamics of open spaces as a basis for the structuring of urban occupation. In this sense, management of the territory construction may be interested in maintaining the resources of the territory and highlighting the importance of open spaces in a system as a guide for spatial planning and restructuring of the territory (Battle 2002; Font 2003; Sabaté 2003; Llop 2003, among others).

In this sense, on a broader scale of the territory, open spaces can have distinct characters, being rural spaces, water spaces, forest spaces, major unoccupied urban areas or other areas, according to their spatial characteristics (e.g., size, position, and type of elements) and functional characteristics (e.g., type of functions that are carried out in each space and the repercussion of development).

The analysis of territorial open spaces thus falls on non-occupied surfaces, protected or not by law, of public or private realm, covered or not by vegetation, which can represent opportunities for the restructuring of the territory. The importance of the analyses of these surfaces is that, on the one hand, the surfaces are generally areas whose structuring value is not recognized by the planners (with the exception

of those already protected and having an unquestionable value ensured by law) and, on the other hand, the surfaces are made up of areas threatened by urban occupation. At the same time, it is believed that the surfaces should remain free from occupation, according to their attributes and the relationships they establish with their surroundings, and that they can form a system, being restructuring elements of the territory.

2.3 System of Open Spaces and Resources for Project Strategies

2.3.1 *Open Spaces in a System*

The spatial system referred to in this book is represented by a set of elements on distinct scales. There are various relationships between the elements themselves and between the elements and their surroundings, and the elements can be under mutual influence and have relative autonomy. In other words, the elements are able to receive and transmit effects from their interior to their exterior, and vice versa. In the system, the elements and relationships make up the whole, and their dynamics affect the general structure, without one element or relationship being dominant. However, not every dynamic has the same repercussion on the whole, and the repercussions vary according to scale. Considering the scale as a fraction of the total space, the larger the scale of the phenomenon, the greater the repercussions tend to be in the system. As a system, the set of open spaces is more than the sum of the parts (Santos 2002).⁴

For the planning of a system, it is important to recognize the constituting elements and the relationships that are established between them and their immediate surroundings. According to Forman (1995), the composition of a system of territorial open spaces can be viewed as a mosaic of ecosystems and the system brings

⁴A system is defined by a node, a periphery and the energy through which the pioneering features developed and located in the center can be projected on the periphery, which will thereby be modified by them. It is only from this scheme that we will be able to systematically capture the articulations of the space and understand its nature. This should make defining each piece of land possible, in an exact and special way. Each spatial system and its corresponding locations appear then as a result of the interaction between relationships; the analysis will be so much more rigorous as we are capable of avoiding the confrontations between simple variables that most of the time lead to causative analysis or to cause-and-effect relationships that artificially isolate certain variables and prevent covering the totality of the interactions. Whenever one system substitutes another, it is because the spatial system is always the consequence of the projection of one or more historic systems. Since the space contains characteristics of the different corresponding ages, this focus should allow for a more careful and more systematic interpretation of the remnants and affiliations. (Santos 2002, p. 79, translated from the original)

together continuous and non-continuous spaces that can be defined by patches, corridors and matrices, according to the following criteria.

- Patches are fragments, or pieces of the mosaic that have homogenous characteristics and can acquire distinct formats, elongated or wide, with straight or curved limits.
- Corridors are defined as linear elements that differ from their surroundings and cross an area. They can be of three basic types.
 - Trough corridors are strips with vegetation that is shorter than that of the adjacent matrices.
 - Wooden strips are corridors with vegetation that is taller than that of the adjacent matrices.
 - Stream and river corridors are strips with vegetation that can be taller or shorter than that of surrounding matrices and that contain a channel of flowing water.
- Matrices represent ecosystems that occupy extensive areas and they include patches and corridors. They are very connected and control the dynamics of the regional landscape. A matrix has three basic attributes: area, connectivity and control of the dynamics.

Each element of the system contains a margin, which is the border that separates the element from the adjacent elements. Two combined margins generate a *boundary zone*, which can be between open spaces or between open and occupied spaces.

The scales of the elements of the system vary, and the continuity of scale also varies. Among the elements of the system of open spaces, one distinguishes those that are continuous and those that are non-continuous. The continuous elements are connected to each other, such as in the case of water. The non-continuous elements are separated by portions of the territory that impede their direct connection and the elements are “satellite” pieces of the continuous system. The continuous or non-continuous nature of elements can help or hinder the development of flow in the system, where flows, especially energetic flows, are important to the correct operation of the system. Without these flows, there is no system, and it is thus critical that there is element continuity. Otherwise, the components themselves would be stagnant or, at most, juxtaposed. However, all pieces, connected or not, big or small, are important parts of the whole and can play a role in maintaining the processes that occur in open spaces, whether the processes are related to nature itself or to the human artifacts and experience.

On the other hand, open spaces, continuous or not, have spatial relationships with their subsoil, their borders and their surroundings. The effects of phenomena that occur in the subsoil reach the surface (e.g., when groundwater comes to the surface or a plant sprouts), and phenomena at the surface affect the subsoil (e.g., the impermeabilization of soil hindering the flow of water). Likewise, everything that happens at the borders and in the surroundings directly affects the open spaces; e.g., the consequences of urban occupation on open spaces related to the interference of processes, natural or not.

Together, the processes in the system make up an integrated framework, with relationships between the system's own elements and the surroundings. This means that the processes of the system, on a broader scale, are shaped by general and local interactions between elements and processes, which are reflected in each piece of the open system, and can influence the flow within the system with different intensities.

A spatial system of open spaces is a dynamic whole that varies with time (Santos 2002); e.g., one can observe how urban occupation affects the spaces; how water moves and affects surrounding areas; and how the climate and vegetation are affected. Over time, the open spaces can become occupied, areas with water can become dry, and explored areas can become abandoned. Additionally, the changes are not linear and occur simultaneously, in different directions and for different aspects. Thus, the system is not a system of a single time but the layering of different ages of the system, in which the permanencies and modifications throughout the years are mingled together. The recognition of these "times" of the system allows for the identification of problems, potentialities and currently existing symbioses between open spaces and their surroundings, whose analysis into certain categories can provide strategic information about spatial/functional relationships between open spaces and their surroundings for the planning of the system and the restructuring of the territory.

2.3.2 Nature as a Project Resource

According to the ecological method of McHarg (1969), each open space, in accordance with its biotic and abiotic elements, has essential ecological characteristics for the maintenance and/or recovery of its natural processes and for the ecological quality of the territory. Thus, the elements and processes of nature need to be respected in the process of urban occupation and can be incorporated by it, and appropriate limits to urban occupation can be established (Figs. 2.7 and 2.8).

Among the natural elements of open spaces, the presence of vegetation in current territories is of unquestionable importance to the distinct functions that it fulfills, such as the diversity of the landscape and wildlife, the stability of the soil structure, the maintenance of water flows, beneficial effects on the climate, reduction of air pollution, and recreational, relaxation and educational uses (McHarg 1969; Hough 1995; Turner 1998, among others).

Places with vegetation, or those without vegetation but that can recover with development of the ecosystem, deserve that attention be paid to their natural elements and processes in the maintenance of the ecological quality of the territory.

Agriculture, which is often directly related to the identity of a place, usually occupies spaces that frequently suffer from the pressure of urbanization, particularly when production conditions are not profitable. However, encouraging agriculture in a territory is an opportunity for recreation, environmental education, the creation of jobs, production and trade conditions for small-scale urban production, and low-cost maintenance of open spaces. Additionally, when cultivations are adequate, conditions are best for the maintenance of the ecological balance of the open space and its surroundings (Hough 1995; Turner 1998, among others).



Fig. 2.7 Nature:Amazon rain forest (Source: <http://www.fmc.am.gov.br>. Accessed 10 July 2008)



Fig. 2.8 Nature:Agricultural landscape (Source: <http://www.flickr.com>. Accessed 10 July 2008)

The water network, among other factors, supplies water to a territory, offers leisure opportunities, enables the development of agriculture, the functioning of cities, provides hygiene and improves human health, and generates its own ecosystems. Beyond this, water is a factor that, together with slope, has associated risks, mainly related to runoff, which promotes flooding, the accumulation of water and sediment, and drainage problems. Thus, “water places”, on the surface or subterranean, affect the functioning of ecological flows and the territory as a whole, and their maintenance is essential for the development of natural processes.

Likewise, observations of the relief and soil conditions are important to the maintenance of natural processes. The stability of soil is a reference for the possibility of the fixation of vegetation, which reduces the interference of earth movement in river and allows safe urban occupation.

In general, the contributions of biophysical elements in the system of open spaces reveal both the possibility of preserving and/or recovering natural processes and the opportunity to promote interconnection between ecology and urban occupation in the process of territory construction. Here it is considered that biophysical elements and processes are important factors in decision making relating to structure urban interventions, rather than simply an attribute considered afterwards.

2.3.3 Visual Perception as a Project Resource

The perception of the landscape can have great importance in the planning of a system of open spaces. Perception is an essential element for the maintenance and/or recovery of the visual quality of an area, and it has repercussions on the quality of life of the population and the preservation of natural and artificial heritage (Zoido 2002). Additionally, the perception of the landscape can be considered an important factor to be taken into account as a guideline for the structuring of urban occupation (Figs. 2.9 and 2.10).

Open spaces can be elements of the visual structure of an area and give the area unique characteristics. The maintenance of open spaces tends to favor the visual diversity of an area and can enhance the value of elements that have remained after a long period of artificialization. According to McHarg (1969), such maintenance means increasing the value of what remains as an element of the physical identity of a place, and it is a collective work carried out by accident or design. The maintenance of open spaces is the result of voluntary or involuntary conservation of significant elements that characterize the place, and it allows the open spaces to be shared by the community. In this sense, scenic elements, areas with visual prominence, the scenic background, and open spaces of historic and cultural interest are important visual content of the landscape. This content makes a place unique, with the singular elements determining the particularity, diversity and visual quality of the place.

Scenic elements give character to a place. They allow for the coverage of its physical structure and highlight the more significant attributes (e.g., unique forms of



Fig. 2.9 Singular scenic background:Rio de Janeiro (2000) (Photo: Rodrigo Anda)



Fig. 2.10 Singular scenic background:Morocco (2004) (Photo: Author)

the relief, hydrography and vegetation). These elements work as references and to mark the place, and they are part of the territorial identity and the visual potential of the landscape (McHarg 1969).

The scenic background allows the visualization of the character of a place in a generic way. The background is the integration of significant elements into large



Fig. 2.11 Fragmented territory. Barra da Tijuca in Rio de Janeiro (Photo: Author 2003)

features of the geography, and it reveals the landscape scenery, totally or partially. The scenic background thus allows visual connections to be established between basic elements (Bolós 1992).

Areas with visual prominence are perceived to have individuality and can be used to guide movement along roadways and to link points between visual sequences. Additionally, they are special spaces that can be recognized as a collective asset, which should be shared with the whole community (Lynch 1976; Spirn 1998).

Open spaces of historic and cultural interest are usually witnesses to the transformation of a place. They are typically remnants of urban development, and it is important to conserve some of their more representative features as part of the identity of a place (McHarg 1969).

Preserving and/or recovering significant physical features of non-occupied spaces can therefore be a reference for the planning of the system of open spaces and for the structuring of urban occupation, and would guarantee the maintenance of the visual quality of the territory and strengthen of the identity of the territory.

2.3.4 Urban Context as a Project Resource

In analyzing the urban reality of large cities of today as extended, transformed and fragmented cities, one can see that the logic of roadway connections, new forms of construction in the territory (in many cases driven by strong real-estate speculation), and outdated spatial planning with respect to the monitoring of urban changes, have a tendency towards dispersion without proper attention to the resources of the territory.

In many cases, one can observe that, as result of several centuries of human occupation, the current conformation of many urban areas has significant imbalances between its elements and processes resulting in fragmented territories. The fragmentation of territories affects open and occupied spaces, with there being negative consequences for both and also for the human experience of the landscape. Recognizing the origins of the fragmentation of the urban territory and consequently their processes and elements (e.g., open spaces, settlements and infrastructure, and especially roadways) can offer a perspective on the roles that open spaces can play to reverse this reality. In this context, looking at the open spaces as possible integrating elements of parts of urban occupation can encourage the maintenance of these spaces free from occupation, or their occupation under certain conditions, and as references for occupation structuring (Fig. 2.11).

In terms of settlements, one can observe factors contributing to the fragmentation of the territory; e.g., the dispersion of settlements with increased accessibility, the excessive consumption of soil, and the construction of “closed” settlements inside “walls”. There is also improper land use in certain places and monofunctional settlements, which depend on other city centers, creating the need for displacement. In this process of fragmentation, the “closed” settlements do not relate to their surroundings in a direct way, and the settlements may have excluded and/or conflicting functions. On the other hand, settlements can occupy areas much larger than the land upon which buildings are constructed, and with the development of greater infrastructure, the settlements thus have a disproportionate effect on the environment; e.g., decrease reduction of agricultural and natural spaces and soil impermeabilization. Additionally, the process of fragmentation can result, in some cases, in the deterioration of urban centers that lack sanitation, public urban spaces, collective facilities and adequate transportation; have an unhealthy environment; have poorly planned buildings; and are affected by overpopulation and the degradation of building heritage. These factors combine to segment a territory (Boeri and Lanzani 1992; Ascher 1995; Corboz 1995; Font et al. 1999, among others).

In terms of the roadway network, a project normally considers traffic flow and tends to be more related to technical and economic issues, which, in many cases, contribute to the fragmentation of urban territories. Roadways, on a broader scale of the territory, are built to connect places in a quicker and shorter manner. Roadways are usually not conceived with consideration of communication between people, open spaces and settlements, or the possibility of incorporating settlements, nature, visual perception and social use in one design (Lynch 1966; McHarg 1969). In particular, highways and expressways are designed like channels with walls at their margins, which do not allow direct connections with the surroundings. In this context, it is common for the territorial roadway infrastructure to cross areas of vegetation or settlements, thus separating the areas into parts, modifying topography and water courses, and separating people. Moreover, there is roadway infrastructure that is in decay, is not maintained or is obsolete, and contributes little to urban efficiency.

In terms of territorial open spaces, their spatial configurations are largely modified by the large occupation of a territory, through the construction of patterns of settlements and roadway infrastructure that contribute to fragmentation. This fragmentation can be seen through biophysical modifications such as the removal of vegetation, changes made to water flow and topography, the presence of monocultures (which tend to produce impoverished soils), water pollution and silting, and soil contamination. These consequences can generate many problems, such as elevated risks of landslide, soil erosion, and flooding. In this way, the visual perception of the open spaces, as part of the identity of the territory, is also affected owing to the loss of important visual features that give a special character to each landscape. On the other hand, the fragmentation of open spaces is, in part, because of the anthropic perspective of planning in the twentieth century, where open spaces were, in general, reserved for later occupation or enjoyed environmental protection, as separated “portions” of land.

In this context, it is important to highlight that the system of open spaces, which can act in the “gaps” of a territory, assumes further importance in the structure of urban occupation. Open spaces, protected or renewed, can reverse the process of fragmentation caused by settlements and roadways, introduce nature and visual perceptions, and benefit social uses and economic activities, establishing new urban dynamics. Thus, the permanence of open spaces can be valued regardless of the current biophysical attributes or visual perception values of the open spaces. In this case, the importance of the permanence of spaces free from occupation in the urban context, or their occupation under certain conditions, relates to their role in integrating elements and processes in the urban occupation, irrespective of whether they have biophysical and/or visual perception values. There are thus alternative guidelines for creating open and occupied spaces to restructure a territory by forming new spatial and functional connections.

2.3.5 Contribution to Sustainability of the Territory

The concept of sustainability has emerged in the last few decades to guide the respectful consumption of territorial resources, and to maintain their functions and equitable distribution spatially and temporally (Rogers 2000; Folch 2003a, among others).

Sustainability is an eloquent paradigm for the transformation of increasingly fragmented territories by random and scattered urban growth, in which, frequently, one can see the spatial and functional disintegration of open spaces. Sustainability itself may be an unreachable goal, an impossible myth or a series of unsolvable contradictions, but it allows for the creation of possible alternatives, or at least healthy illusions, that instigate a proactive attitude in project proposals and are not just descriptions of the reality of urban territories.

The search for a system of open spaces as a possible guideline to spatial planning tends to reflect principles of sustainable action, concerning the maintenance of open spaces and the possibility of developing a new structure for urban occupation. Examples are conserving the heterogeneity of open spaces, guaranteeing the integrity of human and natural processes, in a spatial and functional sense, and promoting physical, biophysical, visual, and social cohesion of the territory (McHarg 1969; Hough 1995; Zoido 2002, among others).

The maintenance of the heterogeneity of open spaces can be translated into, among other factors, the preservation of the diversity of biophysical elements, the more significant visual elements, social variety, functional and typological variety of settlements and alternative mobility. In principle, maintaining the heterogeneity of open spaces leads to the individualization of each portion of the territory, with the reinforcement of its own characteristics against homogenization, trivialization, and segregation of the differences that devastate our urban territories today.

Ensuring the integrity of human and natural processes, in a spatial and functional sense, provides mainly the possibility of development of biophysical processes, visual perception possibilities, and access and social interaction. This is done

through the designation of land use and activities according to the resources and fundamental characteristics of the open spaces and the intentions of people using the open spaces.

The promotion of physical, biophysical, visual, and social cohesion of the territory reveals the relationships between open spaces and urban occupation. Open spaces are favored as places of integration, which relate the distinct instances of the landscape and promote aggregation in the face of fragmentation. Indeed, the promotion of cohesion presents the system of open spaces as an alternative for possible integration among the components of a territory and the community of that territory.

System of Open Spaces

Concrete Project Strategies for Urban Territories

Tardin, R.

2013, XV, 216 p. 113 illus., 108 illus. in color.,

ISBN: 978-1-4614-4352-0