

These new parks could also be linked to existing potential natural systems or to new natural systems that could be set up to develop ecological values that have been nullified.

Building on these new green systems requires establishing multiple connections or green links between the different areas of the city and between the different existing open spaces. Green links are a modern version of Olmstead's systems of parks or interconnecting parkways. They encourage walks, engender a great deal of interest in the metropolis because they allow citizens to interact with all the open spaces, and they are the foundations of a network which offers the possibility of being able to choose and expand routes.

Green links would basically be understood as tree spaces which could also serve for draining city water. The continuity of routes for pedestrians or cyclists is essential, because it is essential to find good solutions for all the intersections and junctions that will be created with other infrastructures. Green links could be simple urban walkways or be closer to the ideas of an ecological corridor guaranteeing continuity of nature. Transforming these spaces into land drainage systems seen from the city means exploiting rainwater to create humid areas that would turn green links into part of the system of parks and into a self-contained natural system. Green links are another piece in the urban routes that can be established in our cities.

The metropolitan landscape has to be constructed based on simultaneously exploiting the values of urban connectivity, ecological connectivity and metropolitan connectivity. Urban connectivity is achieved from urban public space projects, recovering the positive aspects of the compact city which we still wish to preserve. Ecological connectivity can be built from the metropolitan interstices projects, based on the inevitable application new ecological values. Metropolitan connectivity we have to learn to programme given the need to regulate the values of the dispersed city where we live. The intentional layering of these continuities is the first tool when it comes to renovating landscape planning in the new metropolitan parks, and the best instrument for building a better metropolitan landscape.

Public spaces can be the visible image of metropolitan continuity. The composition of these spaces can be dispersed and fragmented, as a logical consequence of the diversity of elements that it contains; but it can also be coherent and continuous, as a direct consequence of the new ideas that we need to implement.

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AGRARIAN LANDSCAPES IN THE ITALIAN METROPOLITAN ENVIRONMENT The case of the South Milan Agricultural Park

Fabio Renzi

“Là dove c’era l’erba ora c’è una città, e quella casa in mezzo al verde ormai dove sarà?”
“Where once there was grass there is a city, and in that house in the green, where might it be?”

Il ragazzo della Via Gluck – a song by Adriano Celentano

1. The years of urban expansion

Over the second half of the last century, like other European countries, Italy underwent an intense urbanization process which caused both a territorial and social transformation. Above all this transformation altered the largest cities. One need only consider that during the 50's and 60's Turin became the largest "Southern" city of Italy, due to the many immigrants from the south who came to work at Fiat.

This urban expansion and building boom was carried out with little or no city planning and an emphasis on profit. The physical and visual results make up the environment and background of many Italian films of the post-war period. The Roman countryside with its suburban towns and the new neighborhoods of the outskirts are seen in Pasolini's movies. De Sica's and Visconti's films show the beachheads on the landscapes of the Lombard countryside which have since become the infinite city that covers the area from Turin to Venice. Francesca Rosi's beautiful and intense film, "Le Mani sulla Città", tells the story of the "sack of Naples" under Mayor Lauro (of the famous shipping family). This radical and profound change in both the physical and human backdrop of the country would become the subject of ever popular protoecologist Italian pop song, *Il ragazzo della Via Gluck* by Adriano Celentano.

In almost every large Italian city, this urbanization brought about the existence of working class suburbs, unauthorized settlements and the new neighborhoods on the city outskirts, all of which have

developed along the various main roads granting access to the city. The countryside, small towns, and rural settlements were upset and absorbed into a chaotic and irrational hodgepodge. Many logistic and infrastructure problems still afflict Italian cities. In particular the relationship between the periphery and the center of the cities, where the center remains the site of nearly all functions and services. The transformation of Italy's agricultural landscapes shows the various phases of civilizations that have marked the country. Their division into lots, their grid work of sharecropping farms, have become vacant lots awaiting buildings or areas to place unhealthy industrial plants. In this manner not only the visual, aesthetic properties of many Italian landscapes with their historical and cultural identities are upset but also the deeper structure of ecological relationships is likewise traumatized. This will lead to a progressive process of degradation of the areas surrounding cities and the impoverishment and loss of their biodiversity while fostering particularly aggressive pollution. Such pollution particularly jeopardizes the hydrographic system, putting the groundwater at risk.

So the Italian cities find themselves poorer not only in their formal and aesthetic elements, but also the social aspects, due to the lack of services and infrastructure and particularly the lack of green.

2. The community's new demand for quality: Agrarian landscapes and urban parks

The aggression towards our territory was facilitated by a legislative vacuum that lasted more than twenty years. Only in 1968, with the introduction of the urbanistic standards, did urban green areas become a theme in city planning. It was a substantial step forward even though it did have its limitations. The letter and spirit of the standards concentrated on more quantitative and compensative aspects (including payments for damages) as a solution to the frightful deficiencies in citizen services and structures. Gardens and areas for sports facilities were the dominant in the planning of public green areas. It was not until some years ahead, in the 70's and 80's Italian city halls made use of their more mature, complex and articulate experience. The trauma to the agricultural space near or between cities, historical gardens, hydrographic networks rather than physical augmentation became a fundamental component of urban planning. The emergence of a public and collective demand regarding the quality of life (from workplace safety to the livability of the city), and its subsequent political renaissance which impacted many Italian administrations, led to the spread of city planning experiences aimed at the creation of parks both inside and beyond the city limits.

The city of Ferrara selected about 1,200 hectares of productive agricultural land (at the time corn, wheat and beets were prevalent) which ran from the Po river to the northern walls of the city, with the aim of maintaining the direct relationship between the countryside and the city walls which dates from the end of the 15th century. The setting aside this area as a park (as part of the 1977 general regulatory planning variation) had dual objective:

- At the territorial level, the possibility to determine a positive relationship between the city and the countryside, optimizing the agricultural employment of the area while also recreational use of the same area, in particular the area near the river.
- At the urban level, the improvement of the facilities and services located in the area next the walls, including sports, cultural and leisure time facilities, within an organic and unified design.

Bologna developed the idea of a hilltop park and an agricultural park near the city which uses the hydrographic network as a strategic element in the upkeep of the open spaces that interrupt the continuity of buildings.

Florence, beginning with the Cascine Park, intervened along the Arno with a strategy of public spaces and equipment.

These are just some of the events which developed in Italian cities during that period which announced the process of reevaluating agrarian landscapes as something more than a gap between buildings. From a social and cultural point of view, as well as when considering practical planning, it is significant that the central and northern areas of Italy were the center of this process. The south of the country was not involved, and still today the cities of the south remain the site of illegal building and aggressive urbanization. One need only think of the area near Vesuvius, the Conca d'Oro of Palermo, the Valley of Temples near Agrigento or the agrarian landscapes of the Calabrian Coast.

FROM THE PARKS TO THE SYSTEM: THE EXPERIENCE OF THE REGION OF LOMBARDIA

The metropolis of Milan, with over five million inhabitants distributed over a territory that extends from the regional capitol to the prealpine hills, surely represents one areas in which the gamble to preserve diffuse natural environments, landscape elements, and even the identity of the territory is most difficult. There the urban coverage is based on an extremely compact model, where the phenomenon of urban sprawl is confined to the outskirts, while (especially in the North sector of the city) the area covered by urban buildings can reach over 70% of the total territory. This density has led to serious environmental crises in all of the

environmental sections: from water to air. The case of water is characterized by a torrential flow of the hydrographic net which is unable to receive the enormous volume waste water flushed by millions of citizens and industries. The case of air is made particularly critical by northern Italy's orography. The mountain range creates a continuous and impervious barrier to wind ground currents. Obviously the urban and infrastructure policies with their overwhelmingly centrifugal design with respect to the city of Milan, form a formidable obstacle for the ecological connectivity of the territory.

Already in the 1970's the first regional experience were founded, which were particularly daring in some cases. It began with the Regional Park of the Valley of Ticino. With over 90,000 hectares of terrain which underwent a special planification aimed at safeguarding the most important river flow in North Italy, which brushes against the western Milanese area. It is home to the most important plains forest of the Po Valley (mainly oak-hornbeam with formations of elm and alder), but also extends over a particularly valued agricultural territory and distinguished by the cultivation of rice. Immediately after it touched a stretched of land particularly assaulted by the advance of cement at the gates of Milan which extends northward to the ancient geological terrace formed by river and glacial movement. This area is the Groane Park, instituted in 1976, and composed of almost 4,000 hectares of oak and sylvester pine woods (which were cultivated there in the period of Maria Teresa of Austria and later grew wild) with large arid clearings occupied by precious heaths at the foot of the mountains. Later an urban park was instituted within the regional park system, the North Milan Park, which still represents one of Italy's most important ecological recuperations of abandoned industrial areas between Milan, Sesto San Giovanni and Cinisello Balsamo, Italy's little Ruhr.

SOUTH MILAN AGRICULTURAL PARK

Certainly the bravest and most innovative operation was that which brought about the institution of the South Milan Agricultural Park. This Park actually embraces the entire southern sector of the province of Milan, the least overcome by the advance of cement due to its extremely profitable agriculture. For centuries this area has benefited from extremely fertile soil and an abundance of wells. These were optimized with works of monumental relevance at the end of first mediaeval period by the monastic orders seated in a great abbatial complex: the three Cistercian abbeys of Milan of Chiaravalle, Mirasole and Viboldone. The Park spreads over 50,000 hectares of primarily agricultural land in 68 municipalities, disseminating the wells and springs innervated by a dense network of irrigation.

It is a Park that interweaves, in a way that is perhaps unique in Europe, the reasons for safeguarding and protecting the territory with the defense of an economic function like agriculture which has marked the history and development of this area. It is a Park that must take into account the ever growing community demand for open, useable, and culturally rich spaces, all of which in one of the country's most developed metropolitan areas.

This territory truly has nothing that can be genuinely defined natural. It is in fact a constructed landscape as Cattaneo writes, from the hydraulic works to the use of the water resources which are so rich in this province. The constant, hard work of has been employed to regulate and model the course of water for its military, agricultural, and commercial and traffic transport value.

Having been founded in 1990 under the strong push of committees and associations, the park must seek to safeguard the antique agricultural vocation of this territory, reconciling it with the present need for green spaces and the chance for urban citizens to socialize and enjoy themselves. It has an enormous and yet unexplored potential to make the concept of multiuse profitable and lucrative. The agricultural sector is called to invest in this concept.

THE LANDSCAPE OF AGRICULTURE

The story of the *grassia* (Italian agricultural argon meaning "fertile") agricultural plains south of Milan intersect with the slow, constant and systematic adaptation works realized by man to satisfy his own needs. Being both rich in water and well extended, the great plains of the southern Milanese province had an almost certain destiny: to become a vast cultivation crossed by draining ditches, canals and farming machinery.

Soon man realized that the hay for cows grew abundantly among the hedges and rows of trees in Po valley fields. Agriculture took hold of this territory and made it one of the most fertile agricultural zones in the world. In the transformation of the terrain the Cistercian monks of the Lower Milanese region with their abbeys and the intense system of work and prayer played a fundamental role.

Through the grandiose strategy of canalization of the countryside, which connected irrigation ditches and waterways, in order to make up "water meadows" (fields upon which a thin layer of water is present year-round, which heats and protect during the winter, allowing the flourishing growth fodder grasses) and the use of groundwater from wells (small natural oases in the countryside). The monks made this a unique area from an agricultural point of view. Even today the secular work of hydraulic-agrarian transformation of this

countryside is testimony to the history of this territory and extraordinarily represents the signs of transformation and the care of the agrarian landscape.

The once dense network of water meadows and springs has slowly disintegrated. Modern agricultural techniques have privileged cultivation methods of greater productivity and decreased expense in manpower. The overly costly and difficult management of the springs and sluices for the water meadows faced the profits obtained with isolates (animal fodder obtained through a fermentation process from corn and other cereals). That is why the Park proposes incentives to farmers who maintain the water meadows.

The *cascine* (traditional square court farmsteads of Lombardy) and the places of peasant civilization selected offer a perspective of the characteristic agriculture of the Park South.

In the Park there are more than 1,400 farming enterprises which employ approximately 4,000 workers. The area of the Park is characterized as one of the most intensive agricultural zones in the nation.

The raising of cows and pigs is the primary activity (in terms of revenue produced) with 305 farms in an area equal to 30% of the agricultural territory of the Park.

The most widespread and characteristic cultivation of the area is that of cereal (43% of the agricultural territory), followed by rice (22%) and grass (16%). There are minor percentages of sunflowers, soy, vegetables, water meadows, floriculture, greenhouses, poplar plantation and wooded areas.

The safeguarding and qualification of the Agro-sylvo-cultural activities is one of the key points of the Park. That is why one of the Park's goals is the adaptation of "measures and initiative aimed at sustaining a progressive reduction of the ecological impact of agricultural activities, aimed at agronomic practices which are more compatible with the safeguarding of the environment", that is to say organic agriculture.

The Park occupies a surface area of approximately 46,300 hectares for agricultural use. This agricultural territory spreads out like leopard spots from the limits of the Park, spotted between 19,000 hectares of urbanized territory.

THE CULTURAL LANDSCAPE

The South Milan Agricultural Park also represents a cultural resource. In it, one finds buildings of architectural and historical value distributed in the less well known corners of the territory. Houses and buildings, witnesses to the peasant's way of life and work, are supported by

the silence of the countryside circled by a network of rural streets, tow waterways, bicycle paths (finished or being finished), drainage ditches, canals, locks and springs. Abbies emerge, a witness to the reclamation work done under the orders of the Chiaravalle (Cistercian), Mirasole and Viboldone (Humiliati) Monasteries.

Other structures remain hidden below the rice fields and water meadows. A rich patrimony of monumental goods present in the Milanese ground is waiting of to be discovered and appreciated.

The presence of castles provide testimony of the times of the Visconti and of the Sforza in this territory. For centuries these buildings were used to oversee the countryside and the agricultural work. The castles of Binasco, Cusago and Melegnano are of considerable value, as are those of Cassino Scanasio (14th century), Locate and Peschiera (15th), Buccinasco and Macconago (16th), and Rocca Brivio (17th). The villas around Milan, which often developed along the waterways, were the vacation homes or hunting lodges of the Milanese nobility during the 1700's and 1800's.

Beside this testimony of a most noble past there is the genuine beauty of a poor and more concrete farm, the *cascine* and prized rural hamlets, with their annexed icehouses for the conservation of food, and little chapels and windmills.

From amongst the *cascine* the fortified agricultural complexes of Carpiano, Fagnano, Gudo Visconti, Tolcinasco, Settala, and Coazzano emerge along with the rural hamlets of Cascina, Resenterio, Selvanesco, Conigo, Cassinetta, Bagnolo, and Sarmazzano. Besides these, there are the ancient windmills like those of Bazzanella, Vione, Gudo Gambaredo; the ancient farm structures with towered gates like in Dresano, Locate, and Zivido. There are the *cascine* whose structures show their monastic origins such as in Colturano, Gaggiano-Vigano, Mediglia, and Tribiano. There are interesting examples of 19th century neogothic *cascine* in Cislano, Rozzano and Zibido. Finally the country villas of Bareggino, Corbetta, Gaggiano, Trenzanosio, and Vittuone are well worth mentioning.

There are many architectural elements which, although they may not be of any value at all, still make up a fascinating testimony to rural architecture and are of a cultural significance which should be maintained. They serve as a physical memory of the passage of the past systems of production.

The recuperation of the architectural and monumental goods for a use coherent with their origins represents an enormous opportunity for the Park. Some significant examples of the recuperation of the *cascine* and of other elements connected to the agricultural tradition have already

been done. Take for example the *gazzera* (icehouse) of Cornaredo, the agricultural museums of Albairate and San Giuliano, and the restructuring of the *cascine* in Albairate, Assago, Buccinasco, Milan and Rozzano, which were transformed into exposition and cultural centers. Within an Agricultural Park the structure of peasant origins, linked to the so-called "lesser" rural architecture represents an important cultural, educative and recreational resource.

The development of simple rural tourism which is compatible with the environment (agro-ecological education, direct sales of typical products, restaurants in the ancient osterie outside the city walls, instructional walks through the traditional rural landscape, etc.) are an important path towards the revitalization and appreciation of the rural architectural patrimony.

THE NATURAL LANDSCAPE

The Park wrapping around Milan presents a greater extension of agricultural areas than wooded areas.

In the beginning, there was a dense forest made up of various oaks and white hornbeams, mixed with lime, elm, ash, maples, wild flowers and wild cherries, which substituted the current landscape of agricultural uniformity.

The wetlands and riverside environments were also diffused. There were oxbows and meanders of the Lambro and other water flows, with flowering zones on its banks (just below the ground level of some of the plains). Springs and swamps hosted the typical vegetation of wetlands, with black alders, poplars and willows, as well as beds of reeds and rushes. This created a rich ecosystem capable of supporting the presence of precious fauna: herons, raptors, swans, egrets, wild geese, night herons and other swamp animals which have since disappeared like the otter, beaver, wolf, bear and deer.

There are however a series of green areas of naturalistic area which is still spread across the territory which serves to testify to the unique and irrepeatable natural wealth of the area.

An important role is played in this area by the springs. The springs are sources of water which spout where the ground water encounters impermeable clay layers which allow the water to rise to the surface. The water shoots out forming a font that is a source which is the origin of the so called spring. Alongside this, a rich, flourishing vegetation develops which creates a natural oasis in the countryside.

The Park has selected some zones to safeguard particularly important natural resources. These are the Fontanile Nuovo (Bareggio), Muzzetta Springs (Rodano) and Lacchiarella Oasis Natural Reserves. In them there are zones which curate the

appreciation of the landscapes formed by the integration of nature and agriculture which are typical of the plains. It is a landscape in which the main role is filled by hedges and rows of trees (consider the area west of the Park around the cities of Cusago, Cislano, Bareggio and Vittuone), and traditional cultivations (rice, water meadows, grass) of the "set-aside" fields (a practice instituted and subventioned by the European Union in order to limit excess agricultural production and favor, among other things, the formation of a refuge for wild fauna).

In other zones of naturalistic interest, incentives are provided for naturalization interventions in the territory for woods and wetlands: the Woods of Cusago, Riazzolo, and Carengione and the wetlands of Lamberin di Opera, Pasturago di Vernate and Paullo are just some of the significant examples in terms of scientific interest and the evolution of the vegetation. Additionally, the use of agricultural techniques which are more compatible with the wealth and biodiversity of the ecosystem are supported, such as organic farming, and naturalization interventions along the vegetation strips parallel to the course of the river (including intervention through naturalistic engineering).

THE EXPERIENCE OF WOODS IN THE CITY AND THE CAVE PARK

The Cave Park in the eastern belt of Milan and the area of the Woods in the city, occupy a surface area of over 2 million square meters within the South Milan Park.

The requalification plan issued in 1997 brought the 33 initial hectares of the Cave Park up to the current 110 hectares. The Woods in the city, which spreads over 80 hectares, is one of the first examples of urban forestation realized in Italy. It began in 1986 with the volunteer actions of the environmental association Italia Nostra. It is also for this reason that it received the important "Treasure of the world / Unesco" recognition which is given by Unesco clubs to sites of particular natural, cultural and social interest which are cared for and recuperated with the full cooperation of the local community. Despite the extraordinary success and the notable recognition, today, this precious urban green area is threatened by urbanistic pressure.

THE PLANNING

Through the Piano Territoriale di Coordinamento or PTC (Territorial Plan of Coordination) the South Milan Agricultural Park has selected different "types" of territory or zones:

a. Agricultural territory in the metropolitan belt and green areas of the urban belt These are the areas dedicated to professional agricultural activities in close proximity to the city. The agricultural activity is preserved through

the management of the territory in a manner to avoid the introduction of new infrastructure and buildings that could bring about a fragmentation or alteration of the rural building patrimony (except for transformations for agricultural purposes).

b. The Natural Reserves of Fontanile Nuovo, Muzzetta Springs, the Woods of Cusago and the Lacchiarella Oasis. These are the most esteemed naturalistic areas of the Park.

c. Zones dedicated to the promotion of the landscape. It is a zone in which agriculture assumes a particular importance in the characterization of the landscape. Traditional cultivations, set-aside fields, and the improvement of the hedges and trees is promoted. They are set up for cultural, recreational and sports use.

These include sub-zones ("parks of existent or projected local interest", "existent and projected sports and recreational structures and centers", and "abandoned mines") which bridge the areas outside the park and the agricultural areas of the metropolitan belt.

Alongside the activities of agricultural enterprises in this zone, it is proposed to carry out interventions aimed at the cultural, recreational and sports use of the Park.

d. Areas for the cultivation of mines as industrial and conventional archeological sites. The activities in these areas are regulated in accordance with the province level plan for mines and the laws regarding areas connected to archeological value.

PROJECTS FOR THE SOUTH MILAN AGRICULTURAL PARK

In the Accordo Quadro 2002 (2002 General Agreement) between the Ministry of the Environment, the Ministry of the Treasury, Budget and Economic Planning and the Region of Lombardy funds were made available for projects in the regionally protected areas, aimed at the acquisition of areas of naturalistic value, requalification projects, studies in fauna or the environments which produce reports and management plans for the conservation of habitats and species.

Among the projects planned, the Park and the Region have agreed upon the guidelines and the end of the project named Ecological requalification interventions – Forestation and floral requalification of the South Milan Agricultural Park. During the preliminary drawing up of the project, the 61 municipalities of the Park were called upon to collaborate and make available city lands (when the cities had such land available), where such interventions could be carried out.

The goals of the project, agreed upon with the Region of Lombardy, concern:

a. The forestation of uncultivated areas and the floristic requalification of the existing forest areas. The vegetable species to put in place have been selected from among the indigenous plants of the Lombard plains woods by the technicians of the Park, by ERSASF (Regional Entity for Agriculture and Forest Services) and by the Regional Center for Autochthonous Flora, which collaborated on the project;

b. The creation of two centers for environmental education and naturalistic use near the Lake of Basiglio and the Fontanili di Rho Park;

c. The reinforcement and requalification of the ecological passages of the Park.

During the course of the predisposition of the definitive-executive project a list of tree, bush, and grass species was written up to be used in the renaturalization interventions. The selection criteria considered the purely phytogeographic elements, excluding a priori all species that were not autochthonous to the valley, as well as the stational ecological characteristics of the project area, the ease with which such species take root and the availability of the Center for Autochthonous Flora to attempt, based on previous experience, the experimentation of cultivations, particularly in regard to the herbage plants.

FROM THE PARKS SYSTEM TO THE ECOLOGICAL NETWORK OF THE PROVINCE OF MILAN

The newest project in the recuperation of metropolitan landscapes is the Green backs project of ecological passages conceived to recuperate the connection of green with the heart of the metropolis, setting aside spaces between urban areas and the major axes of infrastructure. The construction of the green back requires a substantial activation of the municipalities through the institutions of the Local parks of Supermunicipal Interest.

These types of parks, only foreseen in the regional legislation of Lombardy, are areas that are realized from the round up, from initiatives from the municipalities called to coordinate amongst themselves for the urbanistic safeguarding of the territory. 17 supermunicipal parks have been instituted in the province of Milan alone (70 in all of Lombardy), and many of these are actually areas left over from the urban advance, often lacking their own naturalistic value, but deserving of protection as a "benchmark" in the ecological project of the province of Milan. It is not so much to safeguard the natural environment but to reconstruct a natural trauma which has been lost over the last few decades through the disorganized occupation of the terrain,

and to create a new natural metropolis. Initiative have already been identified which, beyond the institutional activation, call the community and citizen's associations into play. New woods are already growing in North Milan, thanks to the efforts of volunteers, school groups, and elderly groups. Often these have been coordinated and encouraged by associations such as, above all others, the Circoli della Legambiente.

RECOVERING METROPOLITAN RIVER LANDSCAPES

The project for recovering the Llobregat river environment and landscape in the Baix Llobregat region

Ramon Torra i Xicoy
Antoni Farrero i Compte
Victor Ténez i Ybern.

How should we embark upon an understanding of the city in relation to the countryside? (...)

After a little study we can move on to the generalisation of the "valley section" (...)

This profile is associated with a diagrammatic representation related to the early occupations conditioned by this relief.

This serves as an introduction to the rational geography of cities from the point of view of its regional origins. To begin with, they can be better studied and understood if we start from the valley and its resulting occupations with the consequential types of human settlements (...)

This principle of "geographic control" is of vital importance both for understanding cities as well as the layout of new cities; and their disastrous violation, (...) is an important cause of constant economic waste and aesthetic havoc.

«The valley section», Patrick Geddes

In *Cities in Evolution*,¹ Patrick Geddes suggests that when considering cities that spread across the territory we should begin from the two-way tension between two approaches to the matter: that which is based on the Town-Country tension and the opposite, or corresponding approach, the Country-Town tension. Although time and translations of his work have come and gone, this consideration by Geddes' still holds true when we talk about this reversible tension between the city and the countryside, the urban reality and its environs. From as far back as 1915, Geddes, with remarkable prophetic foresight, drew attention to how urban development processes, as generators of metropolitan regions, tend to transfer their immediate needs to the territory, the Town-Country tension, far too often ignoring the potential of incorporating

non-urbanised territories to enrich the structures of major cities. In other words, ignoring the Country-Town tension.

When Geddes, biologist and precursor of modern theories about the metropolis, tries to explain to us the basis of this often overlooked Country-Town approach, he resorts to the example of a valley which, as a synthesis, illustrates the capacity of environmental features to give order to land development. A valley provides tangible evidence of an already existing order in the territory which urban development strategies have to understand if we want to avoid wasting economic resources and wreaking aesthetic havoc. In other words, what is called for here is the need to articulate an organic relationship between urban areas and their metropolitan environs, which at the same time opens up the debate about the potential of the environment to play an active part in the structure of the metropolitan city.

Almost one century later, Geddes' warnings about the dangers of uncontrolled urban sprawl left to the devices of the Town-Country logic quickly come to mind when we consider a metropolitan river such as the Llobregat: from the urban perspective it is the vestige of a road running through the territory, a level location suitable for building over more or less organised grids and it even constitutes a precarious, but practical, drainage and sewage system (albeit said with certain irony). The river also provides a vast extension which is a kind of paradigmatic "vague terrain": although not always a river as such, it will be from time to time as it runs between wider and narrower avenues. This is a space which is resistant to the processes of land development, yet difficult to classify and far too often left abandoned to its destiny of becoming marginalised.

So, recovering the river does not simply mean asking how we can preserve it in the face of urban development which tends to degrade it, but, first and foremost, understanding how the river can enhance the metropolitan city. There can be no strategy for halting the adverse effects of river urban development which does not contemplate making use of the river in the city. The history of the urbanisation of the river and the civil engineering works to make use of the river in the Barcelona metropolitan area are the topics elaborated on over the following pages.

1. The urbanised river

THE RIVER AS A ROAD

The coast of Catalonia is an exceptionally uneven territory. In such cases, rivers, even small rivers like those we find in the metropolitan area, become determining factors, not only for locating settlements but also for tracing out the dynamic

connections that link the various nuclei at a local and territorial level. They trace the directions in which these nuclei develop, how they are expressed as a system of cities, and at the same time constitute the basis for terrestrial communications and supply lines at a regional level.

The Besòs and Llobregat river basins, in fact, constitute a stretch of the natural route that enters the Iberian Peninsula from Europe. Hannibal with his army and elephants crossed the Martorell gorge as did Augustus later; the same point was the dividing line between what would later be Medieval Catalonia and the territory occupied by the Moors for almost two centuries; and, once again, the gorge was to be the pass through which Napoleon's troops commanded by Saint-Cyr entered the peninsular during the Spanish War of Independence. So, it comes as no surprise that nowadays the Llobregat river is accompanied by three double line railway networks, a motorway, an expressway and at least two secondary road networks (the BV-2002 and the N-340) which are, nonetheless, very important for the metropolitan area, in a strip of land that is little over one kilometre wide.

In the case of major infrastructures such as the AP-7 motorway, the A-2 expressway or the High Speed Train line, they have been planned out according to the criterion of reducing impact on urban fabrics. The result of all this is a river trapped between a giant system of banks which support these infrastructures and protect the settlements from floods, even though by doing so they have inevitably confined the river within a reduced and isolated fluvial space from an ecological and public perspective.

It should be remembered that the Llobregat Valley has not just attended to the need to sustain a flow of vehicles: a huge number of installations, the majority buried, take advantage of unoccupied spaces with gentle slopes. All manner of channels supplying substances, energy or information wind their way alongside a large number of hydraulic waste pipes. Generally speaking, these tend to be discrete but they can be determining factors for operations such as planting forest zones, excavations or managing water drainage or filtering for the territory, etc.

THE RIVER: PROVIDER AND BASIS OF ACTIVITIES

As Xavier Latorre explains in his book, *Història de l'Aigua a Catalunya* (The History of Water in Catalonia),² the first projects that envisaged channelling the waters of the Llobregat for use in Barcelona date back to the mid sixteenth century when the city proposed a dam project sited at the elevation of the Martorell Gorge in an attempt to reinforce the flow of the Rec Comtal. The proposal failed due to the opposition of the Baix Llobregat water concessionaires, and so the first