

The role of resources management on shaping the landscape patterns: the water in the Royal Estates of Lisbon region

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Introducción

Landscape is always the result of the resources management model from the society that occupies it. The analysis of the traditional landscape, as source of resources and expression of the technical system that produces them, has a determinant interest both to suitably take part on that patrimony, and to the acknowledge of the necessary lessons to define a sustainable future.

On the traditional systems, the resources use to be obtaining through the managements of the biosphere in order to transform the solar radiation - the power plant of the system - into materials organized properly for social use (Tello, 1999). That management forces to a transformation of the biosphere by means of the human work that entails, in most of the cases, transformations on the territory form in order to make that transformation even more efficient.

This paper proposes, through the presentation of a paradigmatic case study of a model of territory occupation that moves forward to an extensive scale, a model that allows to approach the study of the landscape - of the form of the territory - from the resources management point of view. Though, it is possible to identify the different scales to be considered and their organization, in order to understand the landscape as a formal expression of that management.

Like in other cases, the analysis of the water management as resource is enormously useful for the proposed analysis (Laureano, 1995), for the reason that the water represents the most substantial material flow for whoever manage with traditional systems, for being always a very

reduce and limited element for the agricultural production capacity, because its complete distribution through the territory is necessary, and because its mobility depends - when in absence of the modern power sources - of the existing topography and its possible transformation.

The resource capture, its delivery right to the place of the agricultural production, moreover its storage and distribution do not only determine the majority of the technical elements of the system - that usually are recognized as the elements that conform the patrimony and treaties independently - but also their functional articulation, its disposition throughout the territory and, mainly, the interpretation - and often the transformation - of the topography to receive them.

The Royal Estate of Caxias

The Royal Estate of Caxias is situated in the surroundings of Lisbon, just at the north seaside of Tagus River, at its mouth; however its roots are too difficult to trace. Although the works of the Royal Palace, ordered by D. Francisco, brother of King John V, were initiated in 1739 and concluded in 1845, there are traces of former occupations in the area where the Estate is situated nowadays, such as a "*Cartuxa*", as described by the Priest António de Carvalho in 1712 (Gonçalves, 2003). Despite the unclear past, it is possible to verify that the Royal Estate of Caxias development took place throughout different phases, though the successive and continuous annexations of neighbourhood walled properties situated in its environs, the "*casais*".

The garden is the most distinguished element of the Estate. Broad and rectilinear avenues, fountains and different elements of the surrounding countryside do all contribute to take part of the garden environment that together with its monumental Cascade, that occupies the totality of the east wall of the garden, obfuscates the simplicity of the palace architecture.

During its productive times, the Estate, with benefit of microclimate enrichment, due to its proximity to the river and to a water stream, used to supply the Royal Palace of Queluz with fresh fruit, mainly oranges. Together with the orchard a vineyard completed the agricultural production of the Estate. Indeed, the history of the Estate of Caxias can not be isolated from the history of Royal Palace of Queluz. Both Palaces, with their respective farms, were integrated in the vast patrimony of the Infantado House that administrated together both Queluz and Caxias Estates (Miranda, 2002). While Queluz was chose as the permanent Royal Residence, Caxias was preferred for short stays, being mainly used during spring and summer times for rest and therapeutically sea baths proposes. Nevertheless, both uses, the productive and the leisure, needed to be secured with water supply and an accurate water management in order to satisfy the Estates needs.

As one can testify from the legend of the 1844 plan of the Royal Estate of Caxias this enumerates several water elements, such as the great cascade, the aqueduct the well and a well house. Through theses elements one can easily identify how the water do arrives into the Estate, nevertheless it is not so easy to identify how the water distribution works within the Estate, even if it is possible to recognise the water deposits system that regulates it. From this perspective one can assume that great consideration was being given to the territory scale.

The Territory Scale

From the plan "*Planta das Minas e Encanamentos d'agua do Almoxaridado de Caxias*", from 1901, one can identify different water proveniences to the Royal Estate of Caxias. Whereas the Royal Estate has its own borders,

delineated by its high walls, it depends from resources, such as water that emanates from a wider scale rather than the local one. In fact, the water that supplies the Royal Estate of Caxias arrives not only from two water quarries located at the mediations of the Royal Estate east side limits, but also from a water quarry located at Queijas, at the Carnaxide Mountain, a territory further north to Caxias.

The emphasis attributed to the above water supply system reveals a Sustainable Agenda that should be recovered. This Agenda embraces recognition to land use planning with great respect for its biophysical environment - such as climate, soil, vegetation - in order to enhance an appropriate exploitation of its natural resources. This strategy should be regarded at a much superior scale rather than the one of the water fountains and the cascade situated at the Royal State of Caxias.

During XVIII century, several Lisbon surrounding areas assisted to great landscape transformation, with the endeavour of numerous farms and recreation gardens - Estates - of vast dimensions from which the Royal Estate of Caxias is one of these examples. This landscape order, through the planning of agro productions and its adaptability to the land use, as one can testify in the Royal Estate of Caxias seems to testify a very secure agronomic knowledge.

The image of Lisbon's environments shows a topographic map of the North Coast of Tagus river mouth, in which the geographic structure of that coast can be regarded as a plane surface undulated by water streams that crosses it from north to south and that finally drains the continuous mountains situated northwards between Sintra and Montejusto mountains. Such strategic situation of the mountainous area allows taking hold of the humidity of the marine air and therefore granting the clouds formation that after rain allows the feed of the water streams and the increment of the ground water levels.

Quarries, water wells, aqueducts, deposits and other technical elements punctuate this territory allowing both water extraction and the creation of a network of Estates (more than one hundred) that feed all an irrigated agricultural system - vines, fruit trees and orchards- that complements the cereal use that forms the base of the agrarian system (Da Silva, 1993)

That morphologic structure exploration with the technical systems not only determined the Estates site implantation- and with them the organization of Lisbon's landscape - that in the mid XVIII century allowed to establish, by means of a remarkable change of scale, one infrastructure that transported water for urban purpose uses to the capital with the erection of the "Águas Livres" Aqueduct, gathering at the same time good part of the water of the city nearest western river basins.

Conclusions

The present value of the patrimony consists in the reference that today the traditional knowledge conveys as a model to develop a sustainable technical system, when facing the un-sustainability that our industrial system model has already proved. Understand the most adequate manner to approach such knowledge is determinant to extract the lessons that we must retain and learn.

The presented case study calls attention to an essential question such as the scale that the patrimony should be analysed, as to the proposition of a methodological approach to the study of the territory and the traditional landscape as an expression of a sustainable model of obtaining of the resources.

It is also argued that there is no sense in the current perception of the

patrimony that approaches the technical elements independently, constructions, quarries, canals, deposits, etc. - like a set of operative techniques - of construction, agriculture, etc. - or of material resources has sense not even. The object of the study and of the rehabilitation - and reutilisation - of the patrimony should not be each element treated as in an individual manner.

The patrimony must be understood and rehabilitated as an articulated set of techniques, and its application throughout the territory should show us the scale to which we must realize the analysis of such articulation. And, reading in the opposite direction, the territorial scale is the most suitable scale to intervene on the patrimony in order to raise a sustainable technical system.

As confirmed with the case study, moreover as the patrimony is somewhat evolutionary (Laureano, 2001), pressed by innovation and re-interpretations of its elements and readjustments of scale in order to face new needs, the territorial analysis scale should also be dynamic, diachronic. That dynamism grants us, in exchange with our effort to understand it, the capacity of the traditional knowledge to be used in the definition of our sustainable future.

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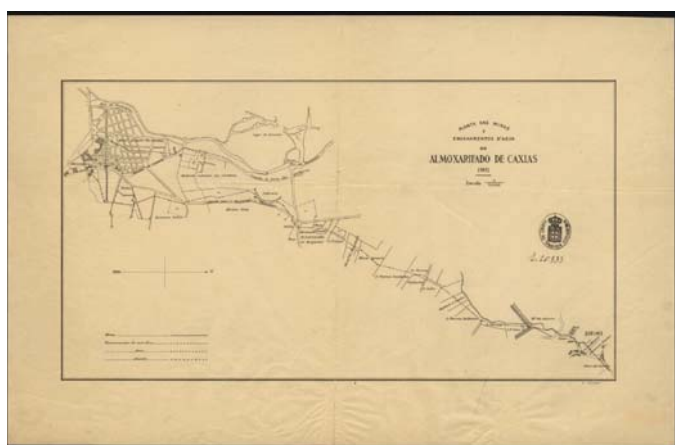
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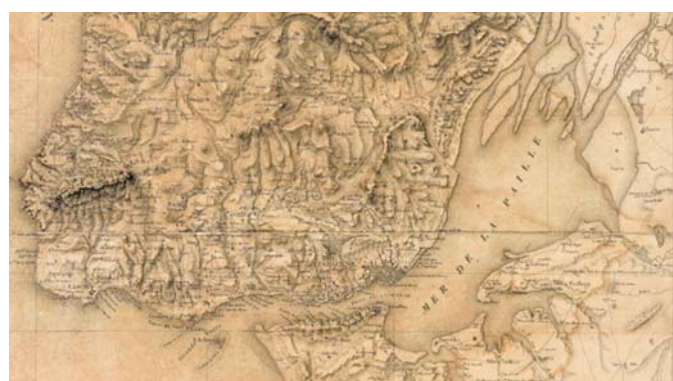
Planta da Real Quinta de Caxias, José António Abreu 1844, IGP



The cascade of the Royal estate of Caxias and its gardens



Planta das minas e encanamentos d'água do Almojarifado de Caxias, 1901, BNL



Carta Corográfica dos Arredores de Lisboa, Guérin de Lamotte, 1821, IGP