

LANDSCAPE TYPOLOGY AND ORGANIZATION IN MUNTANYES D'ORDAL (BARCELONA)

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The European Landscape Convention, signed in Florence in the year 2000 and ratified by Spain in 2008, defines landscape as «an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors». Taking this description a step further, landscape can be understood as the reality, as well as the impression, that results from the interaction between the biophysical and the sociocultural. Above all, landscape is of primary importance in the creation and perpetuation of the identity of an area. Various disciplines relating to territory, such as geography, pay special attention to landscape studies (Muñoz, 1981); an interest which has experienced significant growth in recent years (Zoido, 1998; Tarroja, 2006; Llop, 2008; Nogué, 2008).

Numerous bodies of research and schools of practice have focused on landscape as an object of study, each taking their own different perspective. Arturo García and Julio Muñoz group the range of projects into three categories of study: the summation approach, the ecological approach and the systematic approach. Within the latter category, it is useful to highlight three different areas of focus: geosystems, land surveys and integrated studies. Integrated studies are strongly linked to Georges Bertrand. Grounded on French historicist tradition, he developed this type of study based on the concept of systems. Eduardo Martínez de Pisón, Maria de Bolòs, Julio Muñoz and Valentín Cabero are usually accredited with having introduced landscape studies into Spain. Their preferred methodological focus is the systematic approach (Gómez Mendoza, 2003:5), examples of which can also be seen the pioneering work undertaken by Juan Ignacio Plaza Gutiérrez (1984) in Alto Aliste (Zamora), José Manuel Llorente (1985) in the *dehesa salmantina*, and María Eugenia Arozena (1990) on La Gomera island, among others. More recent experiences include those of Jesús Saz (2001) around the Pancrudo and Jiloca rivers (Teruel), of Emma Pérez-Chacón et al. in the north-eastern area of Gran Canaria (2005), and Maria de Bolòs and Antonio Gómez in the Catalan Pyrenees (2006), to cite just three examples.

The purpose of this study is to identify, characterise and catalogue the Muntanyes d'Ordal landscape in detail from a global, comprehensive perspective. It is based on the conceptual framework of the General Systems Theory, selecting the main components that form the

structure of the area under study: relief, as a support for biotic and anthropic activity; vegetation, as an environmental indicator; and the past and present activities of humans, focussing on their clear role as modellers of the landscape. The study employs the systematic method, inspired by integrated studies (Bertrand, 1968; Bolòs, 1992) and enhanced by the land surveying procedure described by Christian and Stewart (1968).

The project began with a detailed study of the structural elements of the landscape. Landscape units were demarcated according to their categorisation, using a systematised field form and adopting criteria relating to homogeneity, dynamics and functionality. Units were characterised according to their predominant elements and energies. This method was proposed by Bolòs (1992), employed by Pérez-Chacón et al.(2005), and recently successfully applied in the Catalan Pyrenees (Bolòs and Gómez Ortiz, 2006).

The method considers the landscape as a complex set of elements and energies that can be combined in different degrees, but are also capable of being simplified depending on the predominant components. There are three basic types of landscape, depending on abiotic, biotic or anthropic dominance. Elements and energies are defined according to the role they play within the whole. This leads to the emergence of structural or primary components, and subordinate or secondary components. Structural components are present in 50% or more of the whole, while secondary components are present in between 20% and 50% of the whole. This method allows the minority, but significant, presence of dominant elements which contribute less than 20% to be identified. Parameters are therefore integrated quantitatively (according to their percentage in relation to the whole) and enhanced by a qualitative process involving the level of detail sought, knowledge of the location and the project manager's expertise.

Overall, landscape is suited to a multiscalar approach, in which the predominance of different components varies according to the level of detail sought. It is for this reason that the land was subdivided into different integration levels, making it easy to establish a correlation between the precision of the study and the scale of work. Three hierarchical levels were established which, meeting the double purpose of order and classification, are also taxonomic. The first taxonomic range relates to the most detailed units, while the last deals with units exhibiting more general characteristics. Obviously, the landscape units and taxonomic ranges are very closely linked. The former have internal significance in relation to one another as a result of the taxonomic ranges which classify them and put them into a hierarchy. Meanwhile, the latter are established and interrelated via prior unitary delimitation.

Field work was an important component within the process. First, an initial land survey was undertaken, which led to a detailed study of the structural elements and the selection of the three taxonomic ranges. Secondly, the landscape units were preliminarily demarcated out of the field based on the information collected, cartographic documents, aerial photographs and a digital terrain model. This was followed by exhaustive and meticulous fieldwork adapted to the three levels of work. The objective was to verify, check and where necessary, correct the units previously marked out. Finally, the information collected was computerised using a Geographic Information System. This allowed a database and different thematic cartography to be produced.

The area of study is located in the central section of the Catalan coastal mountain system, in the Barcelona metropolitan area only a few kilometres from the city (Fig. 1). This is

an area of a little over 15,000 hectares comprised of thirteen municipalities belonging to three different counties. The peri-urban nature of this sector is reflected in the high average population density (recorded at 967.6 inhabitants per km² in 2007), the dispersion of built-up spaces (which occupy 17.15% of the total surface area) and the abundance of road networks (Fig. 2).

Taxonomic range I consists of land units demarcated in great detail, since they constitute the basis of the study and the taxonomy employed. These demarcations are valid at a scale of 1:10000, which is the working scale recommended for landscape studies and urban planning (Flórez-Estrada et al., 1994; Hernández et al., 1999). They include subdivisions valid at a scale of 1:5000, for complex spaces or those where demarcation was difficult. The precision of the study allows very homogeneous units to be delimited. These units share similar characteristics and consequently have similar functions and can be used for purposes of comparison. The units were characterised according to the predominance of elements and energies following a legend based on the one designed for the Pyrenees in the Bolòs and Gómez Ortiz study, which was accurately enhanced and amplified to suit our larger location and greater scale of work. The coding employed consists of four classes (abiotic, biotic, anthropic and mixed predominance) and forty-two categories (resulting from the combination and separation of the four classes). Including units and subunits, 1,019 polygons were delimited (Fig. 3 and 4).

Taxonomic range II consists of landscape units valid at a scale of 1:20000. These units were defined and characterised by generalising the units from range I, focussing on the aforementioned criteria relating to homogeneity, dynamics and functionality, and adding the further criterion of territoriality. This process employed a qualitative method, which considers each classification category individually and either favours it or subordinates it, depending on its actual participation within the landscape. The procedure employed is based on the combination of three different aspects:

- a) The categories from range I with the highest frequency and units with the largest surface areas
- b) The existence of other range I categories which proved to be important, but were fewer in number and had smaller unit surface areas
- c) The total number of delimitations and general character of the unit

It is important to clarify that this method is not a simple aggregation of basic units. Rather, it is an individualised, qualitative, detailed evaluation of each landscape unit and its immediate context, according to the predominance of elements and energies, and based on its participation within the whole, on a scale of 1:20000. Seventy-four range II units were established (Fig. 5 and 6).

Taxonomic range III is based on landscape units delimited according to territorial criteria. It has a clear geographical value and is valid on a scale of 1:25000. It is characterised from a holistic perspective, synthesising the units from range II and enhancing them with the territorial values that best define them. In the generalisation process, the systematic values applied to the lower range units were respected. Consideration was also given to the affinities and specific features belonging to the place. The resulting chorographs link the idea of *genius loci* with the global approach of Integrated Studies. It is for this reason that the delimitations in this range combine the systematic values of homogeneity, dynamics and functionality on

the one hand, and the inherent values of geographical historicism on the other. The resulting delimitations are units with a physiognomic and systematic value of evident geographical importance. Fourteen range III units were identified (Fig. 8 and 9). They were characterised in accordance with the classical postulates of structure, function and genesis, and named according to their defining characteristics.