

Remote Sensing Analysis and the Design of Archaeological Prospections: a Regional Study of Settlement Patterns at Eastern Andalusia (Spain).

This paper is intended to show the advantages of new techniques as Remote Sensing, Global Positioning Systems and Geographic Information Systems on the design of research projects directed towards the aims of Landscape Archaeology. Centered on an area of contact among a variety of geographical environments, this project tries to recognise and understand the differences on settlement patterns on a diachronic perspective, employing the new technical implements and generating databases linked with archaeological prospection.

The chosen area is organized along the corridor defined by the river Guadiana Menor, establishing a link between the coastal ports of south-eastern Spain with the important mining area of the upper Guadalquivir. The first stage of the analysis of settlement patterns should be guided to the detection of archaeological sites, as well as to determine the physical characteristics of the environment. Apart from other indispensable tasks, as the revision of the previous archaeological and historical information, there are two essential topics to be accomplished: archaeological prospection and the stock of any relevant geographic information. With this aim, we can benefit of new tools, as Remote Sensing Analysis (RSA), Global Positioning System (GPS) and Geographic Information Systems (GIS). All of them involve a considerable advance on the capacity of analysis of any research regionally oriented.

However, the novelty of these techniques in their archaeological application, and the specific character of each topic and of this particular area, compel us to generate concrete methodological instruments in order to adapt those resources to the research, during fieldwork and on the laboratory analysis. In this paper, we will try to present how the integration of the three systems leads to obtaining meaningful advantages in the attainment of the research objectives.

From a technical point of view, the combination of RSA and GPS allows us to connect directly observations made during fieldwork within the information system. The result is what we could "archaeological prospection satellite-assisted". From the point of view of theory, a central premise is the systematic integration of the archaeological aims of fieldwork, basically the location and documentation of archaeological sites on a regional area with those specifically geographic in character, within a single system of information, planning and evaluation.

Conventional programs of archaeological prospection at a regional level are scarcely efficient in relation with these approaches. This ineffectiveness comes usually from the application of criteria that are exclusively archaeological on the selection of survey areas, sampling patterns and prospection models. This implies in many cases a remarkable difficulty to establish generalizations from – by example – data about site distribution, and, in any case, a deficient assignment of economic resources. The introduction of geographic criteria proves to be essential in this context

Within this methodology, the documentation system includes the conventional archaeological information as an element of landscape, different enough to require specific criteria of classification, but in any case, articulated with other factors and variables of geographic or biological character.

Fig. 1. Iberian Peninsula and Study Area

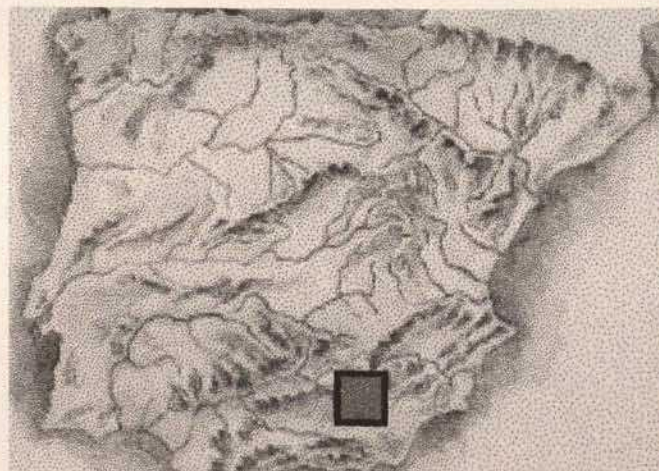




Fig. 2. Relation between water sources, rivers and archaeological sites

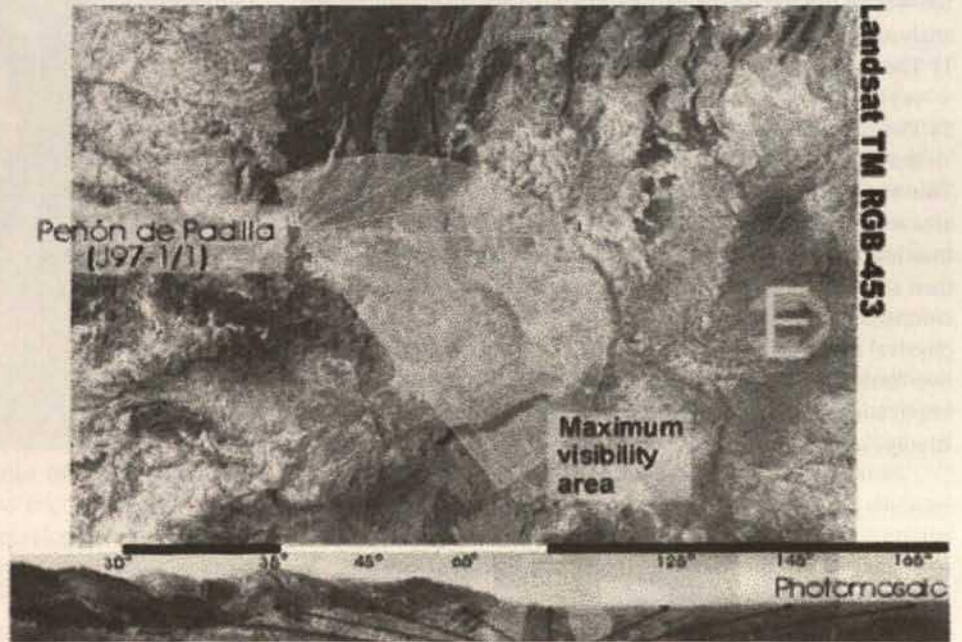


Fig. 3. Establishing visibility areas from an archaeological site



Fig. 4. Definition of Landscape units based on information provided by the Landsat image