34 'Background noise' and landscape exploitation in the Late Iron Age Andalusian countryside

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Abstract

In this paper we present the results from a survey carried out from 2000 to 2003 in the Guadiana Menor valley (Jaen province, Spain). The sampling strategy was designed to explore the presence of archaeological finds in very different landscape units, from the floodplains to the uncultivated slopes of the Cazorla massif. Field survey revealed very high contrasts in find densities, suggesting different patterns of land use. On the valley floor we recorded a weak carpet-like pattern of sherds dating from the Iron Age to Roman times. Its distribution suggests intensive agricultural activities such as manuring in a context of increasing pressure on resources during the Romanization process. In the highland area, the much more scarce evidence seems to be connected with pastoral activity, intensive farming of small valleys, and control over strategic mountain passes. We will here present methodological issues relating to the field survey and reliability problems raised by erosion and land use history of the study area.

1. Introduction

From the early 1980s onward the Complutense University of Madrid, in collaboration with CSIC (the Spanish Council for Higher Research) and the University of Jaen, has conducted a regional project on the landscape evolution of the upper Guadalquivir valley (eastern Andalusia) from Prehistory to Roman times. The study area focuses on the Guadiana Menor valley, an important route that connects Andalusia and south-eastern Spain (fig. 1). This region had a very strong previous research tradition on the Iberian Culture (6th to 1st centuries BC). In the first half of the 20th century several great funerary areas were excavated in Tugia (Peal de Becerro, Jaen; Pereira Sieso 1979, Madrigal Belinchón 1997, Blánquez Pérez 1999), Castellones de Céal (Hinojares, Jaén; Chapa Brunet *et al.* 1998), Basti (Baza, Granada; Presedo Velo 1982) and Tutugi (Galera; Pereira Sieso *et al.* 2004). Their work and the reviewing of old research has been the main focus of the project until the end of the 1990s. During this stage, archaeological surveys were directed toward the selective examination of certain location types, extrapolating settlement patterns from several historic periods.

In 1998 a new interdisciplinary approach was begun, with the aim of incorporating new spatial technologies in the study of landscape evolution (Chapa *et al.* 1998). Our team carried out new survey campaigns, dealing with both micro-scale analysis of sites and extensive prospection of wide areas. The mountainous and semi-desert nature of the region challenged traditional survey methods and demanded continuous adaptation.

Intense erosive activity generates very complex patterns of sherd distribution. As has happened in other Mediterranean regions, we have documented widely dispersed artifacts that cast doubts on the traditional definition of archaeological sites. With regard to the two more extensive survey campaigns we conducted in 2001 and 2003, the first was focused on the middle course of the Guadiana Menor river,

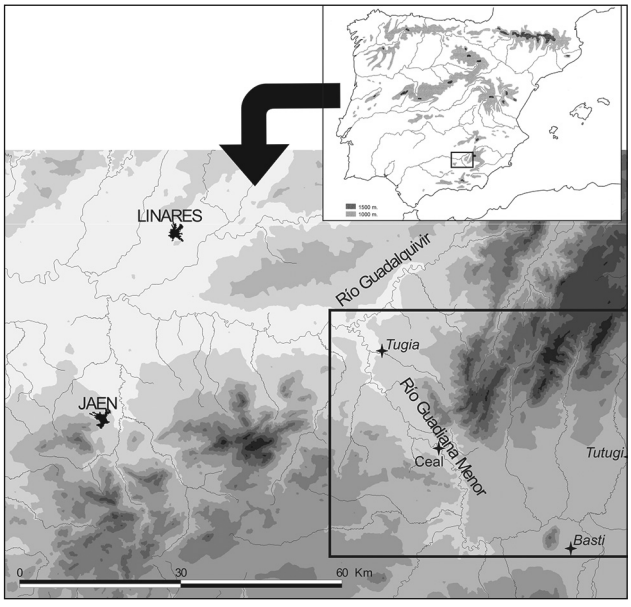


Figure 1 – Location of the study area in the Iberian Peninsula. Distribution of main archaeological sites of the Late Iron Age cited in the text.

where it passes through a narrow valley flanked by the Magina and Cazorla mountains. Altitude and geological differences create strong contrasts in land use and water availability. High mountain areas provide good pasture in summer for herds coming from the Guadalquivir valley floor. Middling heights are mainly calcareous terrain with dense conifer woods and many springs. Closer to the river, gypsum is the predominant substrate, giving a poor support for agriculture. Here the sparse vegetation consists of shrubs, some of great economic significance like the esparto grass. In contrast, the river floodplain provides clayey soils very suitable for intensive agriculture by irrigation.

The campaign of 2003 was conducted along the lower course of the Guadiana Menor, close to its confluence with the Guadalquivir. This is an area with a much softer relief, mainly of calcareous origin. The valley is very open, with an increasingly wide river bed. The predominant land use in traditional agriculture was dry cultivation of wheat and barley combined with olive trees, but in recent times there has been a great expansion of the latter.

2. Objectives and methodology

The aim of our survey strategy was twofold. On the one hand, we wanted to develop methods to obtain a high resolution picture of the distribution of archaeological remains over large areas. This required the design of reliable, flexible and not very expensive protocols for the recording of surface finds. But obtaining more abundant and higher-quality data also put more demands on the need for developing information systems for their management and analysis. On the other hand we were keenly aware that it is the landscape as a whole, not just the archaeological remains in themselves, that provides the information necessary for the reconstruction of its historical evolution. We must therefore incorporate every available source of evidence, from palaeobotany to ethnography. We must identify *longe-dureé* land use patterns, labor processes and changing territorial structures.

Since we were aware of the factors affecting the representativity of surface collections, we chose an experimental, non-reconstructive approach. Survey methods were designed with an analytical rather than a descriptive purpose in mind. One may think that the *desideratum* of any landscape study should be to obtain a rigorous picture of 'how it really was' in the past but we think it may be more profitable to focus on the understanding of the distribution of preserved and observed evidence. Our survey strategy therefore took the individual find as the most elementary unit. At first, the analytical work concentrates on assessing differences in find density and other variables (size, weight, roundness, shape, function, chronology…) over the study area. After that, all these data are correlated with contextual information such as surface visibility, topography (prominence, slope, drainage capacity), land use and any other factors related to the alteration of archaeological deposits and its interpretation.

The basic criterion for the delimitation of survey areas was to provide a representative sample of the diversity of landscape units in the region outlined above. We therefore used a stratified random sampling design, each sampling area being a square with

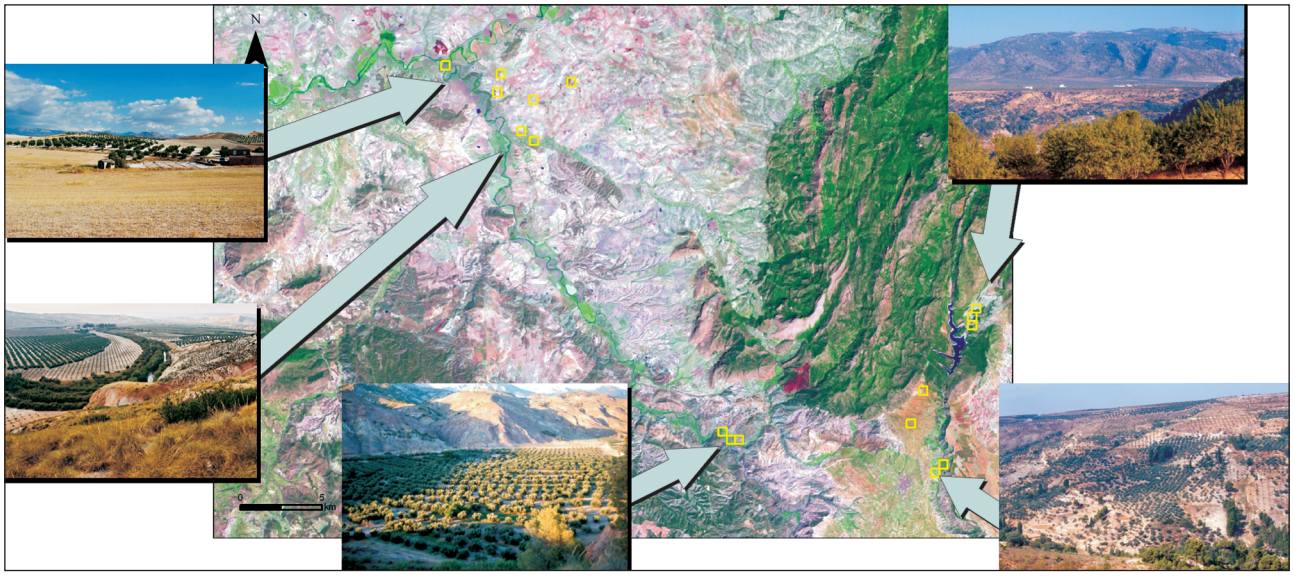


Figure 2 – Views of the different survey areas in each landscape unit.

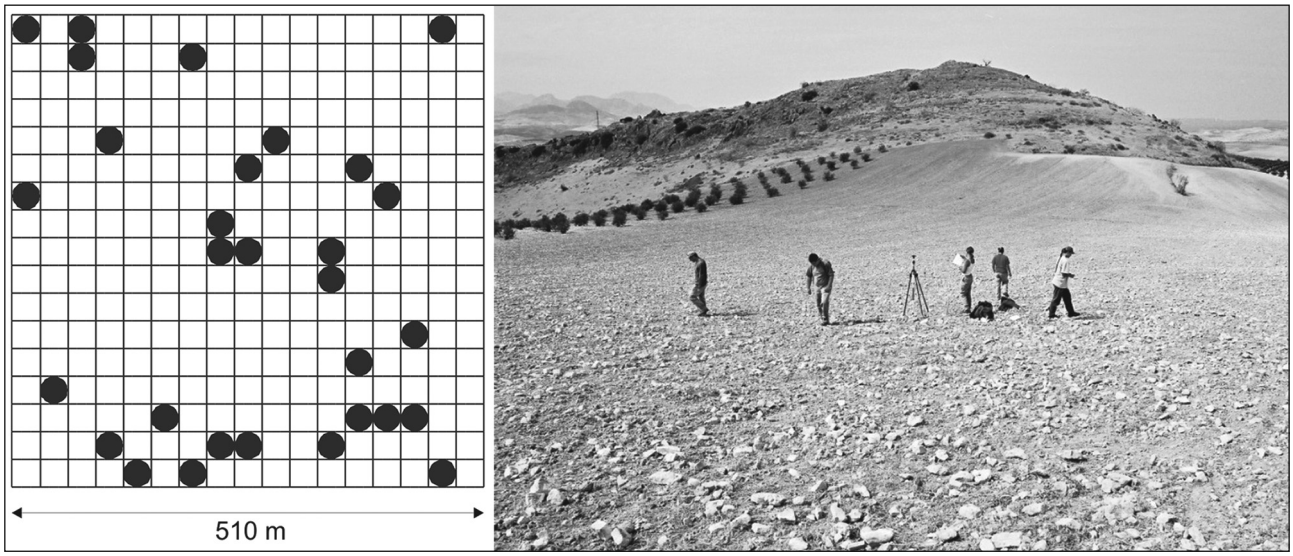


Figure 3 – Setting up the survey sampling design (left) and field grid (right).

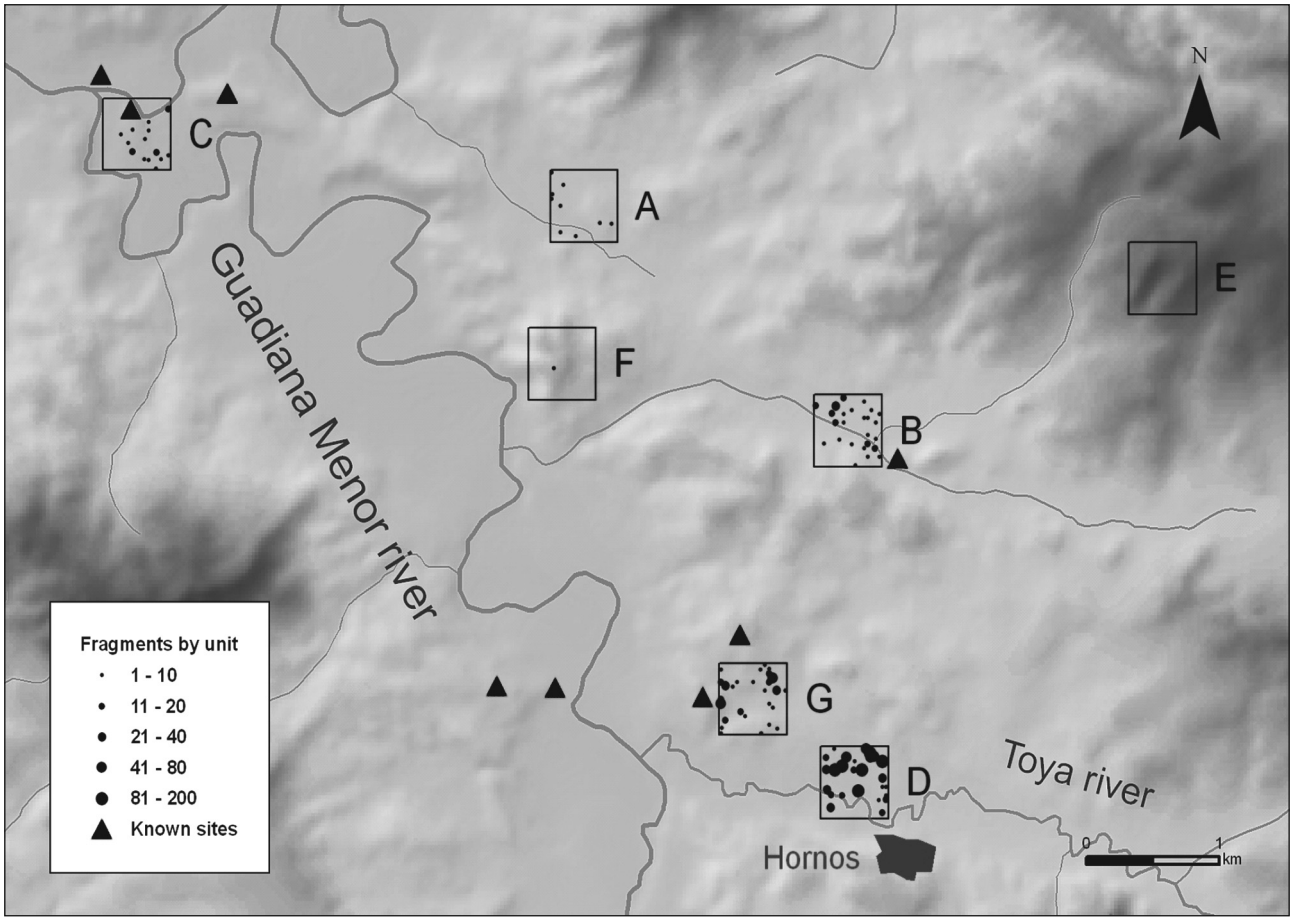


Figure 4 – Layout of survey sample areas with density of Iberian finds in the lower Guadiana Menor valley. A, B, G: open countryside; C, D: alluvial plain; E, F: steep uncultivated slopes.

a surface area of 26 ha (we used squares of 510 × 510 in order to include 17 × 17 sampling units of 30 m diameter: this value was selected because we were using a Landsat TM image with this pixel resolution for land use classification). Within each of these squares, a grid defines a population of 289 sampling units of 30 by 30 m, and a random sample of 30 units is prospected.

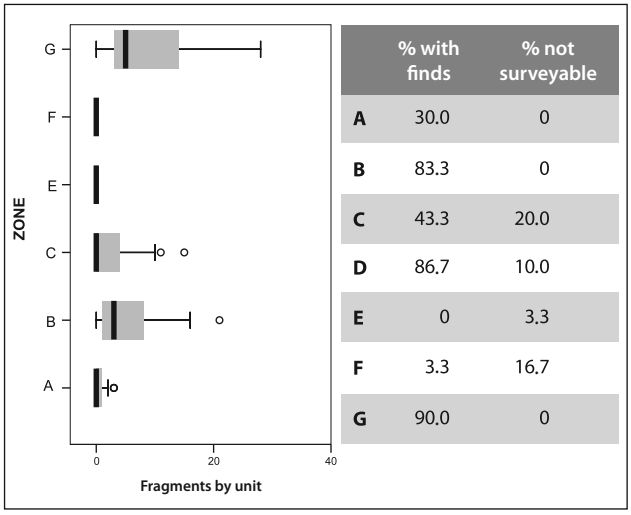
Data collection was accomplished within a small circular area, which allows for fast recording in hilly terrain. The procedure for each unit used the following steps:

- Location using GPS navigation. We used a single-frequency receiver (Trimble Geoexplorer 3) with an accuracy of around 5 m. Originally we had to load each pair of coordinates, previously obtained with a GIS software, individually. Once found, the new location was recorded in order to calculate the difference between the expected and observed coordinates. Differential correction was made by post processing.
- Setting up of the sampling unit. Once its center had been determined, its limits were marked by four stakes placed 15 m away from it.
- The inspection of the area outlined in this manner was conducted with a fixed number of prospectors (4) during a fixed time (10 minutes). The aim was to keep observation conditions as standardized as possible. All the finds were collected.
- During the unit examination, a form was filled in to record factors that can cause bias with regard to the surface archaeological record.
- Documentation of the unit was completed by photographs and sketches.

Finds were processed in the laboratory. We tried to provide as detailed as possible a description of the pottery. Quantitative analysis was structured in several stages of increasing complexity, from basic descriptive statistics to significance tests and numerical taxonomy.

3. Results

Analysis of the survey results showed strong contrasts in background noise from Protohistoric to Roman times throughout the study region (fig. 5). We statistically explored the finds probability in each survey area, establishing meaningful links between surface visibility and terrain characteristics. The highest off-site find densities were recorded in the open countryside close to the Guadalquivir river. Quantifying sherd roundness and fragmentation, we were able to obtain a highly detailed picture of the low-density distributions around sites such as the late Iberian settlement of Cortijo de los Castellones. This is a small site close to the *oppidum* of Tugia, characterised by a walled enclosure made from large stones on the top of a little hill. A very high density of sherds is observed on the southern side, suggesting the existence of a little habitation area. The life of the site span from the beginning of the 1st century BC to the first half of the 1st century AD. A sampling area was deployed around it, and the resulting trends suggest a continuous waste accumulation around the stream bed that crosses the survey



	% with finds	% not surveyable
A	30.0	0
B	83.3	0
C	43.3	20.0
D	86.7	10.0
E	0	3.3
F	3.3	16.7
G	90.0	0

Figure 5 – Boxplot of find densities in survey sample areas. D zone overlaps with part of the Tugia oppidum.

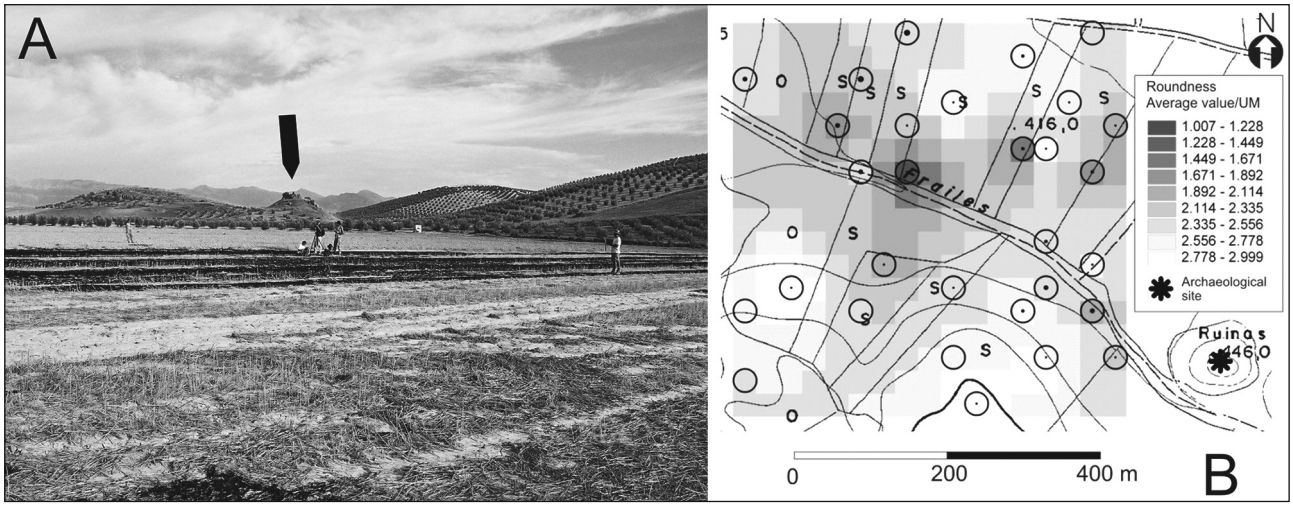


Figure 6 – Cortijo de los Castellones. A: view of the survey area from NW; the arrow indicates the location of the archaeological site. B: average sherd roundness value in the survey area.

area. Here density was very low but homogeneous. Slopes and low ridges showed higher find densities and lower sherd erosion values. A limited activity area was tentatively identified in the NW corner of the survey area; perhaps a temporary dwelling for agricultural labor. No obtrusive sherd dispersions were identified in the nearby hills.

This site provides a good example of how the 'background noise' is much more clustered in the small stretches of alluvial soils bordering tributary streams in the middle course of the Guadiana Menor river. We have also found evidence of activity in late Iberian times around some salt springs and iron mines. Lastly, Iberian sherds are almost completely absent from areas like the foot of the Cazorla massif and the Granada highlands; these were agriculturally colonized in much more recent times.

4. Concluding remarks

Our survey strategy has allowed us to document abundant surface finds not related to 'archaeological sites'. We think that useful tools have been developed for the application of a 'distributional' (non-site oriented) approach, but some aspects can still be improved. Firstly, while well-suited to find the more widely distributed materials, our sampling strategy runs the risk of missing more discrete sherd concentrations. Common sense therefore suggest that spaces between sampling units should be field-walked as well (as was done for example in Cortijo de los Castellones). Secondly, we must make use of the exponential improvement of spatial technologies in recent years. Integration of GPS and GIS is now much easier, so it is possible to create, upload and record samples very quickly and with greater accuracy (see, for example, Campana 2006).

High levels of 'background noise' may indicate the existence of an intensively exploited agrarian landscape mainly between the late 3rd and late 1st centuries BC. It is commonly accepted, on the basis of survey data, that during the 5th and 4th centuries BC the fortified village (*oppidum*) remained the almost exclusive settlement type in the upper Guadalquivir area, but after the Roman conquest scattered rural settlement began in areas like the Guadiana Menor, Guadalimar, Jandulilla and Guadalbullón valleys. This last case study has been very well recorded by open-area excavations, and show an intensive agriculture system developed around small stream beds. Quadrangular fields were crossed by ponds and irrigation channels, and dotted with small rural huts and more permanent households (Ruiz Rodriguez *et al.* 2007). In this context, low-density sherd distributions could be at least partly the result of manuring for horticulture, a practice with strong implications for the organization of labor in peasant communities.

Figure 7 – Castellones de Céal, a late Iberian settlement in the middle course of the Guadiana Menor valley.

Nevertheless, there are great contrasts in land use throughout the Guadiana Menor valley during the Iron Age, which could be related to the emergence of first order settlements in the 5th century BC on both sides of the Cazorla and Magina massifs. These *oppida* had a role on the regional scale due to their strategic location in ethnic and political frontier zones (Chapa & Mayoral 1998). Settlements on the limits of their territories combined control over trade routes with the exploitation of the scarcer and more concentrated resources. A good example of this is Castellones de Ceal, located above a ford through the Guadiana Menor river, on the edge of its cultivable meadows. This site was established at the start of the 4th century BC, and abandoned in the first quarter of the 1st century BC (Mayoral 1996).

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Acknowledgements

The work presented in this paper was developed in the framework of the research project 'El Poblamiento Ibérico en el valle del Guadiana Menor. Una perspectiva desde la Arqueología del Paisaje' (DGES-PB98/0775), led by Teresa Chapa Brunet.