Mediterranean Archaeology and Archaeometry, Vol. 16, No 4,(2016), pp. 291-295

10.5281/zenodo.220949

LA GESSERA: AN IBERIAN BUILDING FOR WORSHIP? (TARRAGONA, SPAIN)

Manuel Pérez Gutiérrez[1], David Bea Castaño[2], Jordi Diloli Fons[2], Jordi Vila Llorach[2], Marc Prades Painous[2]

[1] Higher Polytechnic School of Ávila, University of Salamanca
C/ Hornos caleros, 50. 05003 Ávila, Spain. Tel:+34920353500, Fax: +34920353505 (manolope@usal.es)
[2] Research Group of the Seminar of Protohistory and Archaeology. University Rovira i Virgili of Tarragona

Received: 03/03/2016
Accepted: 20/04/2016
Corresponding author: Pérez Gutiérrez (manolope@usal.es)

ABSTRACT

In the fourth century, a new settlement was built over an ancient pre-existent building (eighth century BC), situated in the top of a hill and associated to an emerging aristocratic system which is presumed to have disappeared at the end of the Early Iron Age. This new settlement is, nowadays, kwon as La Gessera and was first excavated over a hundred years ago .

Located in the western side of the modern day province of Tarragona, this building, with a hexagonal floor plan, covers the entire rocky surface, making it an unassailable fortress, and allowing it to control a vast amount of the surrounding area, especially from and to the Ebro River. Nevertheless, the unusual floor plan of this building, combined with the lack of water and the inability to collect basic resources, suggests that this construction was more than just a simple house. In that case, it could be seen as a special place, even though we still do not know what the building was used for.

Perhaps, the astronomical orientation could lead us to think it is remarkable. The well-known preference for orientating significant buildings towards significant astronomical events is also to be found here. The orientation of the main axis points unambiguously to the Equinoctial Sunrises, and it also coincides with the corridor that goes through the building from east to west. Besides, the biggest and most remarkable room in the building looks to the west. What is more, the seemingly unnecessary thick wall could easily have been used as an altar. The apparent lack of straightness of the corridor could be perfectly explained by observing the sunlight of the Equinoctial dawn. Only on those two particular days does the winding corridor allow the sunlight to illuminate the room to which it leads.

KEYWORDS: Iberian Culture, Cultural place, solar orientations, Equinoxes.

1. INTRODUCTION

La Gessera (in Catalan, place formed by gypsum) is an archaeological site located at the top of a rough hill which can only be accessed from its north face. From this spot a stretch of the Algars river basin can be seen, as well as other important Iberian and coetaneous settlements like the village of Sant Antoni de Calaceit and one of the road axis which might have connected this site with the important village of Coll del Moro in Gandesa (Moret, 2002: 165). Even though Joan Cabré and Santiago Vidiella did some explorations there between 1902 and 1903, it wasn't until 1914 that it was almost fully excavated under the direction of Dr. Pere Bosch Gimpera (Bosh Gimpera, 1915). Some of the materials extracted during the excavation work carried out in October 1914, were taken to the Museu Arqueològic de Catalunya (Archaeological Museum of Catalonia), and were checked by Enric Sanmartí Grego (Sanmartí Grego, 1975a, 1975b) during the first half of the 1970's. Later, another set of materials, together with the structures preserved in situ, were re-examined by Pierre Moret (Moret, 2002) in 2000.

La Gessera is a protohistoric settlement included in a territory with a broad and rich archaeological heritage (Bea, 2012; Moret *et alii*, 2006). In fact, the potential of the Matarraña-Algars area was already recognized by the scholars of the early twentieth century, who turned it into one of the pioneering archaeological areas at state level with regard to the systematic excavation, using archaeological techniques that can be considered modern.

The archaeological works carried out by the Institut d'Estudis Catalans (Catalonian Studies Institute) focused on the region of El Matarraña, with some excavations in La Terra Alta, and the works in Caseres (where our settlement is located) were finished in the same year, 1914; once Bosch Gimpera considered that the settlement of La Gessera was exhausted.

As a result, La Gessera fell into oblivion, just being occasionally mentioned in some scientific essays. Then, a century later, the restoration and the museological conservation of the settlement and the re-excavation of some levels abandoned by Bosch Guimpera were assigned to the Grup de Recerca del Seminari de Protohistòria I Arqueologia de la Universitat Rovira I Virgili (GRESEPIA-URV) by the council of Caseres.

2. LA GESSERA: THE BUILDING

If we look at the site from an urban point of view, two distinct periods can be identified. The first, and older, period dates from the Early Iron Age (late 7th century and 6th century BC) and the second from Iberian times (4th to 3rd century BC). Between these two periods it was uninhabited, having been peacefully abandoned. It is important to note that there are no signs of violence that may have forced the inhabitants to leave the area.

Although the position of the walls and the stratigraphic relationships help us see the two different periods in which the site was inhabited, the results we obtained, particularly in reference to the later, Iberian period, are no more than partial. This is because we are dealing with a site that had already been excavated prior to our excavation of 2014. Such "re-excavation" causes difficulties of interpretation as we no longer have all the information necessary to be more precise.

However, a credible level of interpretation leads us to believe that during the Early Iron Age the site was used as an isolated aristocratic residence, possibly imitating the "house / tower" models of occupancy, so prominent at that period in the areas of La Terra Alta, El Matarraña and El Bajo Aragón. Although our knowledge of this phase is only partial as we do not have a full topographical survey, at least we can talk about two distinct areas, each being more or less quadrangular and organized in a defensive system, based on the construction of orthostatic walls.

Figure 1. Dron view of La Gessera

If we focus on the Iberian period [Σ1](IV-III BC), using the data which we do have, we can rule out the possibility that we are dealing with a conventional dwelling. One reason for this is the lack of evidence of normal domestic chores. The lack of fires in almost the whole site is of particular interest. In this regard we can take into account the size, dimensions and other references which Bosch Gimpera took, relating to the discovery of ashes, which he believed pointed to the possibility of a domestic dwelling in this part of the site. It is logical to believe that the far south west area of the site could have been used as a domestic dwelling, while the rest of the rooms, based on the long, tight dimensions and the small size, must have been used for storage or other, as yet unknown functions.

Another peculiarity refers to the western extreme of the site which is not only the largest area in use (9

m^2), but also, in the second urban period it breaks the parallel pattern of the southern areas of the site by adopting an irregular polygonal form and taking up the space that would otherwise be part of the central corridor. We will look at the layout of this area later in the paper, along with its dimensions in relation to the rest of the site.

What marks this area out for particular investigation is, among other things, the fact that this is the area of the site where we have found most ceramic remains from the Iberian period. 11% of all the ceramic remains in the site were found in this one area[Σ2], even though there are no pieces or specimens which can be said to belong to any individual part of the site. It is also interesting to note that this is also the area where we have found most carpological remains, for example a caryopsis of pine (Pinus halepensis), one of a vine (Pinus halepensis) and another of a lentil (Lens culinaris).

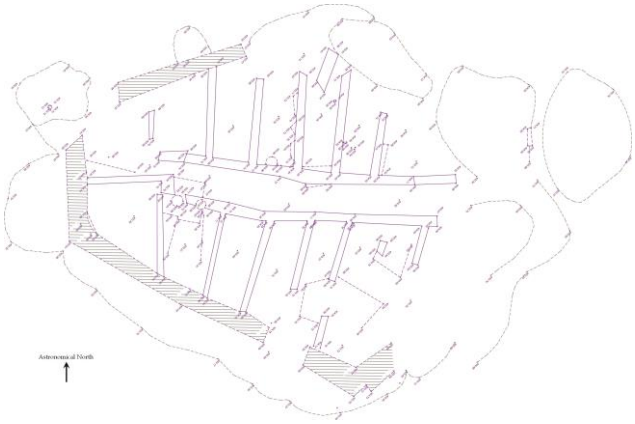

Figure 2. Topographic survey of La Gessera[Σ3]

3. DIGITAL RECONSTRUCTION OF THE BUILDING AND ITS ENVIRONS

The digital reconstruction, necessary for the solar simulation of the topographic area of the hilltop (La Gessera) was carried out as follows (Figure 3). We started with the official map of the area (the official 1:10.000 map produced by the Catalonian Cartographic Institute), from which we separated the information from the hypsometry, represented by 5 meters hypsometry curves of which gave us an outline. The points which define the contour lines were then used to calculate the Triangular Irregular Network (TIN), which in turn allowed us to make a Digital Terrain Model (DTM).

The orientation of the map was corrected using the convergence of meridians (the difference between the UTM grid north and the geodetic north, which for our needs is the same that as the astronomical one.

The building has been digitally reconstructed, based on a highly detailed topographic survey (*Figure 3*). This digital model has been oriented astronomically on site, using the habitual meridian determination for the resolution of position triangle with the Sun. This technique is explained more clearly in Pérez Gutiérrez 2014a[Σ4]).

Both models have jointly been incorporated in a CAD (Computer-Aided Design). Thus it is possible to simulate the entrance of sunlight into the building, as we can see in the next paragraph[Σ5].

4. GEOMETRY AND ASTRONOMICAL ORIENTATION IN THE BUILDING

The first peculiarity to take into account is the ground, which is hexagonal and symmetrical to the north–west axis[Σ6]. The western wall maintains this pattern and follows the north south direction. This indicates that that the corridor which goes through the building does so in an east–west direction. It must also be said that the principal orientation of the building is equinoctial as the height of the horizon is very low in either direction[Σ7].

However, a detailed survey of the structure of the building, leads us to the central corridor. Unlike the other walls in the building, these walls go in a winding track and at first sight, seem to be badly built. In these difficult conditions it is very difficult to ascertain the exact direction or orientation of the corridor. It is here that the 3D digital reconstruction comes in to its own.

In fact, when talking of orientation in a building or other structure, we need the exact definition of a direction (the astronomical azimuth) which is always calculated from a straight line which goes through the axis and connects the observer to a point on the horizon in which an astronomical phenomenon takes place (is verified). It is usually the twilight of an important star such as the sun, the moon or any of the brightest stars in the sky. If we apply this principle to our case, we are forced to determine a "middle axis" of the corridor which would give us, as we have already mentioned, an "approximately" equinoctial orientation.

However, we could easily go a little further into this subject by trying to answer the following question: "Why is this particular corridor not made of two straight parallel walls like the rest of the building"?

We could start to answer this question by going back to the room at the end of the corridor. This stands out because of its size, form and usage as we have said before. It is the only room in the building which can receive solar light through the corridor, which we can assume was covered like the rest of the building, even though iIn Figure 4 it is open to the elements. The reason for this could be that it lets light into the corridor and thence into the room at the end of the corridor..

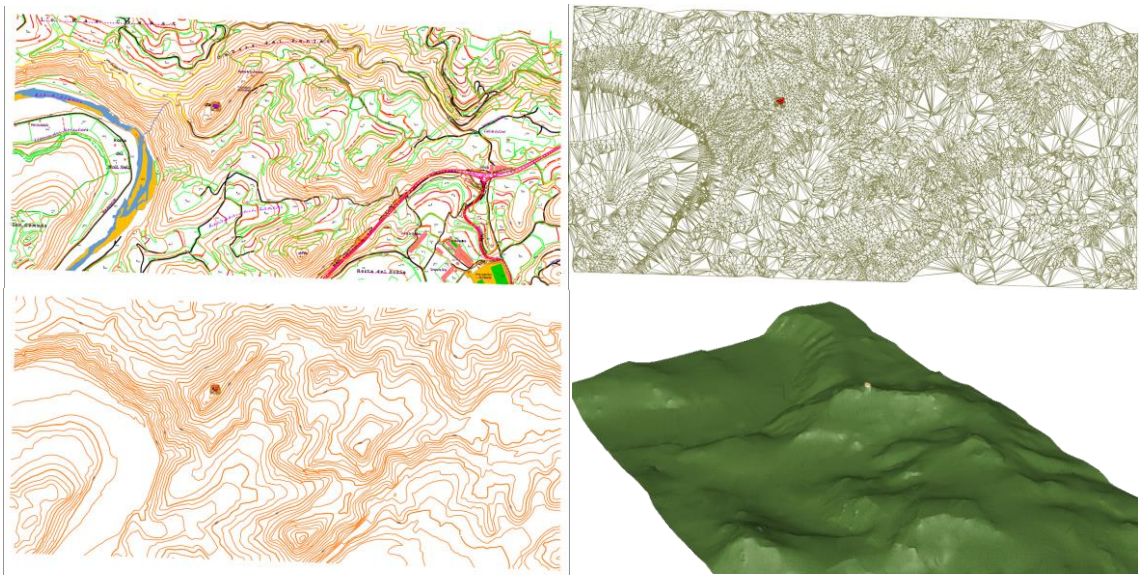

Figure 3. Phases of process of DTM reconstruction

The entrance of sunlight is critical, especially as it has been shown that light only gets into the room on two days per year – the equinoxes[Σ8]! This can be seen in Figure 4, where we are able to see the inside of the room where we can see a small part of the room at the back, lightened from the sun coming in from the corridor. We are now able to answer our question. The bends and turns in the corridor, together with the small entrance to the room, limit the amount of sunlight that can reach the back of the building where the room is, except for a brief moment at sunrise two days per year. After that short moment, due to the length of the corridor, the sun is no longer able to enter the room again for another 6 months. En la

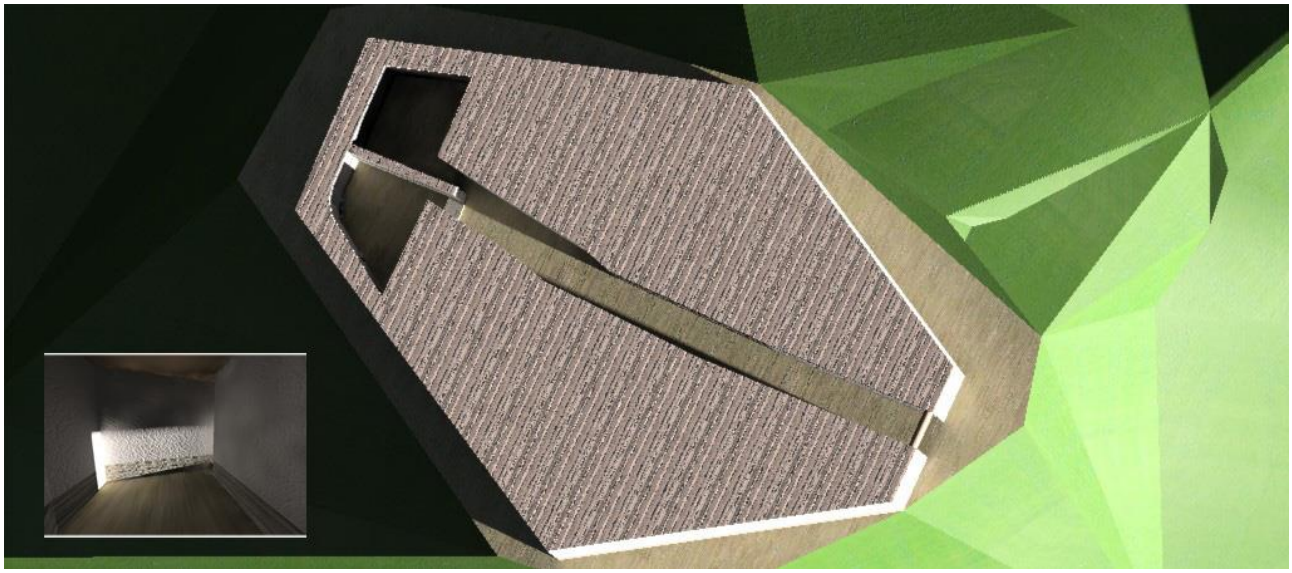

Figure 4. The entrance of the sunlight through the corridor lighting the back room. Bottom left, view from inside the room

5. CONCLUSIONS

In summary, we are dealing with an isolated building which, during the Early Iron Age, was used as a house by an emerging aristocracy (system that collapsed afterwards, Bea, 2012). It was rebuilt during the Iberian period and it had a use that, even though it is still unknown, shows strong evidence of the astronomical orientation associated with cult sites and sanctuaries.

Throughout the Iberian territory, from the north of the Mediterranean coast to the mouth of the Guadalquivir river in the Atlantic ocean, this pattern of orientation can be seen in a multitude of cult buildings, such as the temple of El Tossal de Sant Miquel de

Llíria in Valencia (Esteban 2006) and the sanctuary of Puente Tablas in Jaén (Pérez Gutiérrez et al. 2016).

The equinoctial orientation is also important in topographic indicators on the horizon as seen in El Amarejo in Albacete, La Serreta in Alicante and La Carraposa in Valencia, among many others (Esteban 2002[Σ9]). And even in necropolis (in this case using the sunset as is usual in Iberian sites dedicated to the cult of the ancestors) like for instance, in the most important funerary chambers of Túgi in Granada (Pérez Gutiérrez & Rodríguez Ariza 2014).

Although it is not completely proven, the astronomical orientation of the site and the way it is produced, makes it inevitable that we ask ourselves if La Gessera was an Iberian sanctuary. We still cannot answer that question with absolute certainty but we hope to do so in the future.

REFERENCES

Bea, D. 2012: Poder, arquitectura i complexitat social. Formes polítiques al curs inferior de l'Ebre durant la protohistòria. Tesis Doctorals en Xarxa (TDX). Universitat Rovira i Virgili

Bosch Gimpera, P. 1915: "Campanya arqueològica de l'Institut d'Estudis Catalans al límit de Catalunya i Aragó (Caseres, Calaceit i Maçalió)". Anuari de l'Institut d'Estudis Catalans, 5: 819-838.

Cabré, J. 1908: "Hallazgos arqueológicos". Boletín de Historia y Geografía del Bajo Aragón. Vol. II, núm. 5: 214-244.

Esteban, C. 2002: "Elementos astronómicos en el mundo religioso y funerario ibérico". Trabajos de Prehistoria 59 (2): 81-100.

Esteban, C. 2006: "Ciclos de tiempo en la cultura ibérica: la orientación astronómica en el templo del Tossal de Sant Miquel de Llíria". Trabajos de Prehistoria 63 (1): 167-168

Moret, P. 2002: "Tossal Montañés y La Gessera: ¿residencias aristocráticas del Ibérico Antiguo en la cuenca media del Matarraña?" I Jornades d'Arqueologia. Ibers a l'Ebre. Recerca i interpretació. Tivissa, 23 i 24 de novembre de 2001. Ilercavònia. Fulls d'Arqueologia, 3: 65-73.

Moret, P.; Benavente, J.A.; Gorgues, A. 2006: Iberos del Matarraña. Investigaciones arqueológicas en Valdeltormo, Calaceite, Cretas y La Fresneda (Teruel). Āl-Qannīš. Boletín del Taller de Arqueología de Alcañiz, 11.

Pérez Gutiérrez, M.; Ruiz Rodríguez, A.; Molinos Molinos, M. 2016; "The iberian urban sanctuary of Puente Tablas (Jaén, Spain) (IN PREESS)

Pérez Gutiérrez, M; Rodríguez Ariza, M.O. (2014): Astronomy, Metrics, and Proportionality in the Iberian Necropolis of Túgi (Galera, Granada, Spain). *Mediterranean Archaeology and Archaeometry, Vol. 14, No 3, pp. 121-131*

Sanmartí-Grego, E. 1975a: "Las cerámicas finas de importación de los poblados prerromanos del Bajo Aragón (comarca del Matarranya). Cuadernos de Prehistoria y Arqueología Castellonense, 2: 87-132.

Sanmartí-Grego, E. 1975b: "Algunas observaciones sobre el kylix de La Gessera". XIII Congreso Nacional de Arqueología (Huelva, 1973). Saragossa: 756-759.