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AN EVANESCENT VISION OF THE SACRED? THE EQUINOCTIAL SUN AT THE IBERIAN SANCTUARY OF CASTELLAR

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ABSTRACT

We present results of an archaeoastronomical study of the Iberian cave-sanctuary of La Cueva de la Lobera in Castellar (Jaén, Spain), whose foundation has been dated to the second half of the fourth century BCE. The sanctuary consists of several terraces, a cave and a rock shelter that have been artificially modified. The main axis of the cave is oriented along the east-west direction. A small niche at the innermost part of the cave is illuminated at sunset around the equinoxes through an opening located at the western edge of the cavity. We have photographically documented the evolution of the illumination pattern inside the cave, and have found that the shapes of the niche and the patch of light show the maximum coincidence at the temporal mid-point between the solstices, one or two days from the exact date of the astronomical equinox. Finally, we speculate about the similarity between the shape of the patch of light just before sunset and the side face of one of the most common kinds of votive figurines found in this and other contemporary Iberian sanctuaries, which represent schematically an aristocratic female image, which is sometimes assimilated with the image of a feminine deity.

KEYWORDS: Archaeoastronomy, Iberian Culture, Sanctuaries, Equinox.

1. INTRODUCTION

The Iberians were a group of peoples who inhabited the Iberian Peninsula from the sixth century BCE up to practically the change of the era, by which time the Romans were fully established in their territory. They occupied the Mediterranean facade and part of the centre of the Iberian Peninsula, as well as the French Languedoc region (see Harrison 1988 for an introduction to Spanish protohistory in English). The main Iberian deity was apparently a fertility goddess that also had strong funereal associations. Her iconography is often a more or less direct reflection of the aristocratic Iberian female image, but is also influenced by exogenous models and sometimes represented with attributes of Eastern goddesses such as Astarte, Tanit, Artemis or Demeter (Moneo 2003: 427-439). Iberian sanctuaries were usually in locations that favour the manifestation of the sacred, such as on the top of mountains, within caves or in proximity to springs (see Blázquez 1975: 148-166). They mostly consist of open-air deposits or temples housing a statue of the divinity and a large number of offerings, similar to the Greek *thesauroi*. The chronology of the known Iberian sanctuaries ranges from the 6th century BCE to the first century CE.

The Iberian sanctuaries of La Cueva de la Lobera (Castellar, Jaén) and Collado de Los Jardines (Santa Elena, Jaén) were key locations in the processes of territorial expansion and political and ideological legitimation of the Iberian *oppidum* of Cástulo (Linares, Jaén) at the beginning of fourth century BCE (Ruiz *et al.* 2001). These sacred places were located so as to control the two main paths to the High Guadalquivir area and the rich mines of Sierra Morena (Rueda 2011, Ruiz *et al.* 2010; see Figure 1). The configuration of the space at La Cueva de la Lobera (which highlights the cave as an important landmark) along with the ritual objects and images (including thousands of bronze votive figurines found at the site) are related to the basic beliefs of the Iberians. In both sanctuaries, the ceremonial structure was mainly based on aggregation rites or rites of passage (Rueda 2011: 154).

Figure 1 Location of the Iberian sanctuary of Castellar.

The sanctuary of La Cueva de la Lobera (also known simply as the sanctuary of Castellar) has a long research history. Its votive offerings have been known since the eighteenth century. The Spanish Royal Academy of History started scientific studies at the sanctuary in 1912. Some excavations were carried out in 1957, and further studies were conducted beginning in the late 1960s, led by Gérard Nicolini; these have continued (with some interruptions and the creation of a Spanish-French team in the 80s) until now. The chronology of the sanctuary has been established from the middle of the fourth century BCE until the first century CE, as indicated by the presence of Roman votive materials (Rueda 2011: 97-98).

The sanctuary of Castellar is a complex space located along the base of a cliff on the northern side of a hill. It contains different terraces and rocky shelters. The archaeological record indicates that the nucleus of the site was the cave called La Cueva de la Lobera and its immediate surroundings, an area known by the archaeologists as the "first terrace". The cave has an entrance and two natural but modified (Nicolini *et al.* 2004: 151) openings or windows (see Figure 2). In Iberian times there were footpaths to access the cave along the hillside, with possible ritual importance. In fact, the spatial organization of the whole sanctuary

suggests that rituals were organized in specific itineraries related to the needs of each celebration. It seems that climbing to the rocky outcrop and accessing La Cueva de la Lobera, as the "central point" of the religious complex, was a dominant feature. All pathways are ordered from the valley and move up to the cave, reinforcing the feeling of spaciousness of the sanctuary.

Figure 2 External view of La Cueva de la Lobera taken from the north. The opening on the far right (western window) is the one that produces the solar phenomenon analysed in this work.

2. THE SOLAR PHENOMENON

We carried out an archaeoastronomical study at La Cueva de la Lobera as part of an ongoing survey of Iberian sacred places. This survey has led to the discovery of possible equinoctial markers in a significant fraction (28%) of the sanctuaries studied (Esteban 2002, 2013, Esteban & Moret 2006). The fieldwork took place in February 4, 2010 and it was focused on the cave and its immediate surroundings. The entrance and one of the openings are oriented due north, while the other opening (or "window") is oriented to the west. During our site visit we found that the longitudinal axis of the cave, which connects the deepest area of the cave (corresponding to a kind of niche located at the eastern end of the cavity, see Figure 3) with the west opening, practically coincides with the east-west direction, suggesting that sunset light near the equinoxes might illuminate the niche. Bearings were taken with a precision compass. The magnetic declination was determined by comparing the compass bearings for various landmarks (bell towers of churches of nearby villages, mountain peaks and telecommunications antennas) identified on topographic maps with the azimuths defined between the location of the sanctuary and those landmarks on the maps. We found that the azimuth of the axis defined by the niche and the west opening was about 272° with an uncertainty of about 1°.

Figure 3 Eastern wall of La Cueva de la Lobera on which the solar phenomenon takes place. The photo was taken on the afternoon of March 20, 2011, approximately 1h 20m before sunset. The patch of sunlight projected by the west opening is at the bottom left, near the entrance opening. The innermost zone of the cave corresponds to a relatively small cavity we call the "niche".

The equinoctial orientation of the longitudinal axis of the cave was confirmed by in situ observation at the autumnal equinox of 2010. However, the first good sequence of photographs was taken at the spring equinox of 2011 (March 20 and 21). Using these images we analysed the changes in position and shape of the patch of light projected by the west opening onto the niche. Figure 4 shows the interior of the cave at three consecutive moments during the 20 minutes prior to the sunset on March 20. The 2011 spring equinox occurred at 23h 21m UT on March 20, so the closest sunset to that astronomical event occurred on that day. As we can see in Figure 4, as the sun descends to about the time of sunset, the upper part of the projected patch of light goes up slowly onto the eastern wall of the cave, getting closer to the niche. At

the end of sunset, which occurred at 18h 23m UT (with a declination of the centre of the solar disk of δ = −0° 05', a value obtained from the Almanaque Náutico of the Observatorio de San Fernando for 2011), the top of the patch of light was illuminating the niche almost side to side. In these last moments, the patch turned increasingly red and gradually decreased in brightness until its total disappearance as it set below the local horizon. We repeated the observation of the phenomenon the following day (March 21, 2011). At sunset, the centre of the solar disk was at a declination of δ = +0° 19', about 24' north of the position of the previous day. A year later, on March 21, 2012, the phenomenon was again observed and photographed with the sun at a declination slightly north, δ = +0° 37'. In Figure 5 we can compare the three dates for which we have obtained photographs of the phenomenon. Variations of the position and shape of the patch of light are evident.

Figure 4 Photographic sequence of the evolution of the patch of light on the eastern wall of La Cueva de la Lobera during the last 20 minutes prior to the sunset of March 20, 2011. We can see how the upper part of the patch gets into the niche just in the last minutes of the day. There is a clear variation in the colour and intensity of the patch of light as the sunset approaches the horizon. It becomes redder due to the effect of atmospheric dust.

As discussed, March 20, 2011, coincided with the spring equinox. One of us has proposed that a concept as abstract as the astronomical equinox could be of rather limited practical utility, or even meaningless to a society like the pre-Roman Iberians (Esteban 2002, 2013 and Esteban and Moret 2006). In those works, it has also been argued that the temporal mid-point between solstices (hereinafter referred to as "half-day") should be a simpler and more useful concept for the Iberians. This concept would help these peoples to divide the year into four parts of equal duration, coincident with the seasons. The position of the sun on the half-day is slightly north of the equinoxes and depends on the particular way in which we count the days (e.g., the day during the solstice period chosen for beginning the counting of days, as well as the scheme of counting). We estimate that the declination of the sun on the half-day is within the range of δ = +0°40' ± 0°20' in Iberian times (between one and almost two solar diameters) and occurred between one and two days after the spring equinox, or before the autumnal equinox.

The results obtained for the sample of Iberian sanctuaries showing relations to sunrise or sunset around the equinoxes are not conclusive. It remains uncertain which of the two events, astronomical equinox or half-day, was the phenomenon of interest to the Iberians, although the most recent surveys appear to favour the half-day (see Esteban 2013). In the case of Castellar, the results documented in Figure 5 suggest that the match between the position and width of the niche and the patch of light seems to be more precise at solar declinations closer to the half-day. This is especially evident when we focus our attention on a small illuminated zone of the east wall located to the left of the niche (indicated by a circle in Figure 5). We can see that the size of the illuminated area is smaller on March 21, 2011, and practically disappears on March 21, 2012. The position of the sun on March 21, 2012, was the nearest date to the mean representative declination of the half-day. Of course, these aesthetic and subjective considerations do not constitute conclusive evidence, especially since this is the only Iberian cave-sanctuary showing this kind of phenomenon.

Due to the size and relative positions of the various structures involved in the solar phenomenon, the coincidence between the niche and the patch of light only occurs for a period of about a week around each

equinox. The fact that the coincidence takes place at such a singular moment of the solar annual movement suggests it may have been deliberately used in ritual at the sanctuary. In support of this hypothesis we note that equinoctial markers, as we have stated before, are common in other Iberian sanctuaries in the east and southeast of the Iberian Peninsula (see Esteban 2013), as well as in the sanctuary at the entrance of the nearby *oppidum* of Puente Tablas (Pérez-Gutiérrez *et al.* 2012, unpublished paper presented at SEAC XX).

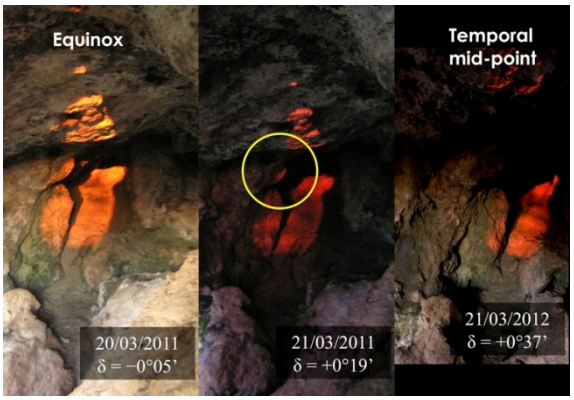

Figure 5: Comparison of the position and shape of the patch of light projected onto the eastern wall of La Cueva de la Lobera, seconds before sunset and on three different dates around the equinoxes, with the solar disk at slightly different declinations (δ). We can see small but appreciable changes due to the displacement of the position of the sun, especially in the zone indicated by the circle in the central photograph. The image on the far left (March 20, 2011) is representative of the astronomical equinox and that on the far right (March 21, 2012, taken by Francisco Gómez Cabeza) is representative of the halfway between solstices (half-day).

3. AN EVANESCENT VISION OF THE SACRED?

At this point, we take the liberty to enter the field of speculation. Since the date of the first observation of the phenomenon, we have noted the resemblance between the shape of the projected patch of light at equinox sunset and the side face of a kind of very common votive figurines found at Castellar and other contemporary Iberian sanctuaries. In general, the subject matter of the votive offerings is very varied, but most of them are human figures interpreted as people making offerings or praying, armed warriors and priests or priestess among others. There is no doubt that figurines are related to the rites performed at the sanctuaries (Rueda 2008). The kind of figurines that recalled the patch of light at Castellar represent schematically the typical aristocratic female image of the Iberians (see Figure 6), which has been sometimes assimilated with a representation of a divinity (Olmos 2000-2001; Rueda 2012). The resemblance is especially remarkable in the areas of the patch of light that can be interpreted as the head, headdress and the chest, essential parts of the archetypal representation of the Iberian woman as the *Dama de Elche*, the masterpiece of Iberian stone carving. As has been commented before, there is evidence that human hands very probably altered the shape of the west opening (Nicolini *et al.* 2004: 151). Therefore, the phenomenon and the shape of the patch of light could be artificially recreated, lending sense to the possibility of reproducing a model that is consistently reproduced through the documented offerings in the sanctuary.

In contrast with other sanctuaries, in Castellar the proportion of feminine figurines is higher than those representing men. This fact and the high number of artifacts dedicated to women's activities in the excavations of structures around the cave have led the excavators to propose that Castellar was a sanctuary for women (Nicolini *et al.* 2004: 157-160). We consider that this indication reinforces the possibility that the patch of light could have been used to represent a feminine figure with sacred connotations. This would be accomplished through the image of abstraction, where the concept takes precedence over the configuration. The abstraction of the divine image is found in other Iberian contexts and very often in the field of iconography.

In Castellar, the offerings found in scientific excavations come from the so-called "second and third terraces" around La Cueva de la Lobera. Its interior and immediate surroundings were very much altered

in uncontrolled surveys and excavations carried out in the site since at least the eighteenth century (Nicolini *et al.* 2004: 11). Unfortunately, this situation does not permit us to know with more detail the true importance of the cave, and in particular the niche, for the ritual.

Another remarkable aspect of the solar phenomenon is that the size of the cave cannot handle a large number of devotees inside (Nicolini *et al.* 2004: 151). In addition, we must also consider the need to avoid the central areas in order to avoid blocking the sunlight, further reducing the number of witnesses likely to observe the phenomenon. We estimate no more than a dozen people could have observed the phenomenon. These limitations suggest that the observation of the phenomenon should be devoted to the political elite and their closest clienteles, the personnel of the sanctuary or, from the perspective of ritual selection, specific groups, such as young men and/or women involved in rites of passage or initiation that are well documented in this sanctuary (Rueda 2013).

We suggest that the astronomical phenomenon we have documented at La Cueva de la Lobera may have been interpreted as a manifestation of the sacred, i.e. a hierophany. This would be obvious in the event that our interpretation of the shape of light is true and that it represents a sacred image or even the divinity herself. But even in the event that the shape was not a relevant aspect, we consider that the solar phenomenon has enough remarkable features to indicate its sacred connotations. It is produced on an important calendrical date at the innermost part of a cave dedicated to a fertility goddess. Moreover, the illumination of the cave interior has clear overtones of an act of fertilization.

The solar phenomenon could be an important element in the articulation of this sacred space, giving the cave a function as necessary scenery, and reinforcing the idea of this sanctuary as a complex space with a functional hierarchy that may be related to privilege in the contemplation of the solar phenomenon. We would be facing a dramatization of a perceptual experience of the sacred among the Iberians. Eliade (2000, 44) tells us that hierophanies adopt different forms and use different resources. If the option chosen at Castellar were to represent the image of the deity, this would raise it to a more active and humanized level, definitely to a more physical level (Van Straten 1981: 80-81). If this were true, the cave would be considered as a true natural temple, a cella housing the image of the deity.

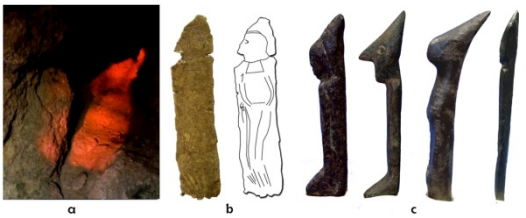

Figure 6: Comparison between the shape of the patch of light projected onto the eastern wall of La Cueva de la Lobera on the half-day (a; photo by Francisco Gómez Cabeza) and the side face of several Iberian votive figurines from the sanctuary of Castellar. The two figures at the centre (b) correspond to a gold ex-voto from Museo de Jaén; the four on the right (c) correspond to bronze ex-votos from Museo de Castellar.

The religious mechanism of contemplating a sacred image would explain the need to visit the cave to appreciate the experience that only occurs in the sanctuary. Such sensory manifestations of the sacred, supplemented with other aspects of worship (materialized through offerings, practices and votive images), may have confirmed the "objective reality" of the presence of the divinity at the sanctuary (Alfayé 2011: 158).

A final remarkable feature of the proposed solar hierophany at Castellar is that it lasts only a few minutes and occurs at sunset, at the end of the day, an aspect that may mark the timing of the rite at various levels. On one hand, it is possible that the rituals developed in the dates around the equinoxes recreate a cycle that began at dawn and ended at sunset, with the "disappearance" of the fertilizing sunrays or the image of the deity. These would be im-

portant aspects of the celebration, and perhaps a necessary complement to the practices developed along daytime.

Processes of divine anthropomorphism are well documented in many belief systems in the ancient world as well as in the Iberian sources. In these processes, the believers use fixed patterns or abstract schematic representations directly related to the image of devotion. However, in this case, it would not be a direct reflection, but rather a hint that requires active involvement of the senses and the perception of the witnesses. It would be just a shape, a mere outline of a known model that includes broad connotations of the divine universe of this Iberian sanctuary.

4. CONCLUSIONS

An archaeoastronomical study carried out in the Iberian sanctuary of Castellar (Jaén, Spain) has found a striking light-projection phenomenon in the interior of La Cueva de la Lobera, the nucleus of the sanctuary. This phenomenon consists of the illumination of the innermost part of the cave (a small niche) at the sunset around the equinoxes. The sunlight enters through an artificially modified opening located at the western edge of the cavity. We present the results of a photographic survey of the evolution of the illumination pattern inside the cave, finding that the shapes of the niche and the patch of light show the maximum coincidence at the moment of the temporal mid-point between the solstices, one or two days away from the exact date of the astronomical equinox. Another interesting result is that the shape of the patch of light in the last moments of the phenomenon resembles the side face of a common model of Iberian votive figurines, which has sometimes been interpreted as an image of a feminine deity. We propose that this astronomical phenomenon should be considered an important element (perhaps a hierophany) in the articulation of the sacred space in the sanctuary of Castellar, with a functional hierarchy that may be related to privilege in the contemplation of the phenomenon (and perhaps the appearance and subsequent disappearance of the image of the divinity) during ceremonies related to fertility and perhaps rites of passage.

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