Mediterranean Archaeology and Archaeometry, Vol. 16, No 4,(2016), pp. 275-282

10.5281/zenodo.220947

PRAILEAITZ I: A MAGDALENIAN LUNAR-SOLAR CAVE AT 15,500 BP IN THE BASQUE COUNTRY

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Received: 31/01/2016
Accepted: 21/03/2016
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ABSTRACT

Hayden et al. (2012) have questioned whether there was a Palaeolithic 'astronomy', yet nevertheless show that ethnographic evidence confirms such knowledge amongst extant 'complex hunter-gatherers'. Included in their critique is a rejection of Marshack's (1972) suggestion that Palaeolithic modern humans made non-decorative lunar notational systems. During fieldwork in the Basque country in March 2015 the authors examined the orientation of the Praileaitz I cave in the valley of the River Deba. The site excavation report (Peñalver, 2014) reveals that the cave was a place of ritual for local hunter-gatherers during the Magdalenian period around 15,500BP. The cave was one of 22 probably inhabited by the same group during the Magdalenian. Since none of the remaining 21 caves displayed any evidence as being places of ritual, then this data-set allows a statistical procedure to identify what particular portfolio of characteristics led to this cave being chosen as a place of ritual. The Praileaitz I cave has a vulva shaped entrance, 29.5 pendants arranged around the cave's chambers, an outward facing vestibular seat, red ochre crayons, a cutting antler baton and abstract 'art'. Many of the pendants displayed marks consistent with Marshack's lunar model. The field archaeoastronomy reveals that the cave entrance had an alignment on summer solstice sunrise. This lunar-solar astronomical finding shows a step-change from tracking discrete months as demonstrated by Marshack to organising 'lunar' rituals abstracted from any particular month displaced onto a solarized time scale. This suggests that the Magdalenian Praileaitz I rituals served as a bridging ritual form between monthly, synodic, rituals in the early Palaeolithic and later monumental alignments on the solarized sidereal moon in the Mesolithic, as for example at Warren Field in Scotland (Gaffney et al., 2013), and in the Neolithic, as for example at Stonehenge (Sims, 2006).

KEYWORDS: Magdalenian, cave, lunar-solar, complexity, vulva, blood, gender, ambiguity.

1. INTRODUCTION

Scholarship remains divided over Marshack's (1971) claims made fifty years ago for Palaeolithic non-decorative lunar notational systems. Hayden and Villeneuve (2012) have called into question not just Marshack's findings but also the suggestion of other archaeoastronomers supportive of Marshack for a Palaeolithic 'astronomy' (d'Errico, 2009; Rappenglück, 2015). Nevertheless from a survey of ethnographic evidence they conclude that 'astronomy' can be found amongst extant 'complex' hunter-gatherers, especially for the solar calendrical timing of rituals, and that this may usefully inform research into prehistoric astronomy.

An element of circularity obtains in their critique, since 'complex counting systems' are one of their criteria for a socially complex culture (Hayden & Villeneuve, 2012, 335). Since the means to establish a sophisticated calendrical system for them defines cultural complexity, then this rules out finding it in a 'simple society'. And as they prefer explanations that link cultural achievements to 'economic, social and political contexts' (Hayden and Villeneuve, 2012, 332), their assumption of a break between egalitarian simplicity to stratified complexity creates a conceptual barrier that obscures the details of this transition.

A deeper engagement with anthropology may suggest a more cautious drawing of the various transformations in early hunting cultures. Wengrow and Graeber (2015) have argued that Palaeolithic cultures may have oscillated between egalitarian and complex modes according to seasonal rhythms. This would suggest that the astronomical knowledge Hayden and Villeneuve associate with complex hunters alone would have been the same people who a season later would be the simple hunters expected to have little or none. And it is a long held understanding in anthropology that while 'economic, social and political contexts' are usually disaggregated from ritual and religion in modern societies they are encapsulated and bound together as a 'total social fact' in a ritual context in early societies (Mauss, 1969). For the present purposes two consequences immediately flow from this understanding. First, all rituals are redundantly multi-dimensional and digital, leading us to expect that symbolic representations will be prescriptively repeated through different performances *and materials* (Rappaport, 1979). Second, that any sophisticated astronomy that could be found in a complex hunting society emerges as a transformation of a prior form linked to a cultural requirement to govern wide areas of foraging life in synchrony with certain heavenly patterns. The BaMbuti (Zeusse, 1979), !Kung (Watts, 2005) and Mescalero Apache (Farrer, 1998), all simple mobile foragers not expected to have any elaborated astronomy according to Hayden and Villeneuve, nevertheless have their own expert knowledge and ritual appropriations of the skyscape. While this knowledge may not be structured as the 'calendars' that Hayden and Villeneuve would recognise, it is these egalitarian understandings that form the infra-structure subsequently transformed into 'astronomical calendars'. If alongside finding differences between egalitarian and stratified hunter gatherers we can also find formal traces of earlier cosmovisions, then once combined this evidence may allow us to locate the reasons for a shift from a cosmology to a religion. If so we would expect that the processes operating on the material plane with substitutions of reversal and estrangement undermining egalitarian relationships would be replicated in the formal properties of the types of astronomy subsequently adopted in complex cultures (Sims, 2006). Following Marshack we might expect the first Palaeolithic astronomy tracking lunar synodic phases, while following Hayden and Villeneuve we might expect the earliest astronomy to emerge from complex cultures expending resources on constructing accurate solarized calendars. Appreciating the thirty thousand years of the European Palaeolithic as a period of rapidly changing seasonal and resource stresses, we might also anticipate a more complex interaction between these two models. Beginning to answer these questions requires enhancing the evidence base and extant theoretical models.

2. LUNAR OR/AND SOLAR

Esteban and Tortosa (2001) have argued that the Parpalló cave in Iberia was chosen by Palaeolithic hunter-gatherers as a place of ritual because of its vulva-shaped entrances and alignment on winter solstice sunrise. The female cave architecture associated with the critical period for survival during winter solstice at the height of the Palaeolithic they suggest attests to an annual sanctuary for conducting a simple naturalistic religion emphasising fertilization of humans, animals and the earth and a possible first step for humans observing the sky. "More evidence of this kind is needed, as only statistical results can give a definitive answer" (Esteban & Tortosa, 2001, 13).

More evidence of another kind is also available from Parpalló cave. Over five thousand inscribed plaquettes dated from the Gravettian to the Magdalenian were found in the cave, with representations of animals and a possible image of a vulva dated to the Gravettian. Not mentioned by the authors is that other Parpalló plaquettes had inscribed serpents and notational systems tracking lunar phases (Villaverde,

1994; Marshack 1971, 102-6, 344-6). This combined evidence suggests that the astronomy of Parpalló cave is therefore not just solar but lunar-solar, and in which the lunar aspect is tracking the synodic phase cycle of the moon. If this interpretation is correct then it suggests that a Palaeolithic lunar-solar 'astronomy' is linked to the social, economic, political *and gender* aspects of some Palaeolithic rituals. But it remains the case that working from single case studies like Parpalló cave requires strengthening by moving towards aggregated data sets.

3. PRAILEAITZ I

In a 5 km stretch of the now lower reaches of the River Deba valley in the Basque country the archaeology of 22 caves reveals occupation remains dating from the Magdalenian, about 15,500 years BP (Peñalver et al., 2006). Some of this archaeology was consistent with stable dwelling places, although they also lived in 'cabins' in the valley. Other caves were complementary and temporary bases for exploiting specific local resources like obtaining raw materials and preparing tools, fishing and gathering molluscs, gathering fruits, tubers and leaves and for specialised hunting of various game animals. During the preceding period of the Solutrean and the Last Glacial Maximum hunting groups from the north retreated south into the Basque country as the northern climate became colder. The archaeology shows a rise in population density during both the Solutrean and Magdalenian in the Basque country.

Figure 1. Praileaitz I entrance

Groups consolidated into single valleys and, with the seashore then at least 10 km further out than today, split into coastal and inland hunter gatherers (Stanford & Bradley, 2012, 194-9). For these reasons the archaeological consensus is that these 22 caves in this small section of the River Deba valley were utilised by the same local group of Magdalenian inland hunter-gatherers. It is also understood that the resource stress consequent from the social circumscription of incomers required continual hunting and foraging with seasonal aggregation once or twice a year for ritual re-bonding of wider coalitions – one of the pre-requisites for 'complexity' (Straus & Clark, 1986).

One of these 22 caves is an exception to this general description. The Praileaitz I cave is located 55 metres above the River Deba on the north facing and very steep valley side. It has no dwelling or resource processing archaeology but does have an elaborate ritual archaeology. Its five metre high entrance is shaped like a vulva (Figure 1). The cave extends into the hillside for about 80 metres and after the vestibule chamber low entrances open serially into two inner chambers each about two metres high and then into a narrowing long low tunnel. Abstract parietal 'art' of red ochre dots are found about halfway along this tunnel. In the vestibule chamber a chocked seat-shaped stone faced outwards to the entrance. Just in front and to the right of this seat were a group of three black stone river-rolled perforated pendants and another single pendant in front and to the left of the seat (Figure 2).

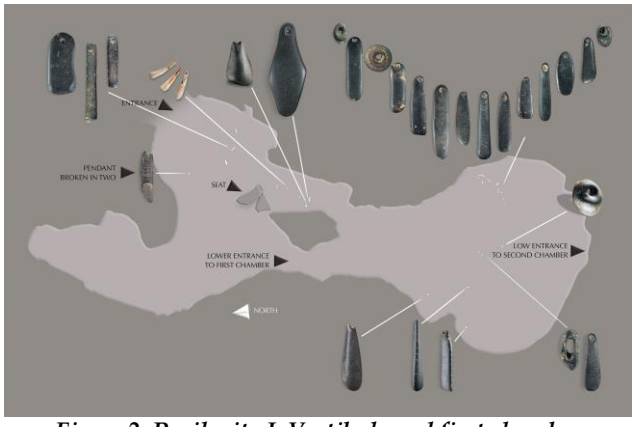

Figure 2. Praileaitz I: Vestibule and first chamber

A further 25 pendants were behind the seat and extending into the first inner chamber. Most of these pendants ranged from 7-12 cms in length. To the right of the seat was a red ochre crayon and a 17 cms long antler sharpened and perforated baton (Figure 3; Peñalver, 2014, 189). Just to the right and behind the seat were three distinctive perforated pendants of *Rupicapra rupicrapra* (wild mountain goat) teeth with the remnants of red ochre upon one. In line with both these two sets of objects and close to the low entrance into the first chamber were two further black stone pendants. One of these, the largest of all the pendants, is by silhouette a lozenge shape. Fur-

ther, from inspection of the high resolution photographs taken by Otero (Peñalver et al., 2006), 11 of the 26 black stone pendants have inscribed upon them a series of marks that fit a lunar notation. The single stone in front and to the left of the vestibular seat was broken into two pieces, and the broken off part was located 13 metres away inside the second chamber (Figure 2). Since one other stone was broken by roof rock fall but found in articulated arrangement with its parent body, this movement of the part pendant into the inner chamber seems an intentional re-location to register pendants approximating to a total of 29½ . If the cave ritual included alternating the position of this piece with and away from its parent body then this would replicate the 29/30 alternation in the length of the synodic month, indicating a proto-concept of 29½.

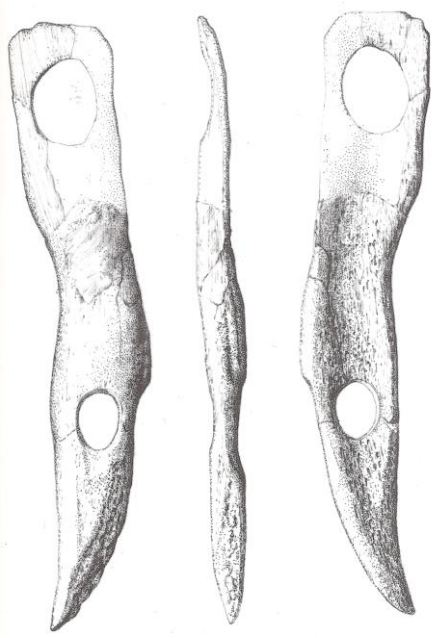

Figure 3 Antler baton from Praileaitiz I

Which, if any, of these fourteen features of Praileaitz I might have been selected by Magdalenian foragers as important for it to be their place of ritual? Using the case study method as a single Palaeolithic cave we might construct a number of narratives consistent with some or many of these features which could well overlap with the commentary provided by Esteban and Tortosa for the Parpalló cave. But since we have here not one but an aggregated data base of 22 caves two questions are made possible. Do the entrance alignments of Praileaitz I and the remaining 21 caves have any astronomical properties similar to Parpalló's, and does the full suite of the cave's properties indicate a specific portfolio distinct from those of the remaining 21 inhabited caves in the lower Deba valley which might add to the understanding provided for Parpalló?

4. RIVER DEBA FIELD WORK AND DATA

During March 2015 five caves, including Praileaitz I, were visited and measurements taken from inside the caves for the azimuths of their entrances and elevations of their outside horizons. Using a Suunto compass and clinometer, both accurate to half a degree, measurements were taken from the three metre inside position of the Praileaitz I seat as a back-sight benchmark. Azimuths were taken of cave entrance edges, the central axial alignment of the cave entrance and of their respective horizon altitudes. Because of very bad weather conditions during the week available for field work, the remaining 17 caves could not be visited, and the azimuth data for them was taken from the Archaeological Resumé (AR) (1995) reports and horizon data from Hey-WhatsThat (2015). Corrections were made for the differing magnetic variation between the 1995 AR data and 2015 field data and to the long term variation in the obliquity of the ecliptic since the Magdalenian (Esteban & Tortosa, 2001, 13). Because this long term variation in the obliquity follows a sinusoidal curve at the time of the 15,500BP occupation it measured 23.9° (±0°.1) while today it is 23.4°. This accounts for a difference of just over half a degree, or one solar diameter, from present solar observations.

The azimuths for all 22 caves' entrances, standardised to a zero level horizon, are shown in Figure 4. Five of the caves have a cave entrance edge within ±5° of all four possible solstice alignments. Praileaitz I, the one cave chosen as a place of ritual, is the only one with an entrance edge aligned within 5° of summer solstice sunrise. There is therefore a less than 3% chance that this is a random selection (10/360 = 2.7%). Because all four solstice alignments are possible from the 22 caves in the lower Deba valley, we can test by inter-disciplinary method what is distinctive in the Praileaitz I cave's portfolio of properties.

5. ELABORATING SKYSCAPES

Esteban and Tortosa (2001, 12) showed that the winter sunrise entered the deepest chamber of the Parpalló cave only for the few days around the solstice. Similarly at Praileaitz I the summer solstice sunrise for about seven days enters the vestibule and a ray of sunlight reaches the low narrow opening into the first inner chamber. Into this chamber it will set up a glow of reflected sunlight for a few minutes in the early mornings of the summer solstice week, after which it will return into near total darkness. Considered as a signal, these are digital properties of a long period of 'Off' and a short period of 'On'.

If the Magdalenian foragers had wanted a cave that could have been used as an observing site for

calendar purposes, then we would expect them to choose a cave with a wide entrance to track the changing horizon movements of the sun over the course of all or most of the year. Two caves' wide entrances offer such an analogue view of the sun's horizon movements – Arno 1 with a standardised azimuth range of 63°-125° and optimally a wider Santakutz with 47°-317°. Since the standardised solstice azimuths were at 55°, 123°, 237° and 304° for 15,500 years BP, then these two caves were options as solar sites for marking the time of the year. Contrarily Praileaitz I's entrance azimuth amplitude between 16°-56° fails as an observing site to see the sunrise's horizon position for all of the year except at summer solstice. In *not* choosing available caves with entrances entrained on a wide solar horizon we therefore conclude that calendar concerns were not a property sought for this place of ritual but that some digital property of a solstice sun was desired.

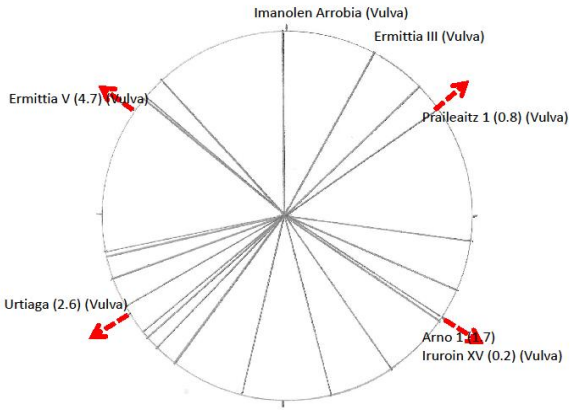

Figure 4 Standardised azimuths of 22 cave entrances in lower River Deba valley (Red dashed arrow indicates standardised solstice azimuth; Name; deviation from solstice azimuth; entrance shape).

If Praileaitz I was chosen for its female architecture to then use as a place for a 'simple fertility ritual', then we need to ask why the six other caves which also had vulva shaped entrances were not chosen. Three, Imanolen Arrobia, Ermittia I and Ermittia III, did not have entrance edges aligned on a solstice azimuth, whereas two others, Ermittia V, and Urtiaga, do have alignments on summer and winter solstice sunsets respectively. Therefore a vulva-shaped entrance alone was not sufficient for a fertility ritual in this cave nor was such an entrance combined with solstice *sunsets*. Iruroin XV has a vulva-shaped entrance and, like Parpalló cave, has an alignment of winter solstice sunrise. Given the choice of two caves with vulva-shaped entrances and summer or winter solstice sunrises, they chose Praileaitz I rather than Iruroin XV. The choice of Praileaitz I cave selected a vulva-shaped entrance with a *summer* solstice *sunrise*. The selection criteria seems to be not the parameter of winter, nor the abstract contemplation of the sky and any of the four of the horizon positions of the solstice sun, nor for a collective sanctuary during the middle of the Palaeolithic winter. What remains is the Praeleaitz I choice for the digital ritual property of the strongest ray of solstice sunlight available to enter the given darkness of the cave. This inference is reinforced by the availability of Arno I which is also aligned on winter solstice sunrise but did not have a vulva-shaped entrance.

In summary we can see from the wide choice of caves available to local foragers in the River Deba valley Praileaitz I was not chosen as a site for calendar calculation, nor as a refuge from the anxieties of a Palaeolithic winter, nor the astronomical observation of solstice sunsets, nor winter solstice sunrises that drove their choice of a place of ritual, but as a dark cave for lunar rituals combined with the digital summer solstice penetration of sunlight through the vulva-shaped entrance.

6. INTERPRETING SKYSCAPE ARCHAEOLOGY

Variation in cave locations, internal dimensions and material culture provide another resource that might specify the reasons for the choice and organisation of Praileaitz I as a place of ritual. Praileaitz I is located 55 metres up a very steep hillside above the River Deba. If convenience of access in this steep topography was a consideration, then on the other side of the River Deba from Praileaitz I was Langatxo cave just 5 metres above the river level. While Langatxo was not aligned on any solstice and looks to the west, Iruroin XV had an alignment on winter solstice sunrise and is lower than Praileaitz I at 44 metres. Clearly convenient access alone was not a criterion and some degree of remoteness may have been a requirement for this ritual. Like Parpalló cave Praileaitz I's first inner chamber was two metre high in the centre and roughly 6.5 metres in diameter. It could conveniently hold a small group of people. A paved vestibule (Peñalver, 2014, 73) suggests it did.

The type of material culture and its sequence from the entrance and into the inner reaches of the cave carries high symbolic value. The site report suggests two attributions according to the shape of two of the stone pendants. The lozenge-shaped largest pendant is seen as signifying a vulva (Peñalver et al., 2006, 113). Other scholars have made the same attribution to the use of the lozenge motif in early cultures (Gopher et al., 2011; Barber, 1991; Smith, 1965). If we apply this genital attribution by shape to those stones that by silhouette are pillar shaped then by extension we see these as signifying a phallus and

silhouettes intermediate between these two would be gender ambiguous (Sims, 2015). The variation in shape of the 26 stone pendants can be seen to reference female, male *and* the possible performative achievement of ambiguous gender. Second, the pendant accompanying the lozenge-shaped pendant is suggested to be an imitation of an atrophied *Cervus elaphus* (red deer) canine (Peñalver et al., 2006, 116). Other scholars have shown that these teeth, which need to be extracted from an opened upper mandible, were commonly used especially in the Iberian Magdalenian (Mussi, 2002, 268). If we see these pendants as representations of gender and of species, and of metamorphoses between genders and species, then they fit the predictions suggested by Power (1997) that the achievement of ritual sanctity requires a performative appropriation of ambiguity between both gender and species in blood rituals. The skyscape archaeology of Praileaitz I supports this prediction.

First into, or last out of, the cave we see two phallic shaped pendants combined with one gender ambiguous pendant (Figure 2). Facing them is the vestibule seat with to its right three *Rupicapra rupicapra* (wild mountain goat) teeth with the remnants of red ochre on one and a red ochre crayon. There follow along the same orientation as the three pendants and three goat teeth two more pendants - the lozenge-shaped and atrophied red deer tooth pendants. The line that all three groups fall upon coincides with the same line of summer solstice sunrise entering the cave. This ray of sunlight continues on to enter the right hand flank of the low entrance into the first inner cave chamber which contains the remaining 20 pendants. This movement through the cave entrance has taken us through its 5 metre high facsimile of a vulva. The three wild mountain goat teeth are placed in the vestibule after the two phallic and one gender ambiguous pendants. While the symbolism of vulva and blood (red ochre crayon) may signify either menstruation and/or childbirth, three additional significations are suggested by this choice and arrangement of materials. First, the symbolism of cutting (teeth, red ochre on teeth) suggests *vagina dentata* – a symbol universal to patriarchal cultures (Walker, 1983, 1034-7). Second, the wild mountain goat changes from a winter coat of blackish brown to red in the summer. Third, female *Rupicapra rupicapra* are gregarious and philopatric and exhibit strong coalitions. They herd in groups of on average over 20 adult females and kids, and females will care for orphaned kids (Gunderson, 2003). If males were appropriating these significations of female blood coalitions, as suggested by the change in pendant shape from phallic to vulva symbolism, then the presence of a red ochre crayon adds to the further possibility of the male appropriation of synchronous menstrual blood symbolism – gender and species ambiguity being another universal component of male initiation ceremonies (Gregor & Tuzin, 2001).

The further componential analysis of the material culture items found in Praileaitz I lends weight to this perspective. Peñalver (2014, 189) shows that the antler baton, found next to the crayon, has perforations and a worked shape that so weakens its integrity by length that it could not possibly have been used to throw or straighten spears (contra Underwood, 1965). However the baton's finely worked point has been ground to create a piercing and gouging instrument (Figure 3). Whoever sat in the vestibule seat faced those who entered. Equipped with red ochre crayon and a cutting baton such a person has the cave position and equipment to perform as a specialist in and instigator of a blood ritual. This baton comes from a *Cervus elaphus* (red deer) that loses its grey-brown coat of winter and like the wild mountain goat also grows a red coat during the summer. It is interesting that they did not choose antler for this tool from the readily available reindeer. Red deer are herd animals and their calves are born in June, signifying a time of collective birth. The redundant multi-media symbolic overlays of cave entrance, pendants, teeth, crayon, red ochre, baton and coalition behaviour and seasonal properties of wild mountain goat and red deer all mutually reinforce and focus a signification that strongly suggests a male initiation blood ritual imitating and possibly confiscating the properties of a menarche ritual. This inference is consistent with the evidence of explicit genital male representations in portable art from the European Upper Palaeolithic, and especially Magadalenian, which display phallic scarification, piercing and tattoos (Angulo et al., 2011). Instead of a simple fertility ritual the properties we have found for Praileaitz I, all aligned on the ray of light of summer solstice sunrise entering the cave, point towards a male initiation ritual that formally shares the structure of a lunar menarche ritual.

Symbolism continues deeper into the cave. For those entering the cave from the outside the low height of the vestibule ceiling to the left and the paving layout moving to the right sends entrants in an anti-clockwise direction through the vestibule and towards the first inner chamber in a line parallel to the line of the ray of sunlight at summer solstice sunrise. The low crawling height entrance requires descending onto all fours to gain access, infantilizing participants. In this darkening space are 20 pendants arranged in an arc, the middle three of which are all arguably signifiers of gender ambiguity – circular, oval and pear-shaped pendants (Figure 2). Crawling similarly into the next darker chamber reveals a cen-

tral natural feature of a block of stalagmites and stalactites. Continuing further into the cave through another low entrance the now totally dark narrowing tunnel first ascends and then descends steeply to a fourth entranceway. By a sharp left turn into a tunnel just one metre wide it turns to the right and brings us to that part of the 1.5 metre wide passage which has parietal red ochre dots on walls which also evoke both uterine and vulva shapes. The small dimensions of this tunnel would not allow the presence of a group of people but just one or two individuals at most. According to Reznikoff (2014) there is a greater that an 80% chance that this position in the cave complex marked with red ochre dots will have maximum resonance properties. Returning to the first inner chamber and resuming the anti-clockwise circuit the pendant layout ends with the vulva-shaped and red deer tooth pendants bathed in summer solstice sunrise and perhaps signifying the completion of a gender and species metamorphosing initiation ritual.

In summary these twenty or so properties do not suggest a simple fertility ritual but a demanding and isolating gender and species ambiguous seclusion ritual by blood-letting. This is a universal characteristic of male initiation rituals (Whitehouse 1996).

7. CONCLUSION

From the 22 caves in the lower Deba Valley in the Basque country we have found that the Praileaitz I cave possesses a distinctive suite of characteristics that specifies aspects of its ritual purpose during the Magdalenian.

The 29.5 pendants, notation on some of these pendants and anti-clockwise route of vestibule pavement and pendant layout which extends into the first inner chamber all represent aspects of the lunar synodic cycle. These properties add credibility to Marshack's claims and weaken the claims of those who deny 'Palaeolithic astronomy'. The alignment of the Praileaitz I cave entrance on summer solstice sunrise, compared to locally available caves with every other alternative solstice alignment, indicates that this was a choice of cave entrance alignment made by local hunter-gatherers. The cave's entrance alignment suggests the displacement of lunar rituals conducted there from a monthly cycle onto an annualised ritual timed to synchronise with the summer solstice. Together these two astronomical properties of this cave's rituals represent a solarised lunar (synodic) ritual. This indicates a departure from Marshack's emphasis on lunar notational systems for discrete months, as at Parpalló cave five millennia earlier, and instead displays a substitution of an abstracted ritual month that can be mobilised at any moment. As such they suggest a confirmation of Marshack's thesis with the qualification of attenuating rituals from a discrete monthly lunar timescale to an annual solarised timescale.

The cave's vulva-shaped entrance, uterine and vulva characteristics of the inner chambers and tunnels, the red ochre crayon and the red ochre 'art' all suggest a female blood dimension to the ritual conducted in the cave. However six other caves also have vulva-shaped entrances, indicating that these were not sufficient characteristics for conducting ritual here. The artefacts of goat and deer teeth, sharpened baton, red ochre and the summer season redness of wild mountain goat and red deer support additional dimensions to this gender dimension. The overlapping and mutually reinforcing signifiers of cutting-blood-summer all suggest a blood ritual by piercing. The stone pendants are shaped to represent both gender and species identity and metamorphosis, suggesting a male appropriation of astronomically timed blood flow. The secluded location of Praileaitz I 55 metres above the valley floor, the inaccessibility of the cave's inner chambers, the complete darkness of the deep tunnel with red ochre 'art' and the extreme claustrophobia and sense of isolation engendered in the route to and dimensions of the red-dotted tunnel all suggest a fear-inducing experience. While this ritual may have been timed to begin and/or end with the start of the brightest longest days, once entering the cave it was digitally contrasted with the journey into a long dark cave complex that simulated the female sexual anatomy alongside symbolic artefacts for conducting a simulated lunar-scheduled blood ritual. These 34 or so enumerated properties all add to the single interdisciplinary model of a solarised lunar male initiation blood ritual.

ACKNOWLEDGEMENTS

We thank the anonymous reviewers for their constructive comments.

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