



THE IRON AGE SAUNAS OF THE NORTHWEST IBERIAN PENINSULA: AN ARCHAEOASTRONOMICAL PERSPECTIVE

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ABSTRACT

In some of the Iron Age hillforts of the northwest Iberian Peninsula ("Gallaecia", in antiquity), public buildings used as saunas have been found. So far some twenty examples are known, in different states of conservation. These are distributed between two separated regional clusters, northern and southern. The southern cases display a single *pedra formosa* ("beautiful stone") to define the entrance to the sweat room. In some cases these are richly decorated with "astral" motives. This fact, and the longitudinal pattern of the layout of the buildings, invites a search for eventual astral alignments. 21 saunas (10 northern and 11 southern) were measured. The results confirm the regional difference also in this respect: Only three of the northern saunas show solstitial orientations, but four of the southern are oriented towards the southern lunar standstill and three others towards dates compatible with the mid-season Celtic feasts.

KEYWORDS: Iron Age, Gallaecia, Celtic calendar, lunar standstill, saunas, *pedras formosas*

1. INTRODUCTION

The *castros* (fortified settlements) are the most conspicuous elements of the Iron Age archaeology of ancient Gallaecia (north-west Iberian Peninsula, eighth to first century BCE). The *castros* display a wide variety of sizes, showing a clear transformation during these centuries. By the fourth century there was a dense land occupation. Large *castros* developed by the second century to the south of these areas, indicating a new social dynamism. The area is culturally Indo-European, with two languages, the isolated Lusitanian language and a second language of Celtic origin (Alberro and Arnold, eds.).

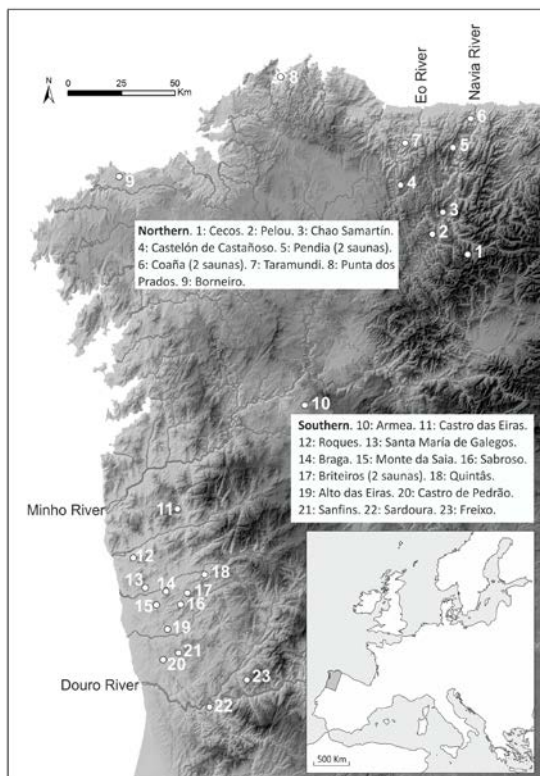


Fig. 1: Distribution of the Iron Age saunas of Gallaecia. Note that three locations have two saunas.

Among the public structures attested in the *castros*, the steam baths or saunas are singular due to their shape and the location pattern. Today we know of 26 steam baths with varied states of preservation and archaeological histories (Silva 2007; Villa Valdés 2012; García Quintela and Santos Estévez 2015).

Saunas are commonly divided into two well-defined groups (Fig. 1), mainly for

geographical reasons, but also due to their formal differences. The reason for such division is not clear yet, as there are plenty of *castros* in the area between the two groups.

The northern saunas appear inside all types of *castros*, both large and small. According to Villa Valdés (2012) the main specialist about this group, any wide excavation in a *castro* of this zone should find a sauna. However, southern saunas appear always at the outskirts of large *castros*, making the finding of these monuments more coincidental.

The radiocarbon dating shows different stages of the buildings (e.g., the Navia valley saunas) and superposition of saunas (Coaña, Punta dos Prados). These data show that saunas started to be used by the fourth century BCE and were in use up until the Roman era (Villa Valdés 2012).

The southern saunas lack a comparable study. They have been traditionally considered as a Roman influence, due to the building materials found next to them during the archaeological interventions. These materials no doubt probably date from the last use of the buildings before their abandonment. The singular morphology of the *pedras formosas* (literally “beautiful stones”) suggests a possible evolution. These stones are placed right before the sweat room of the sauna, and there may have been a transition from those showing a more amorphous design to those with a highly decorated surface (García Quintela and Santos Estévez, in press). Other formal differences highlight the regional differences.

Both types of saunas are located in the outskirts of the habitats, but while the northern ones are inside the *castro*, next to the main entrance, those of the south are away from the habitat and sometimes in wall enlargements. The *pedras formosas* only appear in the southern group, while the northern ones present a large stone at the entrance to the sweat room. The southern monuments are underground, while those in the north are not.



Fig. 2. Layout of the northwest Iberian saunas.

It is worth noting that the saunas are not dedicated to the cult of the waters. Such monuments are usually built in direct connection with the water. However, in the northern saunas the water was carried to recipients built inside the saunas, while in the southern ones the water was conducted through canals to the sauna.



Fig. 3. *Pedras formosas* with "astral" motives

2. ARCHAEOASTRONOMICAL STUDY

An archaeoastronomical study of these monuments seems justified. Their singularity among the buildings in the hillfort indicates a possible ritual use. Also, the plans of all the saunas indicate that they are clearly built purposefully following a longitudinal section with normally four rooms (lobby, ante-chamber, sweat room, oven).

This implies an orientation that could be culturally significant or not (Fig. 2).

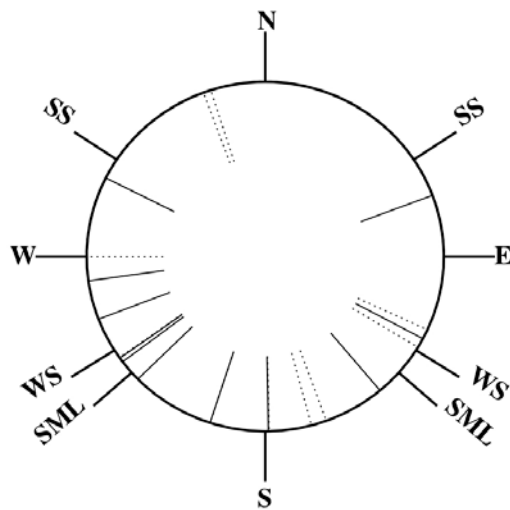


Fig. 4. Orientation diagram for all the northwest Iberian saunas. Dotted lines refer to the northern saunas, solid lines to the southern ones. The cardinal directions, plus the sunrise and sunset at the solstices (summer, SS; and winter, WS) and the moonrise and set at the southern major lunistic (SML), are indicated.

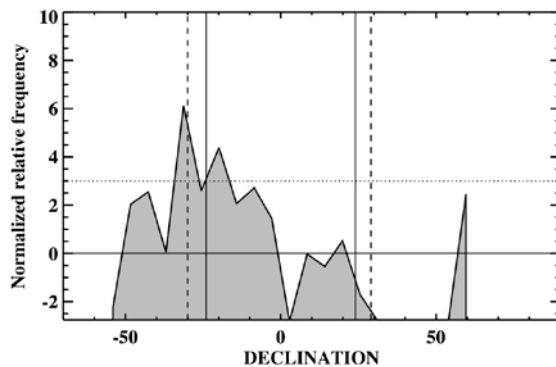


Fig. 5. Declination histogram for the whole sample. Solid vertical lines indicate the solar range. The dashed vertical lines give the lunar range. The vertical axis gives a normalization of the relative frequency to show possibly statistically significant maxima. A maximum higher than 3 should be considered to be significant beyond the 99%.

In addition, three out of the four best-known *pedras formosas* present astral motifs in the upper part (Fig. 3). The question would be whether such fact has any connection with the orientation of the monuments.

Also, an archaeoastronomical study can be useful in a twofold way: it may introduce new arguments into the analysis of the similarities and differences between the two

groups, and it may add new data to the cultural debate on the Celts and their influence on the regional material culture by showing orientations that could be connected to the alleged Celtic calendars.

Place	A	h	δ	Dates (D/M)
Borneiro	270	11	7.5	9/4 - 3/9
Castelon	165	11	-33	----
Chao Samartín	178.75	7	-40	South
Coaña 1	296.75	4	22	SS
Coaña 2	121.25	3	-20	WS
Pelou	114.75	17.5	-4.9	8/3-6/10
Pendia 1	339.75	17	58.5	North
Pendia 2	342.25	19	61.3	North
Pta. Prados	160	2	-40.9	----
Taramundi	234.75	5	-21	WS

Table 1: Measurements of the northern Gallaecia saunas. The columns provide the place name, the azimuth (A), the horizon height (h), the declination (δ) and the corresponding dates in a proleptic Gregorian calendar. Given the state of some of the saunas, an error in declination of $\pm 2^\circ$ in declination should be considered.

There are 21 known saunas available to be measured, 10 in the northern group and 11 in the southern. The measurements are presented in Tables 1 and 2, and the data is shown in the orientation diagram (Figure 4). The distribution appears rather dispersed, not showing clear concentrations. Figure 5 presents the declination histogram, showing a possible significant maximum close to the declinations of the southern major lunistic (SML; the minor lunistic is not considered in this paper), but on the whole we consider also three other possible targets: the solstices, the equinoxes, and the midseason festivals (see below).

Table 1 presents the results for the northern saunas. We may note the large horizon altitudes in almost all cases ($\langle h \rangle = 9.65$, $\text{stdev}(h) = 6.41$), due to the local topography of the region. There are two cases with solstitial alignments inside the same *castro* (Coaña), which are placed almost overlapping each other, and a third one in Taramundi. Given these three cases,

we can estimate the probability that out of 10 observations, three are orientated towards the signaled targets. Using the formula S2.2 of Ruggles (1999) we find that such probability is 0.19. This is low, but not enough to discard the notion that the orientations arise by chance.

Table 2: Measurements of the southern Gallaecia saunas. Columns are as in Table 1.

Place	A	h	δ	Dates
Armea	118	5	-16.8	2/2 - 9/11
Braga	69.5	2.25	16.3	7/5 - 6/8
Briteiros1	179	-1	-50	South
Briteiros2	236	0.5	-24.3	WS/SML
Alto das Eiras	225.5	1.5	-30.9	SML
Freixo	140	6	-30.0	SML
Galegos	262	0.5	-6	6/3 - 8/10
Pedrão	234.5	2	-27.5	SML
Roques	262	-1	-7	4/3 - 10/10
Saia	198	--	-46.3	South
Sanfins	249	2	-14.6	11/2 - 1/11

It is difficult to determine if the north-south orientations of Pendia and Chao Samartín are cardinal or topographic due to the local circumstances.

If we now consider the southern saunas, another situation appears (Table 2). First, the horizon altitudes are different from the northern ones due to the topography but also to the fact that the southern hillforts always occupy dominant spots on the terrain ($\langle h \rangle = 1.61$, $\text{stdev}(h) = 2.24$). The orientations seem to show three distinctive cases:

1) There are 4 saunas compatible with the SML.

2) There are three saunas with orientations compatible with Celtic midseason festivals (fixed in Christian medieval Ireland on November 1, February 1, May 1 and August 1).

3) There could be a tentative third group (Roques, Galegos) with dates close to the start and end of the war season in Rome (Dumézil 1987), this being related to the reuse of former structures under the Roman occupation or to some other reason unknown to us. The northern sauna of Pelou has a similar orientation.

If we perform the same exercise as before to find out if the 7 orientations towards solstices, lunistics, equinoxes and midseason festivals is significant out of the 11 measurements (we leave the last item out of the computation) we obtain a probability of chance alignments of 4×10^{-4} . In other words, we can say that this observation of possible astronomical orientations is significant beyond the 99% confidence level.

Unfortunately, the low number of elements does not allow a cross comparison with other properties such as the presence/absence of *pedras formosas*, local patterns or other formal aspects.

3. DISCUSSION

We should highlight that the formal differences enumerated above among the saunas of the two regions are also present in their orientations.

Although the number of elements is admittedly low, the southern group certainly presents two accumulations, one towards the lunistics and the other towards dates consistent with the midseason festivals. These concentrations are statistically significant, while in the north we have no elements to prove it so.

Given these differences, and given that it seems clear that the southern saunas present some astronomical orientations, we next consider the cultural context of these orientations.

On the one hand, we confirm that the "astral" decorations of the *pedras formosas* could somehow be related to particular orientations. Two out of the three *pedras formosas* with astral motifs are oriented towards the southern major lunistic (Briteiros 2 and Alto de Eiras). The sauna of Castro das Eiras could not be measured, while the one at de Feixo has almost no decoration and the observation at Monte Pedrão is based on a non-excavated site.

This reasoning prompts us to consider the sculptures of the so-called *guerreiros* (Lusitanian warriors). There are about 30 known statues in different states of preservation (see the monograph number of Ma-

drider Mitteilungen, 44, 2003) with a location similar to that of the southern saunas. The best-preserved cases also present what have been termed “astral” decorations in their costumes (see Fig. 6).

In this context of warriors with possible astral decorations, the orientation of three saunas towards the start and end of the war season could be relevant. It allows us to cite Strabo, who writes, at the time of Augustus but relying on information from the first campaign of the Romans in north-west Iberia (137 BCE; *Geography*, III.3.6): “Now, some of the peoples that dwell next to the Durius River live, it is said, after the manner of the Laconians – using anointing-rooms twice a day and taking baths in vapors that rise from heated stones...”

It is not easy to envisage what kind of cultural link there might be between the ritual use of the sauna by the warriors on the one hand and the astral speculations (both on the decorations and the orientation of the saunas) on the other. However, we might connect both with our work in progress, that of trying to define Celtic patterns in the location of their monuments with specific sets of dates throughout the year, which could have been culturally important to the Celts.



Fig. 6. Some Lusitanian warriors. Belts are decorated with “astral” motifs similar to those found in *pedras formosas*.

In relation to the extreme positions of the moon, we may highlight the following sites:

1) Iron Age rock carvings in the south of Galicia (Spain). A series of three sites

dominated by larger-than-average deer with oversized horns. The panels present a peculiar connection with areas of the horizon where the SML could be witnessed (González-García *et al.* 2008).

2) The Glauberg Tumuli (Germany) for the fifth century BC. The *Prozessionsstraße* starts at the tumulus 1 and its orientation is towards the SML (Deiss 2008).

3) The Celtiberian city of Segeda (Saragossa, Spain). A platform excavated at the outskirts of the city walls, with a supposed ritual character, presents two orientations towards the winter solstice and the SML (Pérez and Burillo, in press).

4) The Roman colony of Lugdunum (Lyon, France). Founded in 43 BCE, it was the site for an annual meeting of the tribes of the three Roman provinces in Gaul. The amphitheater, built at the time of Tiberius and located next to the supposed meeting place, has the minor axis oriented towards the sunset on winter solstice. In addition, the moonset at the SML would occur in coincidence with the site where the municipal sanctuary for the imperial cult was located, as seen from the amphitheater. Although the colony is Roman, this link with a lunar event at a time when the Julian calendar as being imposed could be a Gaulish/Celtic heritage (García Quintela and González-García 1014).

5) The *Tochmarc Étaine* (The Wooing of Étaine) is a mythological Irish tale in which Étain, the main character, is a “lunar” character. The plot of the story takes place in the vicinity of the megalithic sites of Newgrange and Mag Inis. The two are located such that the lunistice as seen from Newgrange happens in the direction of Mag Inis (Hicks 2009: 120).

Although each case is a separate, individual case in principle not related to the others, all of them could be compatible with a Celtic context. It is true that the data are scanty, but these observations, together with those presented here, indicate the need to perform a further in-depth analysis.

A similar situation arises with regard to the midseason feasts. These are the known cases:

1) The Iron Age rock carvings area of A Ferradura (Ourense, Spain). Two out of the three main carved rocks display orientations towards the solstices, while the largest has orientations towards the beginning of February (García Quintela and Santos Estévez 2008).

2) The Celtiberian sanctuary of Peñalba de Villastar (Teruel, Spain). This is a 2km long sandstone cliff filled with carvings and inscriptions in both Celtiberian and Latin languages. The most ancient elements tend to be concentrated in areas orientated towards the southeast. A Latin inscription on site indicates a ritual celebration performed a few days before the *Kalends* of May (the inscription is damaged, preventing one from knowing exactly how many days before). The sun rises on top of a prominent feature of the horizon at dates near November 1 (García Quintela and González García 2010).

3) At the Gaulish sanctuary of Corent (Auvergne, France) the main entrance is oriented towards sunrise at the beginning of May and August on top of a nearby prominent hill (Romeuf 2011).

4) The Roman colony of Lugdunum (Lyon, France). Besides the already exposed orientation of the area of the Altar of the Three Gauls, the urban grid of the colony founded in 43 BCE shows an orientation towards the sunrise close to August 1. From 12 BCE the *Concilium Galliarum* was celebrated at the altar on this same date. Finally, the original orientation towards these days was later respected by the building of the municipal sanctuary of imperial cult, with the same orientation (García Quintela and González-García 2014).

The number of cases studied at this point in the agenda is still scanty, despite the fact of their importance in Ireland (MacNeill 1962; Le Roux, Guyonvarc'h 1995; Guibert de la Vaissière 2003). The challenge, though, would be to identify how the celebration of such feasts, possibly linked with in the lunar months of the Celtic calendar,

was fixed to the Julian and Christian calendars (McCluskey 1989, García Quintela *et al.* Evora). Another issue would be the detection of such dates among Celtic populations during the Iron Age and antiquity.

We must highlight that the relevant cases here always show the midseason festivals in relation with alignments towards the solstices or lunistics, indicating the necessity of in-depth archaeoastronomical analysis of the sites.

4. CONCLUSIONS

The sample of saunas considered includes all the measurable monuments known today, but there is no clear pattern for the whole of them. The formal differences between the two regional groups extend to the orientation patterns. The northern saunas show a scatter of orientations that does not allow concluding whether the orientation is astronomical. However, those in the south do seem to present a tendency to be oriented in accordance to a few astronomical directions related to the extreme positions of the sun and the moon, plus the sunrise or sunset on the Celtic midseason festivals.

The two sets of relevant dates that appear in the southern saunas indicate a link with other relevant observations in Celtic areas in European proto-history and antiquity. This points towards the possible importance of the lunistics and the midseason feasts in continental Europe.

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