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# THE ORIENTATION OF *LUGDUNUM CONUENARUM* AND THE CELTIC FEASTS MARKING THE START OF THE SEASONS IN ANCIENT GAUL

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## ABSTRACT

There is a long-lasting debate, started in the nineteenth century by d'Arbois de Jubainville and Jullian, among others, regarding the pan-Celtic nature of the mid-season (or rather, start of season) feasts known from the Mediaeval Ireland (set on 1<sup>st</sup> November, February, May and August). D'Arbois indicated that one of these feasts coincided with the festival celebrated during Roman times at *Lugdunum* (Lyon) on August 1<sup>st</sup> from 12 BC onwards. We recently verified that the orientation of the earlier parts of this Roman colony were laid out facing the sunrise on this date since its foundation in 43 BC, prior to any possible link with Augustus. This fact prompted us to investigate the orientation of other Roman cities in Gaul, particularly those named *Lugdunum* which still contain Roman buildings capable of being measured. The most complex of these is *Lugdunum Conuerarum* (present-day Saint-Bertrand-de-Comminges). With a Celtic name and mixed Aquitaine-Latin culture, it is oriented towards the sunrise on February 1<sup>st</sup>. Other cities in Gaul and Hispania have also been considered, which have similar orientations. We therefore verify the pan-Celtic character of the mid-season feasts. Finally, we present the hypothesis that the conversion of these feasts from a luni-solar calendar to the solar Julian calendar took place in the centre of Gaul at some time between the reigns of Caesar and Augustus. At a later stage, this model would be exported by early Christianity into Ireland, then serving as an interpretative inspiration for scholars such as d'Arbois de Jubainville and others.

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**KEYWORDS:** Celtic Feasts, Roman cities, Ancient Gaul, Lugdunum, Reign of Augustus, Christianization of the Celtic Calendar, Romanization of the Celtic Calendar.

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## 1. INTRODUCTION

An archaeoastronomical study of the Roman colony of *Lugdunum* (present-day Lyon) revealed that the original urban layout, dating from 43 BC, was facing the rising sun on dates close to 1<sup>st</sup> August. Thus, the date of the annual festival held each 1<sup>st</sup> August, from 12 BC onwards, at the altar of the three Gauls adjacent to the colony, had its roots in the history of the city. This result represents a watershed in the scholarly debate on the cultural identity of the celebration, which was Celtic according to d'Arbois Jubainville (1827-1910), or Augustan/Roman according to Jullian (1859-1933) (García Quintela and González-García, 2014; González-García and García Quintela, 2014). However, the solution to this problem raises other questions: to what extent is the situation of *Lugdunum* a rule or an exception? Are there precedents in the regional proto-history, or in Gaul, regarding the significance of this date? Are there other cities founded by the Romans, with a "Celtic" orientation?



Figure 1. Sites examined in Galia. 1 Colonia. 2 Augusta Treverorum. 3 Petrisberg. 4 Augusta Raurica. 5 Augustodunum. 6 Augustonemeton. 7 Lugdunum/Lyon. 8 Vesunna. 9 Lugdunum Convenarum. 10 Narbo Martius. 11 Ruscino. 12 Lugdunum/Laudun. A Bibracte. B Gondole. C Corent.

To answer these questions we implemented a research program for the whole of Gaul that includes the proto-historic *oppida* (<http://oppida.org/>), and the Roman cities founded by the Julio-Claudian dynasty. This includes 48 cities according to the list established by R. McMullen (2000). A first step to broaden the base of this program is to expand the research on *Lugdunum* in three directions.

First, it would be convenient to study the *oppidum* of Bibracte and the Roman city of *Augustodunum* (present-day Autun), because the first priest in charge of the cult at *Lugdunum* came from these places, and because both cities were the capitals of the *Aedui*, traditional allies of Rome and Caesar (albeit with some crises). Divitiacus, the druid friend of Caesar and the assistant commander of the cavalry during the first phase of the conquest of Gaul, was from this tribe (Verger, 2003; García Quintela and González-García, 2016).

Then, it is necessary to examine the Roman colony of *Augusta Raurica* (Augst, Switzerland) as Lucius Munatius Plancus, founder of *Lugdunum*, also founded *Raurica* in 44 BC. *Augustodunum* and *Augusta Raurica* have solstitial orientations (for *Augusta Raurica* see Bertarione and Magli, 2015), and structures oriented towards the 1<sup>st</sup> August appear in the *oppida* of Bibracte (García Quintela, González-García, 2016) and Corent (Romeuf, 2011).

The final route to explore is provided by the series of cities and enclaves called "*Lugdunum*". The latest inventory lists 30 in the territory of ancient Gaul. Of these, only five have archaeological sites of some entity (Lyon, Rhone dept.; Saint-Bertrand-de-Comminges, ancient *Lugdunum Conuenarum*, dept. Haute-Garonne; Loudun, Vienne dept.; Laon, former *Lugdunum Clauatum*, dept. Aisne; Loudun, Gard dept.) (Raydon, in press). However, only three of them are actually Roman sites with structures that can be measured by the archaeoastronomical method: Lyon, Loudun and St. Bertrand de Comminges. In this paper we will focus on St. Bertrand de Comminges, measured in situ, and introduce Loudun, measured using the Google Earth and Géoportail applications. In a wider sense, we also introduce a number of other sites in ancient Gaul in the final discussion, whose orientation was also measured in situ. (Fig. 1).

## 2. GEOGRAPHIC, HISTORICAL AND CULTURAL BACKGROUND

The Roman ruins of *Lugdunum Conuenarum* stand on the northern plain at the foot of the hill containing the city of St. Bertrand de Comminges (Haute-Garonne). This hill, close to the Pyrenees, underwent intensive transformations in mediaeval times, which covered any trace of a protohistoric *oppidum* (some walls close to the medieval Cathedral have been interpreted as the foundation of a public Roman building). The area is on a Roman road network that runs south through the central Pyrenees to the valley of the Ebro, and north to various locations in southern Gaul.

According to a tradition from Late Antiquity that is difficult to interpret, the Roman general Pompey

founded *Lugdunum Conuenaarum* while returning from Hispania to Rome to celebrate his victory over Sertorius (72 BC). The text presents the city as the home of “refugees” (*Conuena* = gathered) and brigands that Pompey brought down from the peaks of the Pyrenees, uniting them in a single strengthened city (*oppidum*) (Jerome, *Contra Vigilantium*, ed. Migne, *Patrologie latine*, vol. XXIII, col. 353, 356-7). However, archaeological explorations have failed to uncover the remains of this foundation.

Initially, the city was inhabited by Aquitanian (proto-Basque) speakers that became progressively Romanised. Roman deities dominated the capital: the only Aquitanian god is [*Ilum*]Berris, compared with the seventeen Roman gods, although there were indigenous deities, possibly Aquitanian, in the region around the city. Moreover, the sanctuaries on the summits contain dedications to Basque-Aquitaine gods (*Garrie*, *Ageio*) and Roman gods such as *Iupiter Optimus Maximus* (Esmonde-Cleary, 2007). There are also Gaulic personal names, but the date of their introduction to the city is disputed (Gorrochategui, 2013).

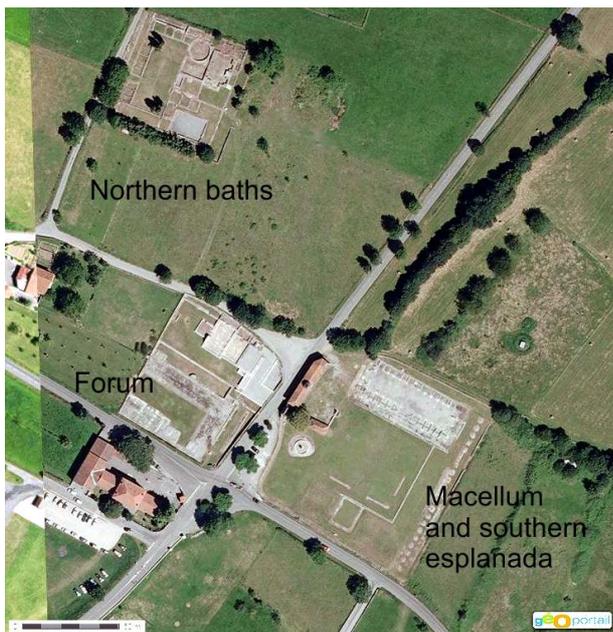


Figure 2. Aerial view of Lugdunum Convenarum and its main public buildings.

The name of the city has mixed origins. Its Latin epithet, *Conuena*, is a translation of the Celtic word *Contrebia* that was given to three Celtic cities in the Ebro valley (C. Belaisca, C. Leukade and C. Carbica). It is a parallel to the Greek word *sunokismos* and fits well with the “mixed” population it contained when it was first founded. The main name, *Lugdunum*, is formed from the name of the Celtic god *Lugus* and the word *dunon*, meaning “height”, “fort” and is a

common place name in ancient Gaul. So at first glance, the name is the only sign of Celtic roots.

*Lugdunum* was profoundly transformed under Augustus. He granted it with Latin rights (Strabo IV 2.1) and two main structures were built under his reign.

Firstly, “The Trophy of Augustus,” built with the finest local marble to commemorate the Augustan victories of Actium (31 BC), Hispania (19 BC), and in rebellious Aquitania. It was found in a very bad state in the SE corner of the forum, although its original position in the city layout is unknown. The monument is of an outstanding quality and was ordered either by Augustus himself, or by local aristocrats friendly to Rome. It was built around the years 13-12 BC. The historical context is that of the organization of the Gallic provinces by August himself (16-13 BC), the inauguration of the pan-Gallic Altar at *Lugdunum* (12 BC), and the momentum of the Augustan ideology and the dedication of the *Ara Pacis* in Rome (10 BC) (Schenck-David, 2003).

Secondly, there is a large paved area with signs of being used for intensive slaughtering (and sacrificial) activity to the south of the market (*macellum*), itself built in the early 20s AD, although the east-west wall and the so-called temple of Hercules are dated to the end of the second century.

To complete the picture, there are two structures that are difficult to date because of digging work carried out in the 1930s. The so-called “forum temple” established in the reign of Tiberius (14-37 AD), is apart to the forum itself, standing back to back with it. Also, the forum dates from Flavian times, but older phases have still not been studied. Finally, the north baths date from the second century replacing a previous building (Esmonde-Cleary, 2007) (fig. 2).

Table I. Buildings measured at Lugdunum Convenarum (latitude 43° 1' N) and at Lugdunum/Laudun (Latitude 44° 7'N). We provide measurements towards the E and W. The columns show the site or structure measured, the azimuth (A) and horizon angular altitude (h) and the calculated astronomical declination (δ). The last column gives the possible astronomical event or date. For details see text.

L Convenarum	A	h	δ	Event
Macellum(E)	118½	4½	-17¼	1 <sup>st</sup> Feb/11 <sup>th</sup> Nov
(W)	298½	3	22½	Summer Solstice?
Forum (E)	121½	3½	-19¾	21 <sup>st</sup> Jan/21 <sup>st</sup> Nov
(W)	301¾	3½	24½	Summer Solstice?
North Baths (E)	110¼	5	-11	20 <sup>th</sup> Feb/22 <sup>nd</sup> Oct
(W)	290¼	3½	17¼	9 <sup>th</sup> May/4 <sup>th</sup> Aug
Fort (E)	74	2½	13¼	26 <sup>th</sup> Apr/17 <sup>th</sup> Aug
(W)	264	3½	-1¾	15 <sup>th</sup> Mar/28 <sup>th</sup> Sep
Pic Saillant	131	6	-23¾	Winter Solstice
Laudun	A	h	δ	Event
Forum (E)	117	½	-18¾	26 <sup>th</sup> Jan/16 <sup>th</sup> Nov
(W)	297	1	19½	18 <sup>th</sup> May/26 <sup>th</sup> Jul

In the case of Laudun, the Roman remains are located at the site called 'Camp de César', at the Lacau plateau some 1.5 km north of the present town of Laudun-l'Ardoise, and close to the Rhône, in a privileged strategic position. The archaeological excavations indicate an occupation of the site since the Iron Age (5<sup>th</sup> century BC), with a possible Gaulic village, until the 6<sup>th</sup> century AD. The Roman town underwent major monumental development in the first centuries AD, including the construction of a Forum and a basilica, indicating a privileged political status. This development apparently continued during late antiquity, as the site has a large number of remains from this period such as a palaeo-Christian basilica and an important number of inhumations (Goury, 1997).

### 3. ARCHEOASTRONOMICAL OBSERVATIONS

We measured the astronomical orientation of the forum, the northern baths, the *macellum* (market) and its sacrificial southern area during a field trip in June 2015 (Table I). To do so, we used two tandems of compass plus clinometer, with an accuracy of  $\frac{1}{2}^\circ$  in the determination of the azimuth and horizon angular altitude. The measurements were corrected for magnetic declination using a triangulation method. This results in an error of about  $\frac{3}{4}^\circ$  in declination.

The dates obtained for the orientations of the forum and the northern baths do not seem to be conclusive. However, the *macellum* seems different.

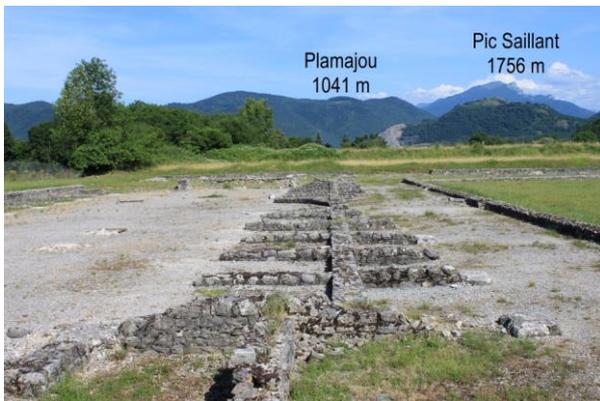


Figure 3. Eastern horizon from the southern side of the *macellum*. On the right is the southern esplanade. Photo: M.V. García Quintela.

As indicated above, this is possibly the oldest extant structure of the Roman city. A huge amount of animal bones (from cattle, sheep and pigs) were found in this area from the Augustan phases of the city, when the main buildings were still made of timber. These could have been associated with some kind of sacrificial activity. The orientation towards 1<sup>st</sup> February obviously recalls the Celtic feast mark-

ing the beginning of spring, and it is important to note that this orientation is not a topographical one, as it is obvious looking towards the east horizon from the *macellum*. Otherwise, they could have used the *Pic Saillant*, a true local landmark, where the winter solstice sunrise occurs (Fig. 3). This orientation must therefore be placed on the Celtic side of the complex and mixed cultural context of the city, together with its Celtic name.

Other structures in the city belong to the different phases of development of the town. It is interesting that the Forum and Forum temple deviate slightly from the orientation of the sacrificial area of the *macellum*. The Forum seems to be oriented towards the west, facing a prominent peak marking the summer solstice sunset.



Figure 4. Western horizon from the forum. Photo: A.C. González-García.

Finally, in Laudun, the *forum* and the adjacent *basilica* seem to be oriented towards the sunrise on dates close to the end of January, perhaps again in connection with a Celtic feast marking the start of the season.

### 4. CONTEXT

Figure 1 shows the Roman city grids and *oppida* measured in Gaul. Of course a great deal of work still has to be done, as the sample is by no means representative. We still cannot estimate the number of measurable *oppida*, and the nine hundred or so Gaulish and Galo-Roman sanctuaries (of course not all measurable) will be the subject of a separate study (Fauduet 2010).

In Table II we show the Roman city layouts measured to date in Ancient Gaul. It is interesting to note that despite the restricted sample, three patterns can be identified.

1. A pattern of cardinal or "equinoctial" layouts (orange cells in Table II). This fits very well with Roman and Mediterranean models, although we also suspect a strong Gaulish pre-

edent based on the orientation of some Gaulish-Roman temples.

2. A solstitial pattern (blue cells). This is well known in Italy and Spain (González-García and Magli, 2014, González-García *et al.*, 2014), and some other cities which have only been studied using maps appear to have this same orientation.

Then there is the unique case of *Augusta Treverorum*, with its “war season” orientation (Espinosa-Espinosa *et al.* this volume). The third pattern is composed of:

3. Roman cities oriented towards the Celtic start of the seasons (green), conventionally set at the 1<sup>st</sup> November, 1<sup>st</sup> February, 1<sup>st</sup> May, and 1<sup>st</sup> August.

In the case of this third group, we can highlight three situations.

1. The 1<sup>st</sup> February orientations of *Lugdunum Conuennarum* and *Laudun* fit with the Roman cities oriented towards the east horizon sunrise on dates related to Celtic Festivals.
2. We have found similar orientations in Roman cities in Spain (González-García *et al.*, 2014), but also, and more importantly, in Iron Age settlements and sanctuaries in Celtic Spain and Gaul (García Quintela *et al.* 2014; García Quintela and González-García 2010; García Quintela and González-García 2016). We do not know the reason behind choosing one date or another.
3. The only three ancient *Lugdunum* place names with consistent, measurable Roman public buildings and layouts are oriented towards the start-of-season feasts. *Lugdunum/Laudun* seems to be a more complex case as, perhaps, the western orientation must be considered, as it is emphasised by a local *oratorium* dedicated to St. Pierre aux Liens, whose feast is on 1<sup>st</sup> August (Alegre, 1866; Goury, 1997).

## 5. CONCLUSIONS

We previously referred to the debate that has lasted for more than a century in French academy between d'Arbois de Jubainville and Camille Jullian, and a series of followers in each side. The key issue was the use of medieval Irish examples introduced by d'Arbois to explain situations in continental antiquity, and in particular the celebration of 1<sup>st</sup> August in *Lugdunum*, compared to the Irish *Lugnasad*. On the contrary, the "Romanists" led by Jullian argued that the Irish and Welsh situations are remote in time, in space and in the social-historical context known in antiquity, and even more so since the triumph of Rome (García Quintela and González-García, 2014).

But now, the Roman Cities of Gaul and Hispania with orientations (and names) related to the Celtic culture suggest seeing things in a different light. The question is not to indicate that, with the help of archaeoastronomical measurements, the debate falls on the side of d'Arbois. Instead, we are seeking a deeper understanding of the historical process of building a new order of time. In this sense, it seems reasonable to raise a hypothesis that will need to be verified with further studies.

If we consider the situation in Ireland in Late Antiquity, the calendar was most probably luni-solar (Loth, 1904), so the dates of the festivities marking the start of the seasons do not correspond to a fixed day on the Julian calendar. This calendar arrived in Ireland together with Christianity, which had endorsed the calendar of the Roman Empire. Under these conditions, the process of setting the dates of these holidays in Ireland was a result of supplanting a lunisolar calendar in a Christian context (McCluskey, 1989).

**Table II. Orientation of Roman cities in Gaul and adjacent areas. The first column shows the city according to the following coding: 1 Colonia. 2 Augusta Treverorum. 3 Petrisberg. 4 Augusta Raurica<sup>1</sup>. 5 Augustodunum. 6 Augustonemeton. 7 Lugdunum/Lyon. 8 Vesunna. 9 Lugdunum/Laudun. 10 Lugdunum Convenarum. 11 Narbo Martius. 12 Ruscino. The second column shows the latitude, and the following columns the azimuth (E and W), altitude of the horizon (b indicated a blocked horizon) and the corresponding dates (for blocked horizons the date has been computed assuming h=1°).**

city	φ	A	h	Dates E	Date W
1	50.93	90½	0½	20/3-24-9	
		270½	b		22/3-21-9
2	49.75	106	4½	3/3-11/10	
		286	5½		3/5-10/8
3	49.75	131	1¾	SS	
		311	1¼		-----
4	47.5	52	1¾	-----	
		232	2¾		WS
5	47.00	54½	1	SS	
		234½	b		WS?
6	45.75	90¾	1	20/3-23/9	
		270¾	4¼		30/3-14/9
7	45.75	63	0½	14/5-30/7	
		243	b		29/1-13/11
8	45.17	90	3	25/3-18/9	
		270	b		22/3-22/9
9	44.12	117	0½	26/1-16-11	
		297	1		18/5-26/7
10	43.00	118½	4½	1/2-11/11	
		298½	3		SS?
11	43.18	113½	1½	5/2-6/11	
		293½	b		9/5-4/8
12	42.70	90¾	0	16/3-27/9	
		270¾	4¼		30/3-13/9

<sup>1</sup> Bertarione and Magli, 2015; confirmed by G. Magli personal communication.

However, we have observed in Gaul (and Hispania) the clear solar orientation of several public buildings towards the sunrise on dates close to the beginning of the seasonal feasts known in medieval Ireland. This invites us to consider that the transition from the (Celtic) calendrical forms and traditional festivals to a Roman system occurred precisely in Gaul from 46 BC and the reign of Augustus, when the solar calendar was implanted in the empire.

An additional hypothesis is that this Gallo-Roman calendrical adjustment was then taken to Ireland from Gaul by the first Christians, and later, and in a more decisive way, from Britain (Charles-Edwards, 2010).

Therefore, when 19<sup>th</sup> century scholars compared Irish and continental calendrical events, they actual-

ly reversed the religious-cultural route which we have presented as a hypothesis. Instead, we suggest that this process began between *Bibracte*, *Augustodunum* and *Lugdunum* (Lyon), from where it spread to other cities in Gaul, then on to Britain under Roman rule, and finally to Ireland with the arrival of Christianity.

In order to confirm or refute this hypothesis, it will be necessary to implement a thorough, interdisciplinary research programme on archaeoastronomy and astronomy in culture, with three complementary goals: 1. To expand the sample of cases studied in Gaul; 2. To consider whether the process in Hispania is autonomous, or if it spread from Gaul; and 3. To include Britain in the investigation.

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