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THE GUNDESTRUP CAULDRON: IS THIS THE KEY TO THE ENIGMA?

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ABSTRACT

The Gundestrup cauldron is one of the most emblematic and studied archaeological relics of the Celtic world but also one of the most mysterious.
Observation of the night sky, the symbolism of the cauldron and of numbers five and eight, traces of an Indo-European base-ten computation, the antiquity of the octaeteric calendar system, all suggest a new interpretation of the Gundestrup cauldron, based on the cycle of Venus.
The five inner plates would each respectively represent the structure of time, as it appears in a computation close to that of the « octaeteris », rhythmed by the synodic cycle of the planet Venus, of the Moon and of the Sun. As for the eight outer plates, as Paul Verdier had suggested, they would represent astronomical events, or in other words, the dates or the periods associated with the appearance-disappearance of celestial object(s) or constellation(s). We particularly underline the importance of the male and female arm movements seen on the different plates. The shining hands of the divinities would rise just like the diurnal body (the Sun) or the nocturnal body (Venus), rising at dawn and in return setting at twilight. The figures associated with the Deities would evoke the constellations they represent, at times under, or, at other times, just above the horizon or sometimes higher up in the night sky. So each motif would recall nocturnal celestial events, observed at dawn or at twilight, corresponding to the heliacal rising or setting of the constellations detected. The two plates portraying the female divinity, her arms folded away under her shoulder line recalling the earthly horizon, would evoke the disappearance of Venus below the horizon, each of these two plates corresponding to the two periods during which the planet is not visible.

KEYWORDS: Gundestrup cauldron, astronomy, calendar, Venus, octaeteris.

1. INTRODUCTION

The Gundestrup cauldron is one of the most emblematic archaeological testimonies of the Celtic world. It was discovered in 1891 (eighteen ninety-one) in a peat bog in Gundestrup in Denmark.

The cauldron is traditionally estimated to date from the first or second century before Christ. However, its precise dating is still to be determined (Nielsen, 2005). Its geographical origin is also subject to debate (Berquist et al., 1987 ; Kaul and al., 1991 ; Taylor, 1992 ; Nielsen, 2005). To all evidence the Gundestrup cauldron is a highly sacred relic. It is made of pure silver. The outer plates each portray a male or a female bust. The five inner plates depict scenes of figures surrounded by animals, some of which are mythical. The numbers eight and five, corresponding to the eight outer plates and the five inner plates have oriented our research in the direction of Venus.

Five synodic cycles of Venus and eight solar years do indeed correspond to an almost identical number of days, and to the number of days in ninety-nine lunar months.

Figure 1. The Gundestrup cauldron

This coincidence is the origin of the calendar system known since Antiquity as the octaeteric cycle[1]. Apparently this eight year's calendar left traces particularly in Greece, Crete, Armenia, Albania, Lithuania, and even as far away as in China, among the Yi people (Broutian, 1997 ; Gregoraides, 2009 ; Kalinowski, 1986 ; Straižys, 1997 ; Maumené, 2012 ; Panagiotes and al., 2008 ; Weibao, 1996 ; Weibao, 1997 ; Weibao and al., 2010).

The imagery depicted on the cauldron possibly enabled memorization of time structure and certain key dates, thanks to representations of the night sky (Verdier, 1998 ; Goudineau et al.,2006).

The five inner plates would materialize the elements of a calendar close to the octaeteris, in rhythm with the cycle of Venus, the Moon and the Sun. The eight outer plates would represent astronomical events, dates or periods, matching the appearance or the disappearance of remarkable celestial objects.

2. THE FIVE INNER PLATES

On Figure 2, we suggest each horse rider represents the four seasons of the Celtic year, each season presided over by one of the four opening festivals, Beltane, Lughnasadh, Samain and Imbolc.

The horsemen are linked two by two, each group composing one of the two light and dark halves of the Celtic year, just as, for example, they appear in the Coligny calendar. The rider leading the procession, wearing a bird crest, might symbolize the Beltane festival, since it takes place in the nesting season and is also when the migratory birds return[2]. The second rider's helmet, crested with a boar, could represent Lughnasadh. Many common features link the boar and Lugh, the Celtic god. We are tempted to associate the third rider's helmet bristling with horns with Cernunnos and the Samain festival. The last rider wears a mysterious helmet. Traditional Irish folklore mentions the making of a belt on the date of Imbolc, using a braided straw rope through which the cattle and the family members were made to pass (Le Roux and al., 1995). It is tempting to compare this with the thing above the helmet with its semi-circular profile and braided aspect. If the four horsemen represent the Celtic festivals and the seasons they preside over, we think the legs and the fore and rear parts of the riders could possibly represent the three lunar months of each season, and symbolize the twelve lunar months of the year.

Figure 2. The four seasons of the Celtic year

[1] Octaeteris » was described by the Greek astronomer Cleostratus (around 548 to 432 BC).

[2] This association of the cavaliers and the four seasons is reinforced by the décor engraved on a bronze sword case from Hallstatt (Naturhistorisches Museum Vienne), also portraying the four cavaliers and the procession of foot-soldiers associated with an eight-spoke wheel.

The foot-soldiers are seen to represent the eleven days required to synchronize the Moon and the Sun. A year consists in fact of 12 synodic moons + 11 days. The ground level indicated by the frieze of vegetation would represent the boundary between the terrestrial and the underworld from which the eleven foot-soldiers come, resuscitated here by the Dagda[3] (who acts here as a regulator of time). Naturally the dog, generally considered to be a chtonic animal belonging to the warrior class, finds its place in the underworld. The last foot-soldier carrying a sword on his shoulder and wearing a boar for crest could mark the end of the season of Lugh. He is followed by three foot-soldiers whose battle cry, amplified by their carnyx, seems to emerge from the underground world into the world above. They could possibly represent the three nights of Samain, marking the end of the battle season.

2.1.1. The goddess with five animals

Figure 3 represents a goddess surrounded by five animals, two elephants, a wolf and two griffins, and also two rosettes with six petals which probably stand for the twelve lunar months[4]. This divinity would represent the moon. She is crossing her arms. The gestural language of the various figures is one of the mysteries of the Gundestrup cauldron. The arms raised would, we think, be the sign of the rising and setting of the celestial body each figure represents. The gilding of their hands and of the upper part of their arms reinforces the idea of a symbolic astral associated with the arms. If, respecting the tradition, we place the deities in the North of the world, the East is on the right and the West on the left side of the observer.

Figure 3. The moon with five animals or the dark season

Supposing the shoulder line corresponds to the horizon, the moon would not be rising at this point. So we would be in the new moon period, the ideal phase to symbolize the dark season. The five animals would represent five of the months of a ten month year[5], or half a year, that is to say, the dark season placed under the sign of the moon. In the Yi calendar, the ten months of the year are each represented by an animal. Other antique calendars present a monthly code in animal forms. Françoise Bader demonstrates the use of animals in Antiquity, as a coding, designating the calendar months[6].

2.1.2. The god with five animals

Obviously this plate (figure 4) forms a pair with the preceding one. Here we would be in presence of a representation of the light season. The five animals would represent the other five months. The central figure, depicted as a bust, both arms raised[7], would

[3] The Dagda is indeed the « governor of time », « guarantor of fertility and of earthly replenishment». His height is colossal (Rabelais will name him Gargantua) and among his attributes is the cauldron of abundance, of immortality and resurrection. He is the great Lord of the elements, of the cosmos and of time, the first of the Druids, assimilated with the sun in his diurnal aspect. He perceives all things within the circle of his course. He reigns over the living and the dead, he is the master of heaven and of the underground world.

[4] Taylor T. 1992 : p.84-89 followed by De Gourcuff (to be published) have pointed out the connection of this illustration to that of the Indian Goddess Lakshmi, likewise surrounded by two elephants and two Lotus flowers, counterparts of the two rosettes of plate C6573. Indian astrology assimilates Lakshmi and the planet Venus.

[5] Some calendar vestiges suggest the existence of an ancient computation containing ten months, in some cases of 36 days, sometimes assembled in pairs, forming five seasons per year. Indeed, the Etruscan, Roman, Armenian and Lithuanian calendars take into account 10 months of 30 or 31 days, then add a period of 2 months to terminate the calculation. This period could correspond to a period outside time as it appears in the Indo-Nepalese calendar system (the latter accounting for 12 lunar months of which 2 have no spatiotemporal correspondence, being considered outside time). On their side the Greek, Minœn and Yi calendar systems account for 10 months of 36 days. An intercalation allows for adjustment of time following the solar cycle, inserting respectively 5 or 6 days per year (or 21 days every four years).
The year is cut into 2 halves in the antique Roman calendar system, as in the Yi and Indo-Nepalese calendars, as well as in the Celtic calendar of Coligny. These calendar systems sometimes join the months in groups of two. Most of the time they are the product of Indo-European cultures: Roman, Lithuanian, Armenian, Greek, and Minoan, Indo-Nepalese, and also Yi or Etruscan. In current everyday language we still recollect a ten month calendar, not just because the name December means the tenth, but also in current expressions such as «every thirty-sixth day of the month », or « to see thirty-six candles », referring perhaps to the length of a month which has disappeared.

[6] Bader, F. 1997, p. 490-515.

[7] This representation of divine busts and gestural coding seem to be echoed in a bronze pendant recently discovered in the tomb of a woman, buried in a Celtic necropolis, representing a stylized figure identified as Lugh by Daniel Gricourt and Dominique Hollard. The deity is recognizable due to his lyre-shaped legs (image linked to a solar divinity) and by his head in the form of a ring

be an avatar of the sun. The two arms lifted would signify it rises in the East in the morning and sets in the West in the evening. The portion of a wheel would evoke the half-year period and its eventual division into eight sub-period.

Figure 4. The sun with five animals or the clear season

2.1.3. Cernunnos and the eight seasons

This plate (figure 5) is probably one of the Gundestrup cauldron's most enigmatic elements. We consider it can be understood with reference to the cycle of Venus and to the octaeteric cycle. Cernunnos is surrounded by eight animals. They would represent eight seasons of 72 or 73 days forming the complete Venus cycle of 584 days. Or they might represent even more simply the eight years of the octaeteric cycle[8].

Figure 5. Cernunnos and the eight seasons

2.1.4. The sacrifice of the bull

We suggest seeing in figure 6, the constellation of the Bull, well known to the people of Antiquity, and also the Lesser and the Greater Dog, as well as Orion the warrior. All these constellations are indeed present in the same part of the sky and are close to one another. The scene would depict the sacrifice of the bull. Our hypothesis is that the three bull sacrifices were associated with the insertion of three embolismic months, based on the octaeteric cycle.

Figure 6. The sacrifice of the bull

3. THE EIGHT OUTER PLATES.

3.1. The feminine deities.

The goddess with her right arm raised is holding a bird which looks like a dove, known to be an attribute of Aphrodite and Astarte. So the central deity could represent the planet Venus, which is clearly associated with these deities.

On the left side, a figure corresponding to a counterpart of the central divinity (the same hairstyle, braids, and torque) could be a second representation of the goddess. From an astronomical viewpoint, seated on the shoulder of the divinity, we would symbolically attend to the rising of the planet Venus, to its first appearance in the evening sky.

The shoulders of the goddess would represent the earthly horizon. The two dogs would respectively represent the Lesser Dog (*Canis Minor*) and the Greater Dog (*Canis Major*), lying under the earthly horizon in a position evoking that of a dead dog.

Figure 7. The goddess Venus

The figure lying on the right, also dead, would represent Orion, also concealed under the horizon, so belonging to the world of the dead. On the right another feminine figure, identical to the figure on the left, is standing as if suspended in the air, braiding the hair of the goddess. The only reference known relating to hair in the sky brings us back to Berenice.

(heliacal aspect). The arms are held aloft, the same attitude as the figures of the cauldron (Gricourt D. et Hollard D., 2005, p. 37).

[8] It is also possible to see in them a sort of interlocking of the 8 days, allowing for adjustment of the 8 seasons of 72 days each to the length of the Venusian cycle (8x72+8=584). Alternatively, the 8 animals could be interpreted as the 8 divisions of the Celtic year, equinoxes and solstices, intersected by the 4 Celtic festivals, Beltane, Lughnasadh, Samain and Imbolc.

She would have sacrificed her hair to Aphrodite. Her hair was reflected in the sky in the form of a group of seven stars, an identical number to that of the braids illustrated on this plate[9]. This scene could recall, from an astronomical viewpoint, Venus and Berenice's hair at the precise moment when the planet and the constellation are visible in the East prior to the break of dawn, at the same level above the horizon.

In short, the remaining feminine plates represent the goddess with her arms crossed. The arms folded under the shoulder line would evoke the disappearance of Venus under the horizon, during the periods of conjunction (inferior and superior) of the planet with the sun.

Figure 8. Venus arms almost crossed (inferior conjunction)

Her tightly closed mouth and slightly swollen cheeks suggest the divinity could be immersed.

The surface of the water would be materialized by the dots ; the waves on top of the image and the liquid element, by the underlying stippled line.

Astronomically, Venus, during the inferior conjunction disappears from the evening sky (under the horizon, possibly in the sea) then reappears in the morning sky – after eight or nine days. So the plate would portray the passage from one spouse to another, from an extremely hirsute so necessarily aging god corresponding to the evening sun, to a youthful smooth-skinned divinity, image of the morning sun. This celestial marital alternation is echoed in mythology (Gricourt and al, 2009).

The following plate (figure 9), also represents the same feminine divinity with her arms folded, or rather crossed. So this plate could depict the second period of the conjunction (the superior conjunction) of Venus, longer than the preceding one. Her arms, this time are totally crossed. It is worthy to notice that the two nipples of the deity are not visible on those two plates, indicating possibly that the planet is not visible, neither in the east, neither in the west

On left side, on the right shoulder of the goddess, in the West, a man is wrestling with a lion. The scene specifically recalls certain Greek representations of Hercules wrestling bare-handed with the lion of Nemea[10]. The group would logically have been codified as a celestial event connected to the constellation of the Lion, probably during its last appearance in the evening sky.

Figure 9. Venus arms fully crossed (superior conjunction)

In the East, on the left shoulder of the divinity, another figure is to be seen, similar to the one depicted in the scene of the bull sacrifice, except that he is unarmed. He is Orion again. The group could mark the date of the heliacal rising of Orion, and more specifically of Betelgeuse (the left shoulder), the brightest star in the constellation.

3.2. *The masculine deities*

The masculine deities represent the sun in the different phases of its cycle[11].

3.2.1. The dragon God

The scene is mysterious, the monsters in the hands of the god can be described as winged serpents with horses heads and wings. Possibly in the Greek records the image recalls Ladon, the fantastic reptile sent by Hera to look after the apples in the garden of the Hesperides. This suggestion is

[9] Four braids on the left side and three on the right side, becoming four.

[10] As for example, a terracotta amphora dated 540 BC, housed in Rouen, inventory n° 538.1(A) ; 9820030 Rouen (n° Charbonneaux Centre).

[11] On examining the four masculine plates, both a match and a chronology can be detected. The plates representing the god with a torque would form a pair, the chronology within each pair would result from the pilosity. In figure 10, the beard is at its beginning and the moustache is absent, indicating that this is the first plate, following a chronological order. It is followed by figure 11 in which the pilosity is more developed.
In the two following plates the torque is absent (or eventually hidden), and the pilosity is well developed, organised, in the form of harmoniously tidy locks. The order could be as follows : figure 12 then 13 based on the number of strands in the beard.

backed up by the presence in the same plate of a hideous two-headed dog (in the bottom of the image), possibly representing Orthos, the bicephalous dog of Hades, conceived like Ladon by Typhon and Echidna. The figure whose legs are separated from his body remains mysterious. As far as we know, only Soslan in Ossetian mythology, is seen to be mutilated like this, not by a hideous dog, but by a magic wheel.

Figure 10. The dragon God

The star ϒ of the Dragon, the brightest, known to the Greeks as the Dragon star, is situated on the head of the monster. At times in the East, at others in the West, the Dragon is always visible above the horizon. The constellation Draco (Serpens) circles the celestial pole, which, according to the conviction of the Indo-Europeans, is held up by the cosmic tree. In plate (figure 10), the Dragon is represented in the East and in the West, overpowered by the divinity, far above the horizon, so without any reference either to a heliacal rising or setting. Like the group of stars and constellations close to the pole, the Dragon's stars never disappear below the horizon. Perhaps one should interpret in this manner the organization of the scene, where the Dragon seems to be captured above the horizon?

3.2.2. The God with a unicorn

Figure 11, represents, the same divinity, slightly older. On his left is a figure similar to the one on the central plate: with the same clothing, the same hairstyle and the same kneeling position. On this plate the figure is unarmed. It could concern a representation of Orion. As for the little figure on the shoulder of the God, it looks like a unicorn. The Indian donkey, said by Ctesias to be a unicorn, (or monoceros), already belonged to the realm of the imagination of the people of Antiquity in Persia as well as in India. It does not belong to the repertoire of Ptolemy. Joseph Juste Scaliger, a great French erudite of the XVIth century mentions the presence of a unicorn in a celestial sphere of Persian origin. When examining a map of the night sky, this constellation is situated immediately on the East of Orion. If accepted that there are representations of the sky in the plates of the cauldron, then the constellation of the Unicorn would be known since Antiquity, and would be illustrated on the cauldron, beside other images of the sky.

On the left of the deity we again find a figure we believe to be the Herdsman. This interpretation ensues from the examination of Figure 12 (see below) where the same figure appears, brandishing a wild boar at the end of his arm. This boar is interpreted as a representation of the Great Bear. The brightest star of the constellation of the Herdsman is called Arcturus (α Boötis). It is the guardian of the bear and is situated in the prolongation of the Great Bear's « tail ».

Figure 11. The God with a unicorn

3.2.3. The God with a boar

The quadruped brandished at the end of the arm of the figure, also lifted up by the divinity, is most certainly a wild boar, recognizable due to its dorsal mane. Indeed, the European boar has short, woolly fur, mixed with bristles, forming a mane along its spine. Numerous Celtic representations of the boar depict this same characteristic feature on the back of the animal. So the resemblance between the crest of the cavalier and the foot soldier of plate figure 2 leads to recognition of the same animal.

The boar is associated among the Celts with the sacerdotal class and with the God Lugh, as well as with the warrior class. Its presence on Gallic coins, together with a circle with a globe in its middle and 7 other globular clusters linked together by an arc has made it possible to relate the boar to the constellation of the Great Bear. The figure holding the boar at arm's length could then indeed be the Herdsman, accompanied by the Great Bear. Astronomically both constellations are in the exact spatial configuration depicted by the plate of the cauldron.

Figure 12. The God with a boar

The Herdsman seems to follow the Great Bear in the sky. The two animals on either side of the central divinity might respectively represent the heliacal rising of Pegasus (α Pegasus) and the heliacal setting of the Greater Dog (Sirius), respectively corresponding to the beginning of February (the 3rd) and the end of April (April 28 to 30).

3.2.4. The God with stags

Here, the divinity seems to be the oldest one. She is holding a deer in each hand, by its back legs. In Greece, the sacrifices of deer and hunts carried out in honour of Artemis took place in the ninth Attic month Elaphebolion corresponding to the period from mid-February to mid- March, moulting period of their antlers by all cervids. In the Coligny calendar the name usually said to correspond to the tenth month Elembiu, contains the Indo-European root for the deer, elen-(bho-) in Greek elaphos (elnbhos).
The stag (figure 13) recalls a constellation of the Stag, of which very little traces are left. Indeed Ptolemy does not mention it, but it is present in Roman and Mesopotamian Antiquity. It is mentioned by Firmicus Maternus, a Latin writer of the fourth century AD, who situates it on the North constellation of Pisces. In Mesopotamia, the constellation of the Stag was assimilated to the oriental part of Andromeda, specifically to α Andromeda. In both examples this means we are in the square of Pegasus, North of Pisces. If α Andromeda is used as reference point, its heliacal rising takes place towards the beginning of February (February 3 to 5) and its setting in the beginning of March (March 5 to 7). But the stags appear on a stippled setting, identical to the one around the goddess with her arms crossed. Perhaps in this representation, the period of invisibility of the Stag, rather than the period separating its rising and heliacal setting is to be perceived?

Figure 13. The God with stags

4. THE CENTRAL PLATE OF THE BULL

Figure 14. The central plate of the bull and the hermaphrodite warrior

The base plate would represent the region of the sky assembling the Bull, Orion and his Dogs. One of the most enigmatic elements is certainly the sex of the warrior. Indeed he seems to have a bosom, making him a woman warrior, a sort of Amazon. Astronomically, following the thread of a Venusian presence associated with the cauldron, the scene could correspond to the conjunction between Venus and the constellation of Orion, a kind of feminization of the hero, merging the bodies into a hermaphroditic form. This particular celestial event takes place every eight years. So it could have been used as a point of reference, setting off the ritual ceremonies associated with the change of the calendar cycle.

5. CONCLUSION

The precise meaning of certain images of the Gundestrup cauldron still remains unsolved. But the main signification of the vessel has been partially revealed to us.

It is a commemoration of the order of the universe. Its commissioners were most probably well-informed observers of the sky. The most ancient astronomical text we have available is a list of observations of the movements of the planet Venus, particularly important in Mesopotamia, being identified with the goddess « Inanna « (Ishtar), more than 1600

years BC. In parallel, many myths, above all Mesopotamian, have incorporated astronomical contents. Given the limited distances combined with the trade routes over the Mediterranean Sea, such observations were certainly shared by all the astronomical scholars around the Mediterranean coast and doubtless even beyond. Traces of this knowledge (lost deliberately or not) remain to be discovered. As for the cauldron, it invites us to reconsider the place and perhaps the identity of some of our feminine deities (Sirona, Rhiannon, Epona, and Rigani) or even that of certain fairies of medieval literature, and above all, Melusine. By proposing a new interpretation of our heritage, we hope to have helped towards the opening path of further new research. Remember that the most ancient astronomical text available is a list of observations of the movements of the planet Venus, more than 3600 years ago. So the incorporation of astronomical knowledge linked to that planet into an object made probably on the shores of the Black Sea during the first centuries before Christ would not be at all improbable.

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