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*Quis dubitet hominem
coniungere caelo?*

a cura di
Elio Antonello

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New evidences of solstice alignments of prehistoric sites in Western Sicily

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Abstract. Following the reports of local scholars, we verified the presence of possible solstice hierophanies in two prehistoric caves sited in Western Sicily. The first one is the so-called “Grotta di Polifemo”, located near the city of Trapani, on the coast of the territory of Erice. On the left half of this cave, is a pictogram in red ocher, representing a sort of labyrinth, discovered in 1986 and dated by the archaeologist Sebastiano Tusa to 3000 BC. It consists of six concentric and roughly elliptical volutes, for a maximum diameter of 30 cm. On June 21st 2016, we verified that, less than a minute before sunset, the Sun, overlooking the rocky ridge located on line of sight connecting the cave to the sea horizon, directly illuminates the pictogram. The second site that we have examined is the “Grotta dei Cavalli”, at a short distance from Cala Mancina in San Vito lo Capo municipality. The material found in the cave dates the use of the site to the Final Eneolithic. In this cave, a pictorial complex consisting of several elements painted in red has been identified in an interior room. One of these pictograms seems to indicate a solar symbol. An inspection carried out on June 21st 2017 has indeed shown that at the precise time when the Sun is about to set, its red light, that penetrates into the cave to a depth of about 78 meters, illuminates the pictogram that we had supposed to represent the Sun. Furthermore, at the same time when the Sun touches this pictogram, it also illuminates a sort of basin artificially carved on the rock, near which there are numerous cupmarks. These evidences suggest the significance (cosmological as well as practical/calendrical) of the solstitial directions since very ancient times in Western Sicily.

1. The Polyphemus Cave

The so-called “Grotta di Polifemo” (“Polyphemus Cave”, 38°03’56.63”N 12°34’59.76”E, see Figure 1) is located near the city of Trapani, on the coast of the territory of Erice, right next to the more famous and easily

accessible prehistoric site of the much larger Emiliana Cave, at a height of about fifty meters above sea level. This last site shows a frequentation from Paleolithic until modern times (Chilardi et al. 2012). Tough some sparse traces of lithic industry have been found there, the Cave of Polyphemus is definitely too small to have been used for inhabitation and it was probably frequented for a different purpose in Prehistory, while it was not used later.

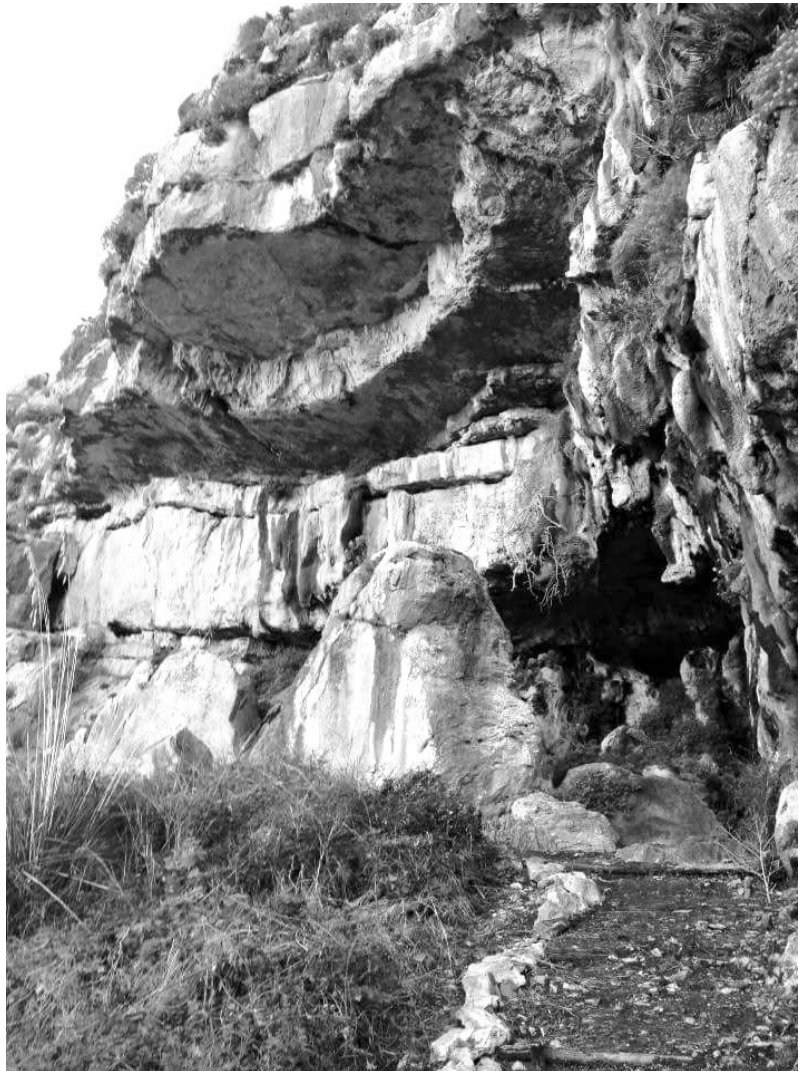


Fig. 1. The Polyphemus Cave entrance.

The cave is divided in two rooms, separated from each other by a stalagmite, connected to the ceiling as a pillar. Various and diverse rock formations are present in its interior (Figure 2). The raised space constituted by the left half of the cave, about seven meters deep, has a sloping bottom and a fairly low ceiling. On it, at a height of 1.30 m, is a pictogram in red ocher, representing a sort of labyrinth, discovered in 1986 and dated by the archaeologist S. Tusa (1990) to 3000 BC (Figure 3). It

consists of six concentric and roughly elliptical volutes, for a maximum diameter of 30 cm. On the ceiling, near to the labyrinth, one can recognize a possible human figure, the faded traces of other figures and several red spots that some scholars have speculated to be stars or constellations (Pavat 2013).

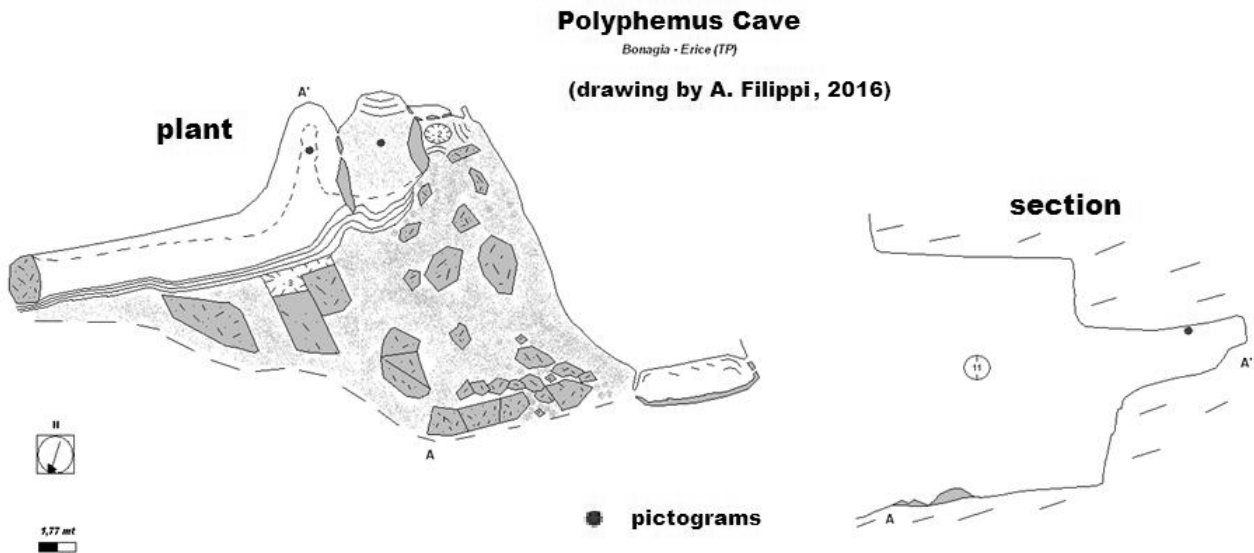


Fig. 2. Plan and section of the Polyphemus Cave (from Filippi 2014, *revised*)



Fig. 3. The pictograms in the Polyphemus Cave.



Fig. 4. The sea horizon seen from the Polyphemos Cave entrance.



Fig. 5. *Left:* The Sun, near to the sunset of the summer solstice, seen from the inside of the Polyphemos Cave. *Right:* The last Sun rays at the summer solstice light the pictograms.

Having been informed by local scholars that around the summer solstice spectacular lighting effects occurred in the cave, we obtained in February 2016 on-field instrumental measurements of the cave entrance orientation.

Being the entrance to the cave oriented towards the sea horizon (Figure 4), the azimuth only is enough to define its orientation. Measurements were performed by a Silva laser compass. Data were corrected for the magnetic declination by measuring the magnetic azimuth of the shadow of a vertical ranging rod, placed 10 m away from the observer at local noon: a magnetic declination of $2^{\circ} 40'E \pm 20'$ was measured, in good agreement with the NOAA WMM model¹ value ($2^{\circ} 42'E$). As an average of 10 measurements, a geographic azimuth of $301^{\circ} \pm 0.5^{\circ}$ was obtained for the line of sight from the labyrinth pictogram to the western edge of the cave entrance, just below a rocky outcrop that juts out into the distant shoreline.

On June 2016, we verified that, because of this orientation, in the days around the summer solstice the rays of the setting Sun penetrate into the cave with spectacular effects. In fact, the left part of the cave (where there are the labyrinth and other pictograms) is illuminated at the sunset by yellow sunlight for several days before and after the solstice. However, only during the three days at the turn of the summer solstice the Sun, just before setting, it can slightly exceed the low rocky outcrop in the background, directly lighting the labyrinth pictogram for a few minutes (Figure 5). Of course, this alignment of the line of sight from the labyrinth pictogram to the summer solstice sunset can be random. However, this spectacular hierophany was surely noticed by the ancient inhabitants of the nearby Emiliana Cave, who, possibly, gave a sacred value to the Cave of Polyphemus, and, after having painted the image of the labyrinth in the right place, the human figure (perhaps a Mother Goddess) and other symbolic figures, performed there their solar rites at the summer solstice.

2. The Grotta dei Cavalli

The second site that we have examined is the “Grotta dei Cavalli” (Cave of the Horses; $38^{\circ} 04' 04.9''$ N, $12^{\circ} 43' 12.4''$ E) at a short distance from Cala Mancina in San Vito lo Capo municipality (Figure 6). The «Grotta dei Cavalli» is much wider than the «Grotta di Polifemo», but its entrance is again open towards the sea horizon (Figure 7). The cave was frequented since the Mesolithic: traces of two hearths, one over the other, have been found, dated by ¹⁴C to 8248 ± 38 BP. However, a pictorial complex consisting of several elements painted in red has been identified in an

¹ NOAA, *Magnetic Field Calculators*, <http://www.ngdc.noaa.gov/geomag-web/> Accessed on 23 Oct. 2016.

interior room at the end of the cave (Tusa 1990). These pictograms have been surely dated by Tusa (1992) to the Eneolithic/Early Bronze Age.

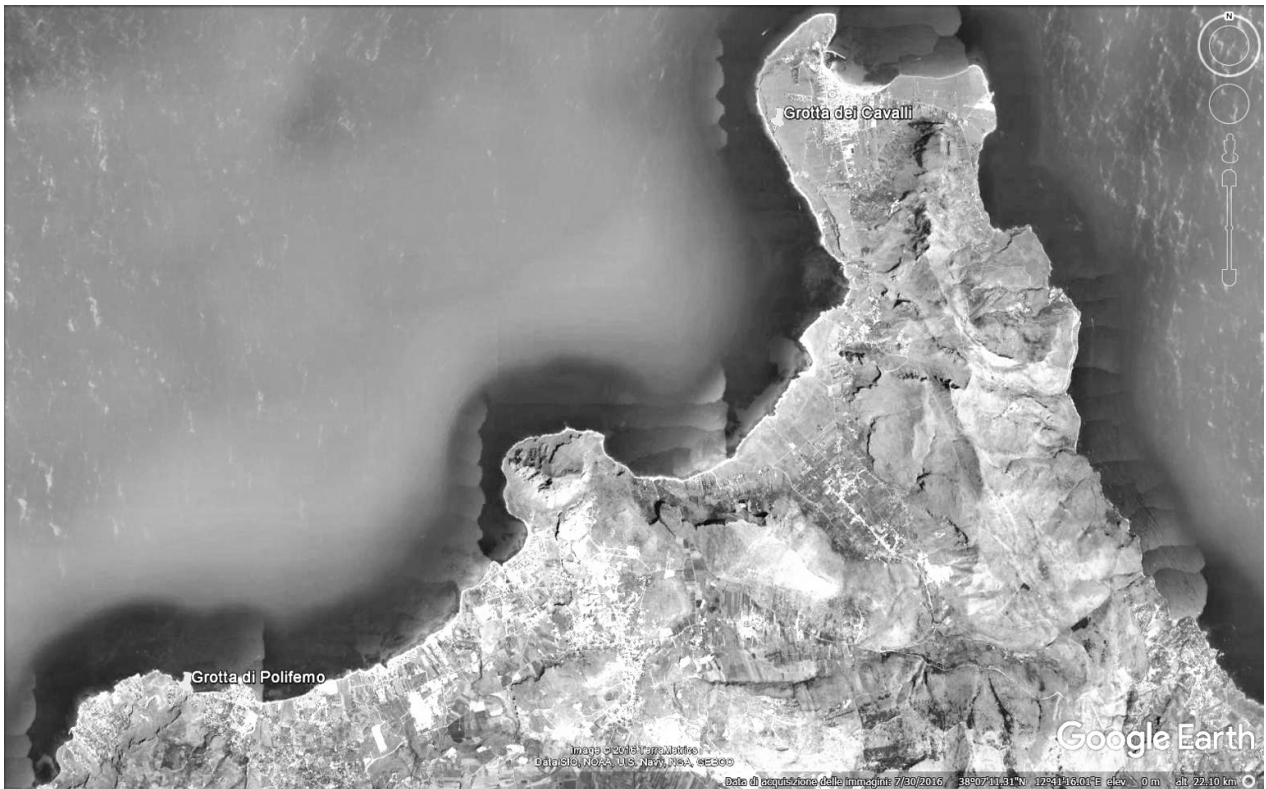


Fig. 6. Google Earth image of the area of Grotta di Polifemo and Grotta dei Cavalli.



Fig. 7. The sea horizon seen from the entrance of the Grotta dei Cavalli.

Two main groups of drawings are placed on the right wall of the cavity. The first, larger group consists of complex abstract linear forms (ellipsoidal, concentric circles, sinusoidal and sinuous pairs of parallel wavy lines). The second group includes some anthropomorphic, filiform figures, some of which are in the shape of double trident.



Fig. 8. The pictogram possibly identified as a solar symbol.

One of the pictograms of the first group (Figure 8), two concentric circles between which a set of points is drawn and from the outermost of which a radial pattern of short straight lines starts, seems to strongly indicate a solar symbol. Near to the pictograms, a number of deep cupmarks were carved, further proving the sacredness of the cave. Our measurements, performed on February 2016, with the same instrumental set-up described in the previous paragraph, have shown that the line of sight, connecting the previously described pictogram with the left edge of the entrance of the cave and the sea horizon, corresponds to an azimuth of $308^{\circ}\pm 1^{\circ}$. This direction coincides with the azimuth of the setting sun on the astronomical horizon at summer solstice. An inspection carried out on June 21st 2017 has indeed shown that on this day the sunlight penetrates slowly inside the 78 m long cave and, at the precise time when the Sun is about to set, its red light illuminates the pictogram that we had supposed to represent the Sun.

At the same time when the Sun touches this pictogram, it also illuminates a sort of basin artificially carved on the rock, near which there are numerous cupmarks (Figure 9).

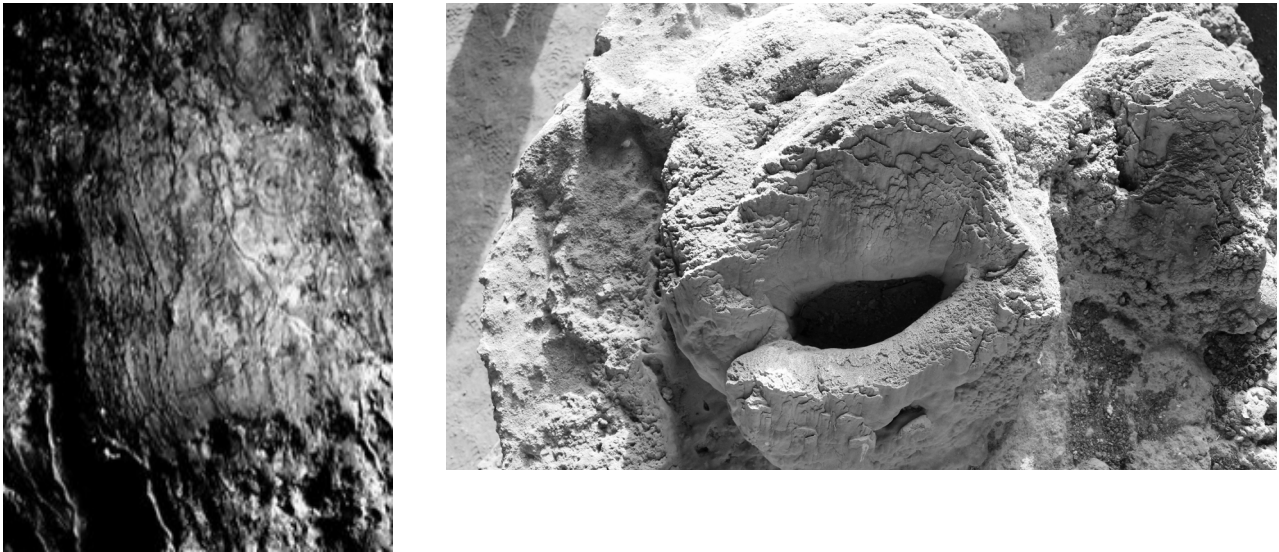


Fig. 9. The pictogram and the carved basin in the Grotta dei Cavalli illuminated by the last sunrays at the summer solstice.

3. Conclusions

Though proofs of astronomical orientations are surely present in Paleolithic artifacts (see e.g., Malville 2015) and ethnological evidence of the importance of sky observation are manifest in present day hunter-gatherer cultures (see e.g., Liebenberg 2013), the presence of astronomical symbolism in Paleolithic caves artworks is still questioned (see e.g., Hayden, Villeneuve 2011). However, solstitial hierophanies, similar to the ones described before in the Sicilian caves, have been recorded in numerous European sacred caves dated to Paleolithic (e.g. Esteban, Tortosa 2001; Sims, Otero 2016). Similar hierophanies are also present in Neolithic and Chalcolithic (e.g. Stoev, Maglova 2014) and Bronze Age (e.g. Campbell 2013) sacred caves. We also stress that solstitial hierophanies have been discovered in a number of other Eneolithic and Early Bronze Age sacred sites in Western Sicily, coeval to the frequentation of the Grotta dei Cavalli (Scuderi et al. 2014), further proving the intentionality of the solar alignment in this cave. These evidences prove the significance (cosmological as well as practical/calendrical) of the solstitial directions since very ancient times in Western Sicily.

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