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A "PHOENICIAN LIGHTHOUSE" AT CAPO GALLO (PALERMO)?

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ABSTRACT

Capo Gallo, a promontory a few miles north of Palermo, is an archaeologically significant site, hosting caves frequented since Palaeolithic times. Around the modern lighthouse, set on the tip of the cape, there are three large boulders of carbonate rock tumbled down from Mount Gallo, which appear to be placed there on purpose. We found that their alignments point toward the islands of Lipari and Ustica, which have been inhabited since Neolithic times. Being at different heights, the boulders constitute a practical orientation aid to set the routes towards the two islands. Seen from the sea, when two rocks appear one above the other, they precisely indicate the route for one of the two islands (normally invisible from the coast). Surmounted by fires, they could perform this function even at night, identifying the constellations to follow through the journey. During the Bronze Age Lipari and Ustica were part of a flourishing trading network with Sicily. At a certain epoch Lipari was even frequented by Mycenaeans, as testified by the finding of Late Helladic pottery at the site of Castello. The phase of frequent maritime exchanges ended traumatically in the 13th century BC when the Ausonians invaded the north of Sicily and the settlements of Lipari and Ustica were abandoned. A few centuries later Capo Gallo became a Punic outpost. Given the renowned Phoenician ability to navigate at night, guided by the Ursa Minor, the boulders could have then constitute a sort of "Phoenician lighthouse" to head to the islands, since not only Lipari (a base for Hannibal during the Punic Wars until about 260 BC), but also Ustica stood in the Punic range for a significant period of time.

KEYWORDS: Bronze Age Seafaring, Ancient Mediterranean Navigation, Phoenicians, Lighthouses

1. INTRODUCTION

Several years ago in Palermo, I (M. Rapisarda) came to know that some boulders in the area of Capo Gallo had not simply tumbled down from the nearby mountain, but had apparently been placed there on purpose (Mercadante, 2014), possibly for astronomical reasons. The promontory of Capo Gallo, a few miles north of Palermo (figure 1), is an archaeologically significant place, thus the hypothesis did not seem odd. Like many other Sicilian promontories overlooking the Tyrrhenian Sea, it has been occupied in the Upper Palaeolithic (Leighton 1999, p. 23) and always frequented since then.

Figure 1. The position of Capo Gallo from Google Maps

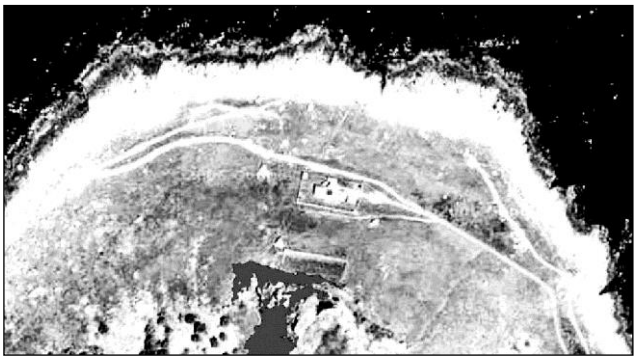

Figure 2. A closer view of Capo Gallo

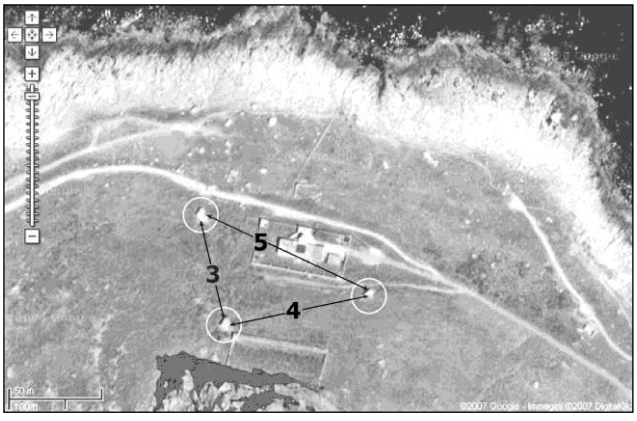

Figure 3. Capo Gallo: the suspected Pythagorean triple

Back in Rome, I told what I heard to Marcello Ranieri, and we looked for the place with Google Maps. We easily recognized three large boulders around the modern lighthouse (figure 2) and Marcello, thanks to his archaeo-geometrical sensitivity, easily noticed that they appeared at the vertices of a Pythagorean triangle (figure 3) corresponding to the **3-4-5** triple. Pythagorean triples are special triples of integer numbers (**3-4-5**, **5-12-13**, etc.) such that the sum of the squares of the first two is equal to the square of the third. In other words, they obey Pythagoras's theorem, and have been known since ancient times because of a useful function they had in ages when precision instruments were in short supply: they allowed building walls at right angle. This peculiarity renders the triples a marker for human intervention: in fact, although a stone structure with right angles is not necessarily the result of human work, it is rather unlikely that the lengths of its sides form a Pythagorean triple by chance. Stimulated by the possibility, Marcello went to Capo Gallo to inspect. He explored the site and even went on a boat tour to observe the place from the sea. However, when he returned, his face betrayed some disappointment. He confirmed that at least one of the three boulders showed clear signs of being in its place purportedly (a condition sufficient to relatively align the other two), but he had verified that the boulders were not on the same horizontal plane. It seemed clear that they were not the corners of an archaic construction. Moreover, not being on the same plane, the distances among them did not confirm what seen on Google Maps and could not conform with the necessary rigour to the **3-4-5** triple. The hypothesis of the Pythagorean triple had to be abandoned. We were disillusioned, but nonetheless remained convinced that the position of the boulders had a meaning: it did not seem reasonable that someone had displaced even just one of such heavy rocks without a purpose. If it was not the distance that counted, it must have been the alignment.

2. THE ALIGNMENT

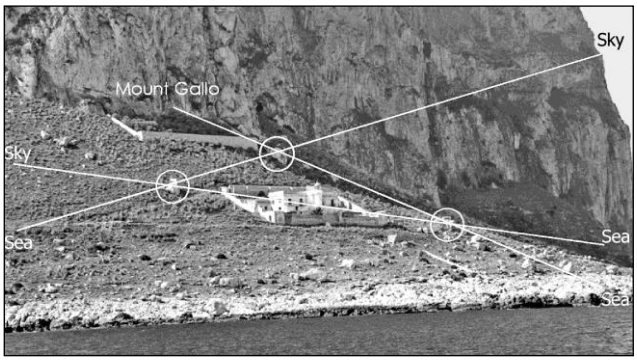

Figure 4. The lines connecting the three boulders

An astronomical pointing was rather unlikely, since only two of the six possible directions pointed to the sky, while one pointed to the nearby mountain and the remaining three towards the sea (figure 4). Towards the sea in which direction? When we drew the two lines joining the highest boulder to the other two on the map (figure 5), we noted an interesting thing.

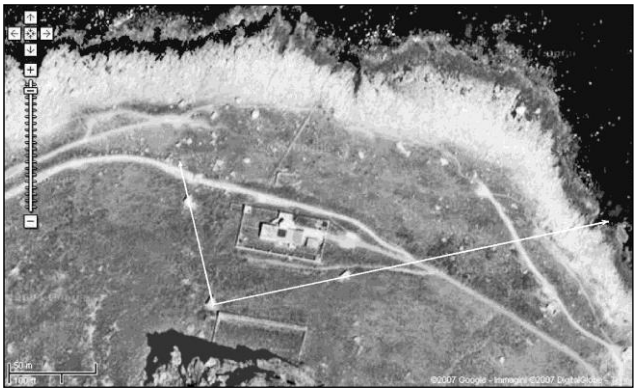

Figure 5. The lines connecting the boulders on Google Map

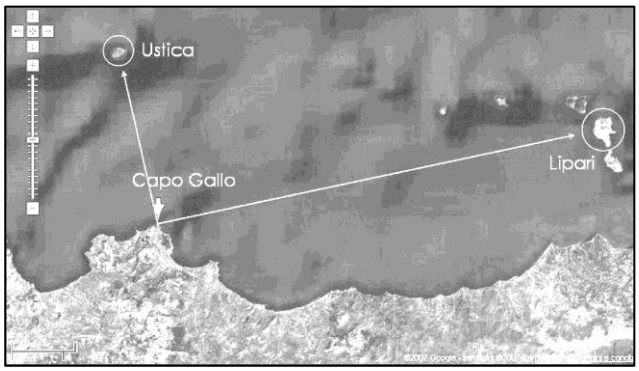

Figure 6. The same lines in a different scale

The first line pointed exactly towards Ustica, while the second one towards Lipari (figure 6): a remarkable coincidence indeed. Since the terrain hosting the rocks is downhill, their alignment had a practical consequence: while leaving Capo Gallo, a sailor seeing two boulders one above the other, would have been oriented exactly in the direction of one of the two islands (figures 7 and 8). And, if the boulders did not appear vertically aligned, to get the correct route simply required reaching a position from where the rocks were seen one above the other.

Being the northernmost promontory in western Sicily, Capo Gallo was a point of passage for all the ships navigating along the northern coast. The site has been regularly frequented since prehistoric times (Leighton, 1999, p. 23, p. 53). Besides fifteen classified caves frequented since the Palaeolithic (Mannino, 2008, p. 77), along its shore there are several large boulders of carbonate rock, tumbled down from Mount Gallo. Some of them appear adapted and stabilized in their positions, likely during the Bronze Age (Mercadante, 2014). It does not seem therefore odd that some of them could have been used as a maritime orientation aid.

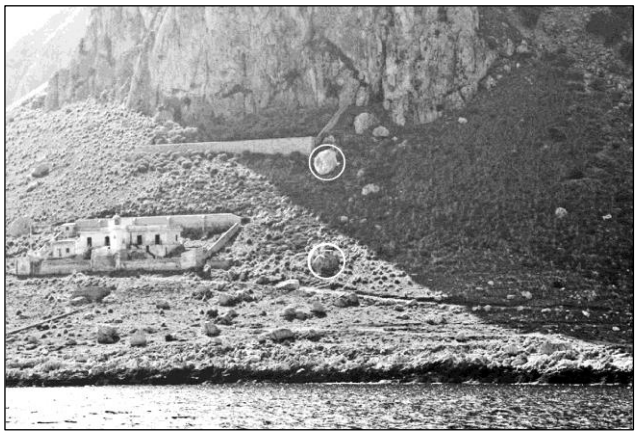

Figure 7. The boulders seen from the direction toward Ustica

Figure 8. The boulders seen from the direction toward Lipari

In Sicily the Bronze Age was characterized by a coastal trade extending over a large part of the central Mediterranean, involving both coastal sites and islands since its initial phase (c.2200-1800 BC) (Bietti-Sestieri, 2013). Later, during the Middle Bronze Age (c.1500-1300 BC), these trade links consolidated, spreading the Thapsos-Milazzese facies in most of the northern sites, including the two flourishing settlements of Castello (Lipari) and Faraglioni (Ustica). Conspicuous amounts of Late Helladic pottery found at Castello indicate extensive links with the Mycenaeans (Leighton, 1999, p. 148; Tusa, 2015, p. 273), while the site of the Faraglioni (which has so far produced one sherd of Mycenaean pottery) was more likely a key node in a regional network involving Sicily and mainland Italy (Spatafora, 2009).

The phase of frequent exchanges finished traumatically in the 13th century BC, when the so-called Ausonian invasion in the North-Eastern part of Sicily from the Italian mainland caused the end of the

Aeolian trading network (Leighton, 1999, p. 149; Bietti-Sestieri, 2013). This may have had serious repercussions on the site of Faraglioni at Ustica, which was presumably cut off (although to the abandonment may have contributed the partial collapse of the site into the sea). The occupation of the two islands persisted (Leighton, 1999, p. 160), although at Ustica it probably became very scant (Amiotti, 2004, p. 304).

In short, during the early and middle Bronze Age there were good reasons to head to the two islands from western Sicily. For a sailor, to see the boulders one over the other would have been a practical way to keep the right direction and build a visual reference with the mountains in the background. In fact, as the distance from the cape increased, the relative position of the mountain peaks in the background would have continued to indicate the route until the island was in sight. It must be kept in mind that Ustica is usually not visible from the Sicilian coast (and Lipari a fortiori). The boulders, in practice, would have served to "calibrate" the initial alignment with the mountains in the background, a necessary mean for seafaring away from the coast, if the destination were out of sight. Surmounted by fires, they could have performed this function also at night, allowing the identification of the constellations to follow during the journey. The journey to Ustica, requiring around twelve hours of navigation in open sea, would have greatly benefited from leaving at night, allowing to approach the rocky cliffs of the island with the light of the successive morning.

Many centuries later, Capo Gallo became a Punic outpost, as shown by the inscriptions of Grotta Regina (De Vincenzo 2012, p. 266) and by the noticeable graffito of a Punic ship found on its walls (Bartoloni, 1978). Palermo, one of the three main Phoenician-Carthaginian colonies in Sicily (Aubet 2001, p. 231), is just a few miles away and the ships coming from its port would pass it before bending toward Carthage or heading to Ustica (and maybe to Lipari). In fact, both Lipari (conquered a first time by the Carthaginian general Himilco in 397 BC, and a base for Hannibal during the Punic Wars until about 260 BC), and Ustica (site of the Rocca della Falconiera (Spatafora and Mannino, 2008)), as testified by the episode of the deportation of Carthaginian mercenaries told by Diodorus (V, 11), stood in the Punic range during the wars with Rome. Therefore also the Phoenicians could have exploited the boulders alignment to navigate toward the islands.

To follow a straight route to Lipari is sound from a modern point of view, but the idea to sail directly to the destination was not the rule among the ancients. At sea they largely preferred to skirt the coast as long as possible, leaving it only if obliged. Although reaching Ustica was possible only by crossing the open sea, the straight route to Lipari was not the natural way to get there, therefore a reason to adopt it is necessary. A reason perhaps lacking during the Bronze Age, but certainly not in Phoenician times.

3. THE "PHOENICIAN LIGHTHOUSE" HYPOTHESIS

The Phoenicians were the great seafarers of antiquity. Being essentially traders, they were not interested in occupying large territories, preferring to oversee the ports strategic to their navigation. Great enemies of the Greeks and later of the Romans, the Phoenicians were recognized as highly skilled in navigation even by their foes. In fact, unlike the Greeks, the other ancient seafaring nation, the Phoenicians regularly sailed both offshore and at night, orienting themselves with the North Star (Silius Italicus, III, 662-665), which the Greeks called the Phoenician Star.

Ustica is about thirty miles from Capo Gallo. Not afraid to leave at night, the Phoenicians could reach it the next day with the light, which would have helped a lot to avoid the island's rocky cliffs. But which was the reason of not skirting the coast to reach Lipari? A good motive was that, beyond the Gulf of Palermo, they would have crossed Termini and then Himera, two Greek colonies whose vessels regularly sailed along the Tyrrhenian coast. To avoid the northern coast was even more compelling when the Romans conquered Sicily and started the Punic wars. The choice was between the open sea and the enemy ships and the first option was certainly the safest. Leaving at night would have been easier with a lighthouse to start the route: as in the case of Ustica, the sight of two fires one above the other would have been a very helpful indication. The next day, the view of Alicudi and Filicudi would have safely guided the sailors to Lipari.

The hypothesis of a use of the Bronze Age boulders as a "lighthouse" is fascinating. In its favour there is the fact that all three boulders were readily accessible from the beach, allowing for the flames to be fed regularly. Moreover the upper faces of the boulders, sloping towards the sea, are compatible with a signal fire. Not neglecting that, even during the day, a visual indication of the route to follow would have been a significant advantage at a time when orientation was a difficult business. In fact, we should remember that the ancients did not have the two-dimensional representation of marine geography that we take for granted today. Marine maps were created in the Middle Ages: for the ancients to navigate meant coasting from one conspicuous point to another. To find out where they were, the Greeks consulted a catalogue of prominent sites, listed one

after the other, trying to figure out which was the one in front of them. The journey, in short, was thought one-dimensional and the position was obtained by unrolling the shoreline features.

When they were forced to move away from the coast, they looked for key points on the mainland. Among these, the profiles of the highest mountains were the easiest to spot, as were the peaks of the islands. Their ensemble constituted the reference frame in which they figured out their position, and one of the reasons why they always tried to stay in sight of the coast.

Without this reference frame, the going got tough. Sailing in a north-south direction could have been relatively easy, with the sun and an hourglass during the daytime and with the North Star at night. Doing so in an east-west direction was more difficult but obtainable by the same means, but intermediate routes commanded larger approximation errors. Navigating on a bearing of twenty degrees north was complicated (even at night with the North Star) and being wrong by few degrees, for example, could mean hours of more sailing to reach Ustica. On the other hand, the ancients knew very well that, apart the seven planets, the stars were moving all together around the North Star. They called them fixed stars and they thought they were nailed to the sky. They grouped them into constellations and knew in which position the constellations would have been during the night. Looking at the sky turning around the North Star they could tell which constellation would have indicated the route every hour of the night and the availability of a water hourglass would have rendered the task even easier. In short: not only did the fires guide the route while they were visible, but they also indicated the stars to be followed. Not bad in a time without GPS.

Nice hypothesis, but how did they place the boulders with such accuracy? Without Google maps, the obvious solution was to see the target, at least once. On a very clear day Ustica can be seen from Cape Gallo and, on an exceptionally clear one, even many of the Aeolian Islands can be seen. Climbing to the top of the mountain would have helped a lot. It would not have been difficult, on one of those days, to guide the placement of the boulders from the top of the mountain.

4. DISCUSSION

Properly distanced and well visible from the sea, it seems reasonable that the two boulders towards Ustica might have been placed in position during the Bronze Age to indicate the route to the island. The third rock in direction of Lipari could instead have been positioned when it was necessary to reach the Aeolian Islands avoiding the dangers of navigating along the coast.

The hypothesis that the rocks were used as nighttime signals is fascinating (hint: traces of burnt material might still be present on the boulders), but in order to affirm that the Phoenicians knew about lighthouses, at least one replica should be found. As far as we know there is no reference to them in literature. It is a negative indication, but up to a point, since the known literary sources are only Greek-Roman. More negative might be the absence of even a single picture in Phoenician iconography, but, on the other hand, if light signals were part of the Phoenician seafaring technique, it is likely that the practice was kept secret.

Nevertheless, somewhere, the remains of another lighthouse ought to exist. Finding them would prove the hypothesis. Where should one look for? As a rule in extreme headlands, indicating the routes to distant islands or to avoid hostile territories. Especially if these routes were not oriented along north-south or east-west axes.

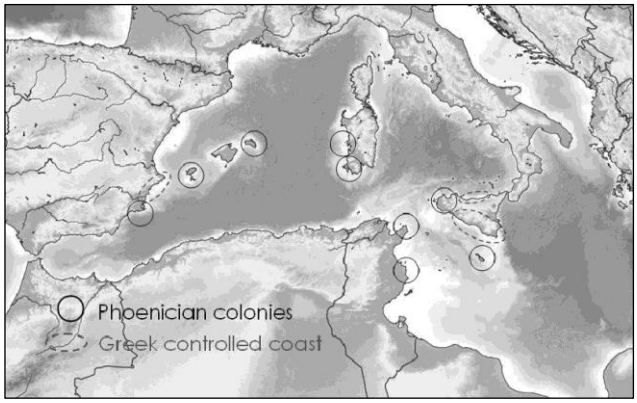

Figure 9. Phoenician colonies and Greek controlled coasts in the western Mediterranean Sea.

The African coast from Morocco to Tunisia was firmly in the hands of the Carthaginians and could therefore be skirted without danger. To find a lighthouse one should look for places where the ships left the coast to cross the Alborán Sea (perhaps the promontory of Melilla) to reach the Phoenician colonies of southern Spain (unless they did not prefer the longer journey via Gibraltar).

In Spain, the Balearic Islands were Phoenician, but the link between Ibiza and the mainland had the same problems of the Greek colonies of the Lipari-Palermo route. Minimizing the marine distance by going towards Xabia would have led into Greek waters: much safer to head south west and reach Cartagena directly, thus a guiding aid could be likely over there.

From the large fjord of Mahón, in Menorca, the Phoenician ships sailed to Tharros and Sant'Antioco

in Sardinia. However, the very long distance and the fact that Mahón and Tharros lie on the same parallel render the need for a lighthouse less crucial. On the other hand, going directly from Mahón to Sant'Antioco was unnecessarily risky, given that all western Sardinia was in Phoenician hands.

In Capo Teulada there could have been a lighthouse to guide the ships that headed from Nora to Tunisia, maybe stopping at La Galite island, but since the route was almost north-south, it was perhaps not worth the candle.

It was much likely a "lighthouse" in Tunisia, at Cape Bon (and maybe on the island of Zembra) to indicate the correct route to Mothia. Note that on the opposite side, in Sicily, two guiding fires on the temple of Astarte in Erice and on the castle of Favignana would have been exactly aligned towards Carthage.

Figure 10. Phoenician sites possibly hosting navigation aids or signal fires in the Strait of Sicily

Another two likely sites could be Gozo and Lampedusa. Malta stayed Phoenician even when the southern coast of Sicily was in Greek hands. To maintain the links with Mothia a safe route to western Sicily from the Maltese islands, far enough from the southern Greek colonies was crucial, and perhaps the Punic Temple of Wardija was oriented precisely to indicate it. The same reason was valid for the link with Tunisia. Unlike Pantelleria and Linosa, Lampedusa is not volcanic and has a well sheltered natural harbour. It was certainly a stopover on the way between Malta and Mahdia in Tunisia. The distances involved, and the fact that two of the routes (Mahdia-Lampedusa and Linosa–Malta) were along the east–west direction, rendered perhaps the relative lighthouses superfluous, but the routes Lampedusa-Linosa, or Lampedusa-Malta may have needed them.

5. CONCLUSIONS

In conclusion, the hypothesis that the boulders of Capo Gallo were positioned as a marine route indicator seems plausible. During the Bronze Age, Ustica was inhabited by a flourishing community and kept frequent contacts with mainland Sicily, whose closest headland was Capo Gallo: a pointer of the right direction to get there would have been invaluably helpful there.

Lipari was inhabited too, but from Capo Gallo a safer way was possible, skirting the northern coast of Sicily, rendering the offshore route to Lipari an unlikely choice during the Bronze Age. Centuries later, Capo Gallo was a Phoenician outpost and the need to connect Lipari to Palermo avoiding the dangers of the northern Sicilian colonies was a reason strong enough to use an offshore route. Then, the use of an aiming system to head directly to the Aeolian Islands, similar to that to Ustica, would have been fully justified. The Phoenicians themselves could have placed the boulder towards Lipari in position. Surmounted by fires the rocks could have served as an ante litteram "lighthouse" to indicate the route at night. If this is true, ruins of similar structures ought to exist. Finding another one would prove the assumption, giving insight to the Punic methods of offshore navigation. A good reason to search for them in extreme Phoenician headlands, aligned towards distant islands.

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