



A Taurus Map on a Minoan Vase?

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Abstract

During the excavation of a shrine at Anemospilia on Crete in 1979, an important, richly decorated vase was discovered, like that appearing on the sarcophagus of Aghia Triada to be used for the collection of the blood of the sacrificed bull. The vase was dated to the Middle Minoan period (around 1700 B.C.) The central motif of the decoration of the vase is a plastic bull painted off-white, with a pattern of red round spots scattered over its body. The whole decoration was considered by the excavators and other investigators, as a "speaking symbol" of a bull sacrifice. In this article we suggest that the pattern of round spots could be considered as a map of the Taurus constellation, the oldest one known in the Aegean; moreover, that the whole decoration refers to the Spring, when the vernal equinox was located in Taurus in Minoan times. We also suggest that the beginning of the year would be fixed following this equinox.

Keywords: Minoan pottery, decoration, symbolism, Taurus constellation, Minoan calendar.

Introduction

Some years ago, Yannis and Efi Sakellarakis (1997), in an excellent two volume publication entitled "Archanes. Minoan Crete in a New Light", presented their finds from the excavations at Archanes and its surroundings.

On a northern hill of the mount Juktas, called Anemospilia, they excavated a very important shrine, dated about 1700 B.C., that they considered as a unique one, mainly because they discovered remains of a human sacrifice. In conclusion, they suggested that the shrine has been destroyed by earthquake and fire, just at the time of the sacrifice of a young man.

Among the most important of their finds, was a large, richly decorated vase, similar to that depicted in the bull-sacrifice scene of the Aghia Triada sarcophagus, used to collect the blood of the sacrificed animal (ibid., 48-61); it was characterized by the excavators as a unique one in Minoan art pottery. The decoration of the vase, as it is described by the authors, consists of an artistic composition, plastic, incised and polychrome, covering the surface of the vase all around, as a frieze. It is formed by motifs painted in white, off-white and red over a black background. The central motif is a plastic figure of a bull, emerging slightly from the surface of the vase, painted



Fig. 1: The oldest record of the Taurus constellation on a Minoan vase unearthed by Yannis and Efi Sakellarakis at Anemospilia on Crete, dated around 1700 B.C. (Photograph Y. and E. Sakellarakis, 1997).

off-white, with a number of round red spots of different sizes scattered on its body (Fig. 1, 4).

The whole decoration of this vessel is similar to that found on a vase from Phaistos, with a plastic wild goat as a central motif. In addition, the figure of the bull looks like that appearing in the decoration of the sarcophagus of Aghia Triada.

The authors, after a detailed description of the vase, focused their interest on the symbolism of its decoration and they concluded that the artist must have composed a scene for some specific purpose. Thus they wrote: "it is quite possible, that the white bull of Anemospilia, dappled with red blots, symbolized a special sacrificial animal". And they added: "we have to hope for new discoveries that will throw more light on the subject".

A throw of more light could come, of course, from another source of Science than that of Archaeology, namely Astronomy. The Sun, the Moon and bright stars have attracted the attention and the worship of people since the early times of human history. Some

of the brightest stars are landmarks and in combination with fainter ones around them, they seem to form distinctive arrangements and shapes, the so-called constellations. Constellations are presented in star maps as patterns of round dots, like the round red spots appearing on the bull's image. It is interesting to note, that a number of stars really have an easily distinguished red-orange colour, such as that of the brightest star of the Taurus constellation (α -Taurus), named Aldebaran, the so-called "eye of the bull". Some of the constellations are mentioned by Homer (*Iliad*, Σ 486-9; X 29-31) and Hesiod (*Works and Days*, 609-20).

Archaeologists looked at the "bull-vase"; in our turn we shall look at the "vase-bull".

The vase bull

Archaeologists state that the artist used the round spots on the bull's image in order to depict the hide of the animal. However, it is quite obvious that the spots are not distributed randomly over the bull's body. On the contrary, a certain pattern is well distinguished, reminding of a constellation's picture on a star chart.

With such a working hypothesis in mind, the next step should be to compare the map on the vase to the Taurus constellation, as it appears on a star chart. Furthermore, for such a comparison, it should be taken into account that: a) The pattern of the round spots on the bull-vase is the mirror image (reversed from left to right) of the constellation. This is rather due to the technique used for the decoration, that is to the use of a mould for the plastic bull. Such a reversal is also found in some star maps of the Renaissance (Fig. 2), in which only the front half of Taurus is traditionally depicted on the sky, because it represents Zeus carrying the princess Europa across the Mediterranean to Crete. Evidently, it is not an important effect, occurring also in the observation of the sky through a telescope. b) People in antiquity might have grouped the stars in different constellations from those of today. For example, the cluster Pleiades, which now belongs to Taurus, was considered as a separate adjacent constellation in ancient times. c)

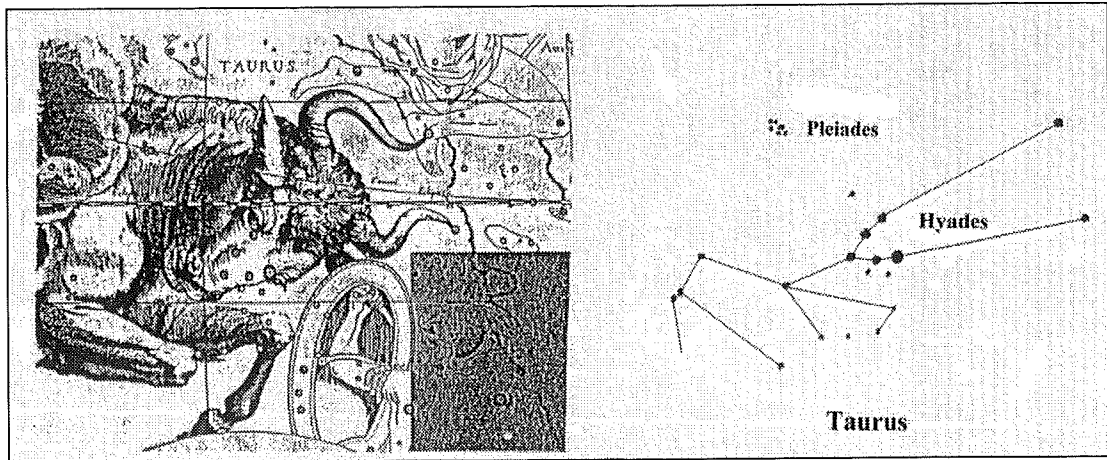


Fig. 2: A Taurus map from "Uranometria" of J. Bayer (1603), (left), and in the form of a star chart (right).

The map scale on the body and the head of the bull is different. This is not unusual in the art perspective. d) A part of the vase map, the head of the bull, which constitutes the well-known, since antiquity, cluster Hyades, is slightly inclined, by comparison to a star chart, so that to be adjusted to the image of the bull.

The identification

In Figure 3, four drawings, labeled a, b, c, d, correspond to the following explanations:

- a) the pattern of the round red spots on the bull's picture,
- b) the same pattern in the form of a star chart,
- c) the Taurus constellation on a modern star chart, reversed from left to right, in order to be compared to (a),
- d) the same constellation with a change in scale and in inclination of the bull's head, as well as without the three legs, so that it can easily be compared to the drawing (b). Only stars visible with the naked eye have been included.

It is quite clear, I think, that there is not a significant difference between the drawings (b) and (d), except in the Aldebaran's position. As it is known, this star moves in front of the Hyades, being at a smaller distance than it (a little lesser than the half), and has a large proper motion of 0.2 arcsec per year towards S-SE. On the contrary, the rest of the Taurus stars

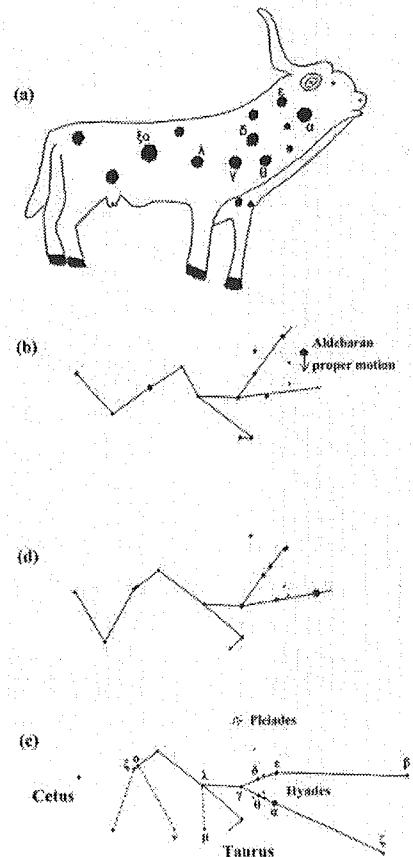


Fig. 3: Drawings of the Taurus constellation: a) as it appears on the bull vase, b) the same in the form of a star chart, c) in a modern star chart, d) the same in a form comparable to (b).

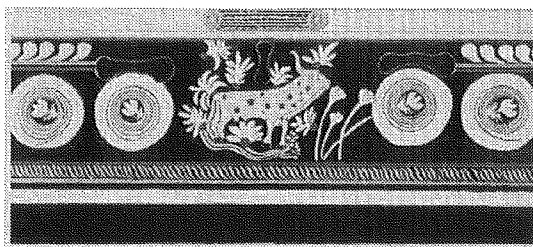


Figure 4. The whole decoration of the bull vase: a real artistic composition, a "speaking symbol" (Photograph Y. and E. Sakellarakis, 1997).

(Hyades and the others) have not a significant proper motion. Consequently, there is not a noticeable change in the shape of Taurus since the Minoan times, except in the Aldebaran's shift, which is effected towards the direction expected, though much higher in measure (value).

The identification becomes more evident, if one takes into consideration the following complementary factors:

1) Some of the stars, like (ξ) and (\omicron) of Taurus (Fig. 3c), are so close on the sky, as to appear as one star, when observed with the naked eye, particularly under bad seeing (observing – atmospheric) conditions. This could be a reasonable explanation why these stars are coalesced in a large dot on the vase-bull. But this could also be due to a faulty restoration of the picture's painting. On the other hand, the size of each dot on a star chart is analogous to the brightness of the corresponding star, as on the bull vase.

2) The prominent characteristic of Taurus is its head, in the shape of a V, formed by five bright stars (α , γ , δ , ϵ , θ -Taurus) (Fig. 3). Three of them (α , γ , ϵ) form a triangle, the "jaw of the bull". The stars of the bull's head constitute the cluster Hyades, known since early antiquity in many countries and peoples.

3) Another characteristic is the absence of spots on the three legs of the vase-bull. There are only two adjacent spots on the left foreleg, corresponding to two stars of Taurus, but none on the others, either because they were out of figure or because they were not considered members of the group at that time.

In addition, the last star of the pattern belongs today to the Cetus constellation (α -Ceti).

The symbolism of the decoration

The authors, as well as other investigators mentioned by them, have agreed in that the polychrome decoration of the entire vase (Fig. 4) constitutes a unique artistic composition with some specific significance. So, Papahatzis (1987, 44-45) estimates that it is a "speaking emblem", a "speaking symbol" of a bull sacrifice, as the authors confirm. With regard to the rosettes of the decoration, "a highly unusual motif in Kamares pottery", the authors add that, "they are not simply decorative motifs, but they have some other significance".

I think that the significance of the whole decoration could be revealed through prehistoric astronomy, namely Minoan astronomy. It seems to me quite certain that the budding and the blooming landscape painted on the vase refers to the Spring, when the vernal equinox (place of the Sun and beginning of the Spring), in Minoan times, was located in Taurus. Some scholars support that the coming of the Spring was always celebrated with festivals and other ceremonies including sacrifices (Willets 1962; Herberger 1972).

The four white discs, two on either side of the bull's image, show the solar disc with the well known spiral motif (discoïd spiral of Walberg). In general, a spiral (simple, double or continuous) is a symbol of the apparent solar motion around the earth and of the continuous, eternal cycle of life, with the annual rebirth of the Nature. This motif is found on different artifacts, such as petroglyphs on Naxos and elsewhere, Cycladic "frying pans", pottery, etc., not only in the Aegean but also in a number of countries and peoples (Banos, 1997).

The two eight-leaf rosettes, a solar motif too, in the upper part of the vase, and the eight-plant ornament around the bull, could symbolize the eight-year cycle of the luni-solar calendar of the Minoans supported by some scholars (Herberger 1972, 1983; Blomberg 1994). At present, this is a speculative

aspect (as nearly all studies on Minoan astronomy) but it seems plausible. It is quite probable that the beginning of this cycle was marked on the appearance of the new moon or of the full moon ("Pasiphae") just after the spring equinox, and was possibly celebrated through a sacrifice (human or animal) in the context of a festival. Alternatively, it could be possible to symbolize simply the beginning of an annual cycle, of a year, which, as in Mesopotamia, was marked at the first appearance of the crescent new Moon at dusk on the western horizon after the heliacal rising of a certain star group as Hyades or Pleiades.

Discussion and Conclusion

The Taurus map on the vase-bull from Anemospilia may be the oldest one recorded so far in the Aegean. This fact adds a considerable piece of astronomical knowledge to the Minoan observers of the night sky, who presumably used peak sanctuaries for their observations (Herinksson and Blomberg, 1996).

One has to recall Ovenden's article (1966), that constellations were known since 3000-2000 B.C. and that they were used to define a celestial coordinate system by a people living in a country of the Aegean on a latitude 36° N, a claim pointing to the Minoans. Furthermore it was proposed that the description of constellations by Aratus (3th century B.C.) was based on old observations made between 3400-1800 B.C. by the same people. Ovenden's claims, however, were strongly criticized by Dicks (1991, 28).

On the other hand, Kyriakidis (2005) has recently supported a constellation theory of floating objects on Minoan seal rings, i.e. that constellations had been symbolically (not as a group of stars) depicted on these rings in the Late Minoan I period. Moreover, he wonders about a possible classification of stars into constellations by the Minoans and he concludes that at least some bright stars would be classified together, in groups, although in different constellations from those today. Moreover, Blomberg P. E. (2006),

on the basis of a comparative study of different works on Minoan astronomical knowledge, has been led to the hypothesis "*that the western map of constellations has its root on Crete during the Minoan period around 2000 B.C.*"

In conclusion, it seems quite likely that the Taurus constellation was the first one named in the Greek Uranographia (Taurus is the Greek name of the bull), because of the power of the bull in work and fertilization and its world-wide profile.

I am convinced that the vase's decoration is really a "speaking symbol", as Papahatzis suggested and that this decoration is an additional indication about the Minoan astronomical knowledge. So, one may conclude that very probably the Minoan year began at the first moon following the spring equinox. This is in contradiction to Blomberg's findings indicating "that the year of Minoans began at the first new moon following the autumn equinox" (2005), when, however, there seems none so important as it is the renewal of the Nature in Spring.

Another point of much interest is that the two grandest star clusters on the sky for the naked-eye observers are the Hyades and the Pleiades, belonging to Taurus. They were both well known since the times of Homer and Hesiod and possibly as early as 4000-3000 B.C. The Hyades, named possibly after the Greek word «*υετός*» ("rain"), constitutes the Taurus head and was considered as a basic sign by the farmers, the navigators and generally by people obliged to fit their work to the weather conditions. The morning setting on November of the Hyades in the western horizon signaled, since antiquity, the onset of winter's rainfalls, coming from the West. Their pluvial character is quoted to by some Roman authors; and the Greek historian Hellanikos of Mytilene linked Zeus and the rain with the seasonal appearance of the Hyades. Thus, the pluvial reputation of this cluster reflects the Taurus importance as an agent of fertility and renewal of Nature. Consequently, it is quite likely that the priest-observers of the heaven at Anemospilia (the "hill-cave of the winds") were engaged in pursuing these phenomena. Some of these priests could be important artists too.

The second equally important cluster of stars, the Pleiades, named possibly after the Greek verb «πλέω» (“sail”) and related perhaps to the month “ploistos» recorded on a tablet of Linear B text, as the voyages started with its heliacal rising on May, was used as a sign by many peoples in the world. In Greece, for example, on a sundial made by Andronikos of Kyrros of Macedonia (1st century B.C.) and unearthed on Tenos by Paul Graindor (1907), the beginning of the winter and of the summer are marked by tracings associated to the morning rising and setting of the Pleiades, while, after Theophrastus (4th century B.C.), the Pleiades bisected the year.

It seems possible, thus, that the tradition of Aegean astronomy might have been a plausible source for the development of the Greek astronomy and its culmination in the Hellenistic period.

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