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THE ANATOMY OF A COMPLEX ASTRONOMICAL PHENOMENON DESCRIBED IN THE ODYSSEY

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ABSTRACT

An intense meteor shower is described as dove's feathers falling down during the Telemachus' arrival in Ithaca mentioned by the Homeric epic. Additionally, in the next days, there are some other descriptions which are regarded from us as meteor activity (bolides, a meteorite, many erupted meteors in the atmosphere, and a glimmering in the sky due to intense dust). In accordance with the proposed by us new astronomical dating of Odysseus' return to Ithaca (25 October 1207 B.C.), this meteor shower occurred in the last days of October 1207 B.C. The radiant point was near to Pleiades nebula of Taurus constellation. Consequently, two astronomical phenomena (a solar eclipse and a meteor shower) were hidden in the two Theoclymenus' prophecies, marking clearly, the Odysseus's return to Ithaca.

KEYWORDS: Homer's Odyssey; Theoclymenus' prophecy; Meteor Shower

1. INTRODUCTION

A number of authors have considered different astronomical aspects, facts and allusions in the Homeric Epics (Theodosiou et al. 2011). Among them, a solar eclipse is described in the passage Od.20.356-357 characterizing the day and the time of suitors killing according to Heraclitus of Pontus (Allegories, 75, 1, 1-9, 3). This astronomical phenomenon is hidden in the prophet Theoclymenus' words and it is consistent with the ancients' concept about the myth's nature. The latter, means, that *'the physical science is natural logos hidden deeply within myths and secret theology'* as mentioned by Ploutarchus (Fragmenta 157).

Theoclymenus was not an everyday person. In Homeric text is characterized θεοειδής (godlike). He was the grand son of the first prophet of the ancient Greece named Melampous (Μελάμπους). His father was the prophet Polyphides (Πολυφείδης) of Mandios (Μάντιος) which was a son of Melampus. Melamponides (Μελαμπονίδες) were the most famous prophets of ancient Greece (Stagiritis A. 1815). They lived in Pylos and Argos. Theoclymenus killed somebody and was a fugitive. Telemachus met him in Pylos and the famous prophet asked him to be transported by him.

Many modern researchers as Schoch (1926), Papamarinopoulos (2008), Baikouzis & Magnasco (2008) proposed that the referred eclipse hidden in the Theoclymenus' prophecy was the Total Solar Eclipse of April 16th 1178 B.C. However, all these authors had ignored other significant diagnostic information mentioned by the Homeric epic. Papamarinopoulos et al. (2012) taking into account all the detailed description by the epic proposed a new date. The referred eclipse was the annular solar eclipse of 30th of October 1207 B.C. (Julian Day/JD 1280869) observed in Ionian Islands as a partial one, with significant obscuration of the solar disk by 75%. This date is in agreement with the appearance of planet Venus at eastward horizon according to the Homeric text.

Also, the authors referred an additional lunar eclipse (52%) observed in the Ionian Islands in the 15th of October 1207 B.C. Moreover, they examined the presentation of the reported constellations in the epic and found that Bootes did not set at all in the nights of October 1207 B.C. As a consequence it could be observed all the night in the NW to NE from all the latitudes of the Mediterranean Sea inside or outside of it.

However, this prophecy is not the only one existing in the Odyssey. There is another one associated again with Theoclymenus. The latter's analysis is explained as a phenomenon occurred during the Telemachus' arrival in Ithaca (Od. 15, 525-534). If the second Theoclymenus' prophecy, as it appears in the text in connection with the suitors described a solar eclipse why wouldn't the first Theoclymenus' prophecy, as it appears in Homer's text in connection to Telemachus' arrival have described another one astronomical phenomenon too?

In this paper we examined this possibility. We do that using the Starry Night 6 Pro Plus software for the related calculations. Starry Night's (2006) algorithms take into account the axial precession of Earth (precession of the equinoxes) in order to *correctly* represent the celestial sphere of the past. It can accept any date from 4713 B.C. to 10000 A.D. to show a valid graphical representation of what the sky looks like from any location on Earth. In order to avoid the problems resulting from historical calendar changes, another astronomical time concept is used, the *Julian Day,* which gives us a method of "absolute" dating of an event which corresponds to a date of the Julian calendar or to another in a extrapolated Gregorian calendar.

2. APPROACH AND METHODOLOGY

2.1 Telemachus' return to Ithaca and its astronomical dating

Telemachus, Odysseus son, traveled to Pylos and to Sparta in order to select information about his father fate from kings Nestor and Menelaus respectively. When he prepared his ship to travel from Pylos back to Ithaca, the famous prophet Theoclymenus met Telemachus and asked him to be transported by him to Ithaca (Od. 15, 224-281) because was a fugitive accused for the killing of a man in Argos. According to the epic, Theoclymenus, Telemachus and his company returned to Ithaca *three days after* Odysseus' arrival to Ithaca and *two days before* the suitors killing.

Based on the dating of Odysseus' return (Papamarinopoulos et al. 2012) on the 25th of October 1207 B.C. (JD 1280864), Telemachus' arrival occurred on the 28th of October 1207 B.C (JD 1280867). The ship anchored in a 'secret' bay *before sunrise* (Od.15,493-500, Od.15,556-557, Od.16,1-2) because Telemachus was hidden knowing that the suitors wished to kill him. He informed it by Athena (Od.15,27-42). She indicated him to shipping by night *(νυκτὶ δ' ὁμῶς πλείειν)*, arrived in a secret bay and went to his farm in order to pass his night *(ἔνθα δὲ νύκτ' ἀέσαι).* The same conclusion for the night is obtained by the information that Telemachus' departure was happened in the night (Od. 2,357, Od, 2, 385-390) and his arrival in Pylos was in the morning (Od., 2,434, Od, 3, 1-5). In the contrary, Telemachus' arrival from Pylos was in the morning (Od. 15,182-221, Od, 15, 292-300); thus his arrival in Ithaca was in the night.

They spend some time to cast anchor and to have a breakfast near to the ship. Then, Telemachus sent, prophet Theoclymenus and his sailors in the town by ship, while he went to his farm. As Telemachus arrived, in the hut's farm he met, firstly, in the farm's yard, outside of the hut, the shepherds still sleeping near to countless pigs (Od.15, 556-557). And, secondly, he entered into the hut finding Odysseus and some shepherds just after waking up setting the fire to make breakfast because *'αμ' ηοί'*, at dawn (Od.16,1-2) and *'αίψα γαρ ηώς ήλθεν εύθρονος'*, for soon came fairthroned Dawn (Od.15,493-500).

Consequently Telemachus' *arrival to Ithaca* took place *before* sunrise on the 28th of October 1207 B.C.

2.2 First Theoclymenus' prophecy

When Telemachus, Theoclymenus and the sailors finished their breakfast and before the ship's departure to go to the town's main port, a description of a rare phenomenon is mentioned in the passages Od.15, 525-528:

> *'ὣς ἄρα οἱ εἰπόντι ἐπέπτατο δεξιὸς ὄρνις, κίρκος, Ἀπόλλωνος ταχὺς ἄγγελος: ἐν δὲ πόδεσσι τίλλε πέλειαν ἔχων, κατὰ δὲ πτερὰ χεῦεν ἔραζε μεσσηγὺς νηός τε καὶ αὐτοῦ Τηλεμάχοιο.'*

> *'Even as he spoke a bird flew forth upon the right, a hawk, the swift messenger of Apollo. In his talons he held a dove, and was plucking her and shedding the feathers down on the ground midway between the ship and Telemachus himself.'*

However, the word *talons* do not exist in the Homeric text. What it exists is in Greek the word *'πόδεσσι'*. The latter does not mean talons but only feet. In the ancient Greek text Homer actually describes the following: *ἐν δὲ πόδεσσι τίλλε πέλειαν ἔχων*, but the interpreter says 'he held a dove'. There is a significant difference between 'has' and 'held' especially because Homer does not mention talons and instead of it uses feet. What Homer says to the reader is that the wild predatory bird *having*

the dove (πέλεια) in his feet and he does not say *holding the dove with its talons.*

We also wonder how it is possible for a predatory bird to fly and simultaneously to pluck its victim. Nature teaches that the wild birds grab the victim, from above, with their talons, they transfer it in their place and as they kill, in their nest, its feathers are dispersed all over the place. One cannot imagine how the wild bird could pluck the dove, as it flies, without using its beak. The Homeric scene does not correspond in this reality of hunting and transportation of the victim in the wild bird's nest.

Since the victim (dove=*πέλεια*) is not held, securely, by the wild bird's *talons* but it is simply in his feet, it means that the victim will escape due to gravity, during the flight, and it will be lost as food. The whole episode, in the interpreter's mind, does not make sense and for this reason he added the nonexistent in Homeric text word *talons*. The interpreter had the same doubts, as us, and in order to make the Homeric scene plausible, to his understanding, he was forced to add the word talons.

Prophet Theoclymenus explained to Telemachus in Od.15, 529-534 the above mentioned event as 'signal originating from the gods' and being itself a good omen for Laertiades:

'τὸν δὲ Θεοκλύμενος ἑτάρων ἀπονόσφι καλέσσας ἔν τ᾽ ἄρα οἱ φῦ χειρὶ ἔπος τ᾽ ἔφατ᾽ ἔκ τ᾽ ὀνόμαζε:
Τηλέμαχ᾽, οὔ τοι ἄνευ θεοῦ ἔπτατο δεξιὸς ὄρνις ἔγνων γάρ μιν ἐσάντα ἰδὼν οἰωνὸν ἐόντα. ὑμετέρου δ᾽ οὐκ ἔστι γένος βασιλεύτερον ἄλλο ἐν δήμῳ Ἰθάκης, ἀλλ᾽ ὑμεῖς καρτεροὶ αἰεί.

We mention to the reader that the phrase *'ἔγνων γάρ μιν ἐσάντα ἰδὼν οἰωνὸν ἐόντα'* was interpreted as *"for I knew, I looked upon him,"* it is not exact because Homer says very clearly: "As I saw (the wild bird= ὄρνις), across of me, I understood that he

'Then Theoclymenus called him apart from his companions, and clasped his hand, and spoke, and addressed him:
"Telemachus, surely not without a god's warrant has this bird flown forth upon our right, for I knew, as I looked upon him, that he was a bird of omen. Than yours is no other house in the land of Ithaca more kingly; nay, ye are ever supreme.'

was an omen'. We note that none of the sailors or even Telemachus showed what Theoclymenus observed because the latter got out of the boat and clasped Telemachus his hand and told him secretly what he observed in the *dark sky.*

Also for the same phenomenon Theoclymenus said clearly to Penelope, that with this 'signal' Odysseus's arrival is confirmed (Od.17,150-161):

'ὦ γύναι αἰδοίη Λαερτιάδεω Ὀδυσῆος, ἦ τοι ὅ γ᾽ οὐ σάφα οἶδεν, ἐμεῖο δὲ σύνθεο μῦθον: ἀτρεκέως γάρ σοι μαντεύσομαι οὐδ᾽ ἐπικεύσω: ἴστω νῦν Ζεὺς πρῶτα θεῶν, ξενίη τε τράπεζα ἱστίη τ᾽ Ὀδυσῆος ἀμύμονος, ἣν ἀφικάνω, ὡς ἦ τοι Ὀδυσεὺς ἤδη ἐν πατρίδι γαίῃ, ἥμενος ἢ ἕρπων, τάδε πευθόμενος κακὰ ἔργα, ἔστιν, ἀτὰρ μνηστῆρσι κακὸν πάντεσσι φυτεύει: τοῖον ἐγὼν οἰωνὸν ἐϋσσέλμου ἐπὶ νηὸς ἥμενος ἐφρασάμην καὶ Τηλεμάχῳ ἐγεγώνευν.'

"Revered wife of Odysseus, son of Laertes, he truly has no clear understanding; but hearken to my words, for with certain knowledge will I prophesy to you and will hide nothing. Be my witness Zeus above all gods, and this hospitable board and the hearth of noble Odysseus to which I am come, that verily Odysseus is even now in his native land, sitting still or creeping, learning of these evil deeds, and he is sowing the seeds of evil for all the suitors. So plain a bird of omen did I mark as I sat on the benched ship, and I declared it to Telemachus.

The interpretation "with certain knowledge will I prophesy to you will hide nothing" does not really says what the Homeric text offers to its reader with the word 'mythos'. In Greek "μύθος" had entirely opposite meaning than in the classic period of Greece or today's reality. In other words *mythos* in the Homeric period had the meaning of *undisputable truth.* The latter certainty originates from the omen he recognized. The interpretation of the Greek word *"εφρασάμην"* does not mean simply "I did mark" but it means "I recognized".

We note that *in two instances* Homer presents Theoclymenus observing *alone*, the omen and fully understanding its deep meaning. The first is in Od.15, 529-534. In that he declares it *only* Telemachus when he is in the coast and the second is in Od.17,150-161 being in the palace with Penelope repeats to only to her, the same omen, which he observed while he was on the boat sitting and looking, from distance and across of him, the dark sky before sunrise.

Consequently by the omen's (Circus) *eastward flight (right part of the horizon)* was announced a) the Odysseus's arrival and b) the saving of Laertiades Home. Indeed, Odysseus was already there in the Palace, in agreement with the Homeric text but nobody knows that, except Telemachus.

Let us examine, further, two more cases in which bird omens appear in Odyssey and study and compare their internal details.

a) When Telemachus departures from Sparta *in the noon as he goes away from Menelaus' Palace* an eagle holding in *its talons a goose* appears, in an eastward flight (δεξιά) with respect the observers. The wild bird's appearance was explained by Helen who was only one of the observers, to Telemachus, as a good omen; and her interpretation is that Odysseus came back and was preparing the suitors' killing (Od.15, 160-179). From the above mentioned passage we present to the reader relevant parts in connection with the omen's characteristics:

'ὣς ἄρα οἱ εἰπόντι ἐπέπτατο δεξιὸς ὄρνις, αἰετὸς ἀργὴν χῆνα φέρων ὀνύχεσσι πέλωρον, ἥμερον ἐξ αὐλῆς… …..'

"Even as he spoke a bird flew by on the right, an eagle, bearing in his talons a great white goose, a tame fowl from the yard….."

Moreover, the above described event is completed with Penelope's dream presented in Od.19, 535-558 in which *Odysseus* corresponds to the coming eagle and the geese as the *suitors* which are going to be killed by the first.

b) The morning of the suitors' killing a *westward flight* of an *eagle clutching a timid dove* is described in Od.20, 240-246. In this scene, Homer presents several witnesses in day light, the suitors, to observe a westward flight (αριστερά) of an eagle having squeezed a timid dove as it flies. It was explained as a bad omen by the suitors and they gave up their plans for the Telemachus killing:

αὐτὰρ ὁ τοῖσιν ἀριστερὸς ἤλυθεν ὄρνις, αἰετὸς ὑψιπέτης, ἔχε δὲ τρήρωνα πέλειαν. τοῖσιν δ᾽ Ἀμφίνομος ἀγορήσατο καὶ μετέειπεν: ὦ φίλοι, οὐχ ἡμῖν συνθεύσεται ἥδε γε βουλή, Τηλεμάχοιο φόνος:'
however there came to them a bird on their left. An eagle of lofty flight, clutching a timid dove. Then Amphinomus spoke in their assembly and said:'Friends, this plan of ours will not turn to our killing. The slaying of Telemachus: instead, let us turn attention to the feas."

Homer presents three different scenes of a predatory bird associated with its victim. In two, of them, the victim is held firmly. In

the first (Od.15, 160-179) the *talons* are mentioned. In the second (Od.20, 240-246) the *talons* are implied. In the third (Od.15, 525-528) however, the predatory bird holds in his feet the victim.

In the first two scenes (Od. 15, 160-179 and Od.20, 240-246), respectively, there is *daylight, many observers, a big predatory* bird the eagle. Further there was a *small distance* between the described event and the observers. The third scene (Od.15, 525-528) is evolved before sunrise *without enough daylight.* There is only *one observer* on the boat, who recognised a small predatory bird Circus (hawk) across of him and not closes by, as in the previously mentioned Homeric scenes.

Additionally in the *third scene* (Od.15, 525-528) the dove's feathers are shedding down in lack of light, whereas in the other two cases, mentioned earlier, the two victims are not shedding their feathers down, *during the flight in broad daylight,* as one would expect from the predatory bird's behaviour to its victim. In the third scene we note an unnatural phenomenon. How it is possible a small bird and small predatory bird to be visible and moreover how the observer could distinguish the very small feathers of the dove falling down in the lack of light just before sunrise?

Also, it is well known that the predatory bird does not hunt during the night and doves are staying in their nests until the sunrise. How it is possible to see this scene in the lack of light, before sunrise?

2.3 Description of the night sky-Looking for an astronomical phenomenon

Being in astonishment, with the Homeric scene, in which a competent prophet of the 13th century B.C., Theoclymenus, connected with the Melampus' family spanning several centuries of omens' analyzers, before him, we take the liberty to examine the medium from which Theoclymenus received his information. Are the omens which Theoclymenus used only the birds in nature? We know of course that experienced Theoclymenus was associated with a solar eclipse already (Papamarinopoulos et al. 2012) and consequently our liberty to examine once more the sky is justified not only because is the last in a row of prophets for centuries going back into deep prehistory, who undoubtedly were looking in the sky for omens, as well, but because we found extremely unusual and unnatural the events described by Homer in this particular case in comparison with other scenes which are described by himself and they make sense.

We know of course that Plato in the 4th century B.C. had accused the poets as deviating from patterns of the initial founders of the first cities and he said in the Republic (Resp.377.b.11-377.c.2): "It is appropriate for the founders to know the patterns on which they must base their stories and from which they *must not deviate"*. Following the arguments mentioned above, our liberty, has another purpose which is to prove that the unnatural scene already pinpointed by us, earlier, was not a product of fertile imagination from which sometimes the poets could not escape and they had to be told not to do it.

Consequently we searched for an astronomical phenomenon observed in the sky from the Ionian Islands at dawn on the 28th of October 1207 B.C (JD 1280867). For this purpose, we used the highly accurate Starry Night software (2006). Apart from the already mentioned capability of taking into account the axial precession of Earth in order to *correctly* represent the stars of the sky in the past, we must also note that according to the creators of the software, the other objects of our solar system, the position of the eight major planets should be accurate to within 5 arcseconds for times within 3000 years of the present, while the position of our moon should be accurate to

within 10 arcseconds for several thousand years in either direction.

In Figure 1, the observed sky from Ionian Islands at 06.10 Local Time (LT) or 4:10 Universal Time (UT) before sunrise is shown. The sunrise was at 06.53 LT (4: 53 UT) according to Starry night program. Planet Venus is eastward in accordance with the Homeric epic's description (see Papamarinopoulos et al. 2012). Also the referred constellations by the Homeric text which can be observed, *then*, were Ursa Major in the northward quadrant, Bootes was close to Ursa Major and Taurus with the Pleiades' nebula was exactly in the westward quadrant. Orion constellation was already set.

However, there are some other constellations, in Figure 1, too which are observable from the Ionian Islands environment. Among them, the Corvus (Crow) constellation is observed well in the south-east quadrant at an altitude of 40 degrees over the horizon. The constellation of Crater is near to Corvus and the Hydra constellation is surrounding them. In prehistoric times Hydra, Corvus and Crater were parts of one single constellation because they were connected with a common myth (Eratosthenes, Catasterismi 1, 41R, 1-34). Apollo requests from Corvus to go and rob the Crater's content in order to bring to the Gods but the water snake Hydra intervenes and does not allow Corvus to rob the Crater's content. By sending Apollo Corvus to do his job, is implied that he is his messenger. Aratus described Κόραξ=Corvus and characteristically notes that with his beak was pecking Hydra's folds (Aratus, Phaenomena, 1, 443-450).

In addition to Eratoshenes, Manillius Marcus (Astronomica, 1, 417) designated Corvus as "Pheobo Sacer Ales" (holly bird), and Ovid (Metamorphoses, 2, 544-545) similarly as "Phoebeius Ales". Both ancient Latin authors connect the bird with Apollo's prophetic functions (Allen 1963). In another variant of the myth Corvus was sent by Apollo to Coronis, to his lover, who was pregnant to Aesculapius, his expected son, but the woman was ready to marry somebody else. The messenger returned to Apollo and declared to him what he found. Apollo, from his sadness, turned the silver colored bird into black (Apollodorus, Library, 3, 118, 3-119, 3).

The connection between today's constellation Corvus and its past mythological descriptive variants and Homeric Circus (a kind of hawk) are firstly their common characteristic to be Apollo's messenger. Secondly, is its common appearance in the sky then towards (South East) and in accordance with the Homeric Text (Eastwards). Shall we accept that today's constellation Corvus is Homeric Circus and if yes why?

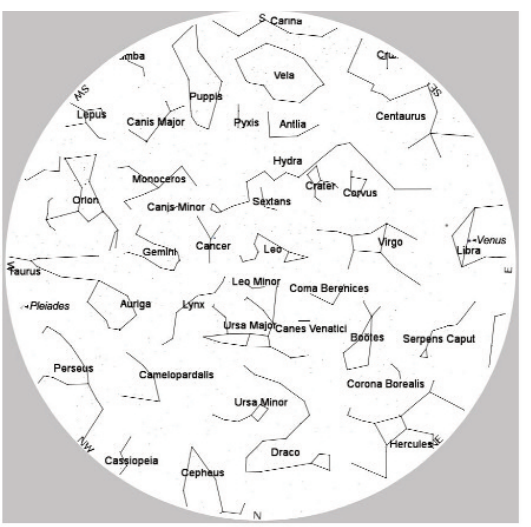

Figure 1: Representation of the sky above Ithaca on October 28th 1207 B.C. (JD 1280867) at 6.10 LT (4.10 UT) before sunrise.

Firstly we note Homeric Circus (a kind of hawk) and Corvus are mentioned both Apollo's *messengers* in different time periods.

Secondly we note that in the Homeric text the omen appears *(δεξιά) eastward* and by observing the astronomical map, mentioned above, we see the constellation Corvus in the *South East* direction. In other

words there is *coincidence* of the East between the omen and the *constellation*.

Thirdly we have presented to the reader, earlier in our text, that Circus and his victim the dove shedding feathers to the ground is highly unnatural event.

Fourthly it is a dark sky and such details, as mentioned above, cannot be distinguished even if the observer was very skillful or even if he had optical capacity 20/10.

Fifthly what it could be possible for an experienced observer like famous Theoclymenus, to be distinguished in such lacking the light conditions are the constellations and Corvus in particular.

After the above analysis we are forced to accept that Apollo's predatory *bird-messenger* Circus observed in the sky eastward at dawn on the 28th of October of 1207 B.C., is hidden under today's Corvus constellation. In other words what Ploutarchus said, about the myths in his *Fragment* 157 is correct and applicable thought-out the prehistoric and the historic period of the Greeks: *"The physiology of the ancients both among Greeks and Barbarians was a physical doctrine concealed in legends, for the most part a secret and mysterious theology conveyed in enigmas and allegories, containing statements that were clearer to the multitude than the silent omissions, and its silent omissions more liable to suspicion than the open statements"*. The reader now understands where the term *'secret theology'* fits in our discussion. Apollo and his messenger the predatory bird Circus shows it clearly. According the Homeric text, Odysseus appears and kills the suitors the exact day of the great feast of god Apollo (Od. 20, 144-159, Od. 20, 276-278, Od. 21, 257-284). He also understands where the physical science exhibits itself in the astronomical information of Corvus' constellation which is hidden within this Homeric myth.

Let us now examine once more (Liritzis and Castro, 2013) the Homeric scene leaving Corvus 'flying in the sky' and examine, together with the reader, the dove being in its feet. How it is possible for a constellation to have a dove in his feet? Is it another paradoxical Homeric scene or is it another hidden old physical science as Plutarchus insists to say? In Figure 1 we observe, with excitement, that indeed there is not only one dove in Corvus' feet posed diametrically in the bottom (thus in the west) but many!

These are the *Pleiades* nebula of Taurus constellation. Pleiades', name, originate from the word *πλείν* (sail) because their heliacal rising as a group in May and their setting in the late autumn in November correspond with the beginning and the end of navigation period for Mediterranean peoples.

However, ancient Greek authors from Homer and Hesiod's times to Athenaeus, Pindar and Simonides and many others call the Pleiades as Peleiades=*Πελειάδες*. The latter mean rock pigeons or rock doves. The seven bright stars of Pleiades observed with naked eye have goddess' names, they are mothers of gods and they are characterized as doves. The constellation of Orion (the heaven hunter) is near to them and he "hunts" the doves in accordance to Boeotian Myths (Scholia in Pindarum, *Ode N 2*, scholion 17 c 6-8). Homer mentions that the Circus has in his feet and *not in his talons a dove (peleia=πέλεια).* We observe, indeed, in Circus' (Corvus') "feet" extension (posed diametrically over the sky, in its feet = in the bottom) the Homeric dove/Pleiades to be located in the westward direction of the quadrant of the astronomical map. The lack of talons in Corvus' feet is interpreted clearly now because the scene is clearly astronomical.

Searching for the theological part of the Homeric scene we remark that indeed the Peleiades/Pleiades "*rain*" with their *"feathers"* and blessing Telemachus and his royal Laertian House with this way. But what are these dove's "feathers" which *unnaturally* are falling down during the

predatory bird's flight? The astronomical phenomenon of a **meteor shower** was presented brilliantly by Homer as dove's falling feathers.

2.4 Meteoric phenomena described in the Homeric text

Moreover, other *'god's type signals'* is mentioned in the epic in the next days after Telemachus' arrival, on the island. These *"divine signals"* are presented with a symbolic way which, however, can be understood if today's astronomical knowledge is utilized:

a) On the eve of the suitors killing (on the 29th of October 1207 B.C. (JD 1280868), a scene is described where the sky appears as *blazing fire* (Od. 19, 39), *"πυρός αιθομένοιο"* in which Odysseus and Telemachus hide their weapons in the early evening. Telemachus attributes the sky to a divine wonder and the presence of God.

It looks like the *Zodiacal light's* description. The latter is a faint light of the night sky caused by sunlight, scattered, by space dust and comets debris. As is well known, the meteor showers contribute *strongly* in the zodiacal light's *intensity* because the exceptional dust in the atmosphere increases, in return, the *scattering effect.*

Additionally, the Homeric description includes "Athena's" involvement with a gold small lamp *(λύχνος)* guiding Odysseus and Telemachus. Athena's presence satisfies once more the expected "theology" of the myth whereas deeply within its core is hidden the physical fact, in the lines of the Plutarchus' model of thinking.

b) The day of the suitors' killing started, with Zeus' thunder in clear sky just before dawn (Od. 20, 91): *ὣς ἔφατ᾽, αὐτίκα δὲ χρυσόθρονος ἦλυθεν Ἠώς. ("So she spoke, and straightway came golden-throned Dawn").* Odysseus woke up and prayed to Zeus in order to receive a sky signal (*τέρας* = celestial sign) (Od.20, 98-104):

> *'ἔκτοσθεν δὲ Διὸς τέρας ἄλλο φανήτω. ὣς ἔφατ᾽ εὐχόμενος: τοῦ δ᾽ ἔκλυε μητίετα Ζεύς, αὐτίκα δ᾽ ἐβρόντησεν ἀπ᾽ αἰγλήεντος Ὀλύμπου, ὑψόθεν ἐκ νεφέων: γήθησε δὲ δῖος Ὀδυσσεύς.'*
>
> *"and without let a sign from Zeus be shown besides. So he spoke in prayer, and Zeus the counsellor heard him. Straightway he thundered from gleaming Olympus, from on high from out the clouds; and goodly Odysseus was glad".*

In the scene, mentioned above, Homer describes a phenomenon which could be meteorological in nature. However, the poet in the following passage describes another scene which fully clarifies the non meteorological nature of the phenomenon. Homer presents a woman grinding at the mill, within the house, who heard a loud noise which she interpreted as Zeus' thunder. She was, however, surprised as she got out of the house because she remarked that the starry sky was cloudless and clear. We understand her surprise because is not a common experience from one to have clear sky and from the other to have a thunder (Od. 20, 111-114):

> *'ἥ ῥα μύλην στήσασα ἔπος φάτο, σῆμα ἄνακτι: Ζεῦ πάτερ, ὅς τε θεοῖσι καὶ ἀνθρώποισιν ἀνάσσεις,*
> *ἦ μεγάλ᾽ ἐβρόντησας ἀπ᾽ οὐρανοῦ ἀστερόεντος, οὐδέ ποθι νέφος ἐστί: τέρας νύ τεῳ τόδε φαίνεις.'*
> *"She now stopped her mill and spoke a word, a sign for her master: "Father Zeus, who art lord over gods and men, verily loud hast thou thundered from the starry sky, yet nowhere is there any cloud: surely this is a sign that thou art showing to some man."*

Since now the reader is familiar that the phenomenon is not meteorological the question which is raised is what was the

nature of 'the god's signal'? We propose to the reader that it was a *meteoric* phenomenon, *a bolide*. A fireball or bolide is an exceptionally bright meteor (magnitude -14) particularly one that explodes, sometimes called a detonating fireball. Odysseus and the woman did not see the astronomical phenomenon because they *were inside the palace. They only heard the strong explosion* as very loud noise close by.

c) During the same day, shortly before the beginning of the battle with the suitors (Od. 21, 413-415), *Zeus' thunder* was heard once more by Odysseus. We propose that it is not a meteorological phenomenon too since the text does not mention rain. It is another meteoric event like a bolide which was exploded and it was not observed by Odysseus since he was within the palace.

> 'Ζεὺς δὲ μεγάλ᾽ ἔκτυπε σήματα φαίνων: γήθησέν τ᾽ ἄρ᾽ ἔπειτα πολύτλας δῖος Ὀδυσσεύς. ὅττι ῥά οἱ τέρας ἧκε Κρόνου πάϊς ἀγκυλομήτεω:'
> "and Zeus thundered loud, showing forth his signs. Then glad at heart was the much-enduring, goodly Odysseus that the son of crooked-counseling Cronos sent him an omen"

The above mentioned official interpretation does not really offer the richness of this unique phenomenon. This particular bolide, mentioned earlier in Od.21, 413-415, is differentiated from the previous bolide mentioned in Od.20, 111-114 because "Zeus' signal was highly intensive and in an extensive mode" (*μεγάλ᾽ ἔκτυπε σήματα*= lauded strongly and extensively showing his signals). This phenomenon is slightly more complex than the explosion of a single bolide's manifestation. It rather corresponds in a bolide's multiple breaking into several little pieces which were exploded sequentially offering this extension of the repetitive sounds.

d) The meteoric phenomena did not stop during the suitors' killing day on the 30th of October of 1207 B.C. (JD 1280869). They continued and in the next day on the 31th of October (JD 1280870) at noon (Od. 24, 526-541).

Odysseus was already in the fields together with his people and he battles against the lords who were there to retaliate for the suitor's loss. During the battle Athena's voice and falling objects induce terror and panic within the battling parties. The people abandoned their weapons and fled to the city. In addition to the falling objects a thunder's remnant was fallen down in Athena's feet on the ground:

> *'εἰ μὴ Ἀθηναίη, κούρη Διὸς αἰγιόχοιο, ἤϋσεν φωνῇ, κατὰ ἔσχεθε λαὸν ἅπαντα. ἴσχεσθε πτολέμου, Ἰθακήσιοι, ἀργαλέοιο,*
> *ὥς κεν ἀναιμωτί γε διακρινθῆτε τάχιστα. ὣς φάτ᾽ Ἀθηναίη, τοὺς δὲ χλωρὸν δέος εἶλεν: τῶν δ᾽ ἄρα δεισάντων ἐκ χειρῶν ἔπτατο τεύχεα, πάντα δ᾽ ἐπὶ χθονὶ πῖπτε, θεᾶς ὄπα φωνησάσης: πρὸς δὲ πόλιν τρωπῶντο λιλαιόμενοι βιότοιο. σμερδαλέον δ᾽ ἐβόησε πολύτλας δῖος Ὀδυσσεύς, οἴμησεν δὲ ἀλεὶς ὥς τ᾽ αἰετὸς ὑψιπετήεις. καὶ τότε δὴ Κρονίδης ἀφίει ψολόεντα κεραυνόν, κὰδ δ᾽ ἔπεσε πρόσθεγλαυκώπιδος βριμοπάτρης.'*

> *"had not Athena, daughter of Zeus, who bears the aegis, shouted aloud, and checked all the host, saying: "Refrain, men of Ithaca, from grievous war, that with all speed you may part, and that without bloodshed." So spoke Athena, and pale fear seized them. Then in their terror the arms flew from their hands and fell one and all to the ground, as the goddess uttered her voice, and they turned toward the city, eager to save their lives. Terribly then shouted the much-enduring, goodly Odysseus, and gathering himself together he swooped upon them like an eagle of lofty flight, and at that moment the son of Cronos cast a flaming thunderbolt, and down it fell before the flashing-eyed daughter of the mighty sire."*

We would like to stress the reader's attention to the following pints: 1) The Homeric text describes a battle scene between opposing parries in the fields during an obviously *non rainy day.* As they battled, they heard a *terrible noise 'Athena's voice'* which made them pale fear and they flew their weapons from their hands *("ἐκ χειρῶν ἔπτατο τεύχεα"* (Od.24, 534): the arms flew from their hands). 2) The text offers an extra particular detail which coincides with "Athena's terrible voice" as well. This, detail is additive, to the falling's of the weapons because the passage presents clearly the following *"πάντα δ᾽ ἐπὶ χθονὶ πῖπτε, θεᾶς ὄπα φωνησάσης"* (Od.24, 535), (*and fell one and all to the ground,* as the goddess uttered her voice). The result of this combined terrible phenomenon compelled the people to run away. And they do that in order to save their lives *("πρὸς δὲ πόλιν τρωπῶντο λιλαιόμενοι βιότοιο"* = they turned toward the city, eager to save their lives). We interpret this scene as the result of a bolide's explosion, 'Athena's voice', at some altitude above the battlefield and possibly a shock wave and/or meteor's debris falling which compelled initially *the people's falling down as well "πάντα δ᾽ ἐπὶ χθονὶ πῖπτε" and fell one and all* to the ground and then to run away. 3) Homer finishing the Odyssey offers us in his final chapter the concept of a bolide's fragment impacting on the ground as meteorite. He does that with the two words; *'ψολόεντα κεραυνόν', (flaming thunderbolt).* However from Homer's text there is not any mention of a storm. This type of thunder is a consequence of the two previously mentioned stages of a bolide's explosion and in fact is the final stage in which the debris crashes warm on the ground smoke and soot *(smouldering lightning).*

In Homer's passages we meet the gods intervening in these phenomena. Zeus, of course is prevailing in all of them but Apollo and Athena participate here and there as they evolve in the stories described. This theology satisfies the invention part of the myth which the reader may see it as a sphere whose spherical sector engulfs the nucleus in which the hidden physical facts exist without altering them.

2.5 Discussion for the meteor shower

A meteor shower is observed by humans because the Earth's orbit intersects the cloud of these meteoric remains. Meteor showers take are named after the background constellation from which they seem to derive (radiant point). For example, if we have a meteor shower with a radiant point near the Pleiades star cluster (in Taurus constellation) it is called Taurids.

In Figure 2 we can observe a radiant point near the star cluster of Pleiades (in Taurus constellation), from which *today* a shiny meteor shower originates, named Taurids (or Halloween fireballs) and is observed every year *during late days of October-fist days of November.* Today Taurids' meteors are the remnants of a big comet which had been broken thousand years ago. Also a remnant of the latter is the small comet Encke belonging in Jupiter' comet family (Whipple 1940, Asher & Izumi 1998, Klacka 1999, Clube & Napier 1984). Encke comet was attracted by Jupiter's gravity field and it approaches the Sun and the Earth's orbit approximately every 3.3 years. Thus, *today's* Taurids are related with Encke and we accept them as the remnants of the latter.

However, the night sky and the constellations back then were different ***because of the precession of the equinoxes.*** This phenomenon "moves" in the exactly same manner all the 'spots' in the sky. Therefore, a radiant point will be displaced and Starry Night software could give us the corresponding celestial equatorial coordinates (right ascension *RA* and declination *dec*) for *the new equinoctial points and their dates* and the coordinates of the radiant point.

Thus, we can extrapolate the exact date of the autumnal equinox then, which is on 4 October 1207 B.C. (JD 1280843).

Also, e.g. the coordinates for the Northern Taurids radiant point for *2012 A.D. are: RA 3h 52.77m, dec 22o 2.24′*, while for *1207 BC* are: *RA 0h 56.93m, dec 7o 43.92′.*

Moreover, as it is known in Celestial Mechanics, over such a long period of time some influences such as the perihelion/ apsidal precession of the comets' orbits, the gravitational perturbations from other objects of the solar system, the material loses from the flying near the Sun on the perihelion, and the absence of ancient verified observations, hinder us from calculating or confirming the orbits of the comets and streams and by extension the exact radiant point or the time period of a visible meteor shower from Earth.

Consequently, the current Taurids could appear at that time from another constellation and in a different period.

The Homeric described meteor shower had its radiant point near to Pleiades in Taurus constellation on 1207 B.C. However, there is not the same meteor shower with today's Taurids.

The meteor showers some times are highly intensive (increase of the meteors' rate, as a flow, than the usual numbers per hour). The explanation of this intensity is due to the passing of a comet (from which we suspect these meteors/remnants come) in the *previous or same year* from its orbit perihelion, approaching the Sun. The comet obviously upsets the cluster increasing the debris' flow due to the loss of his mass. Consequently an intensive meteor shower is observed, as we have recorded many times in the past 3 centuries, amongst the best known are the cases of *Leonids* meteor shower and the enormous upsurge of thousands meteors per hour, that are observed each time the comet 55P/Tempel-Tuttle reaches its perihelion every 33 years (last meteor storms in 1999, 2001, 2002) and the Perseids meteor shower with its outburst of 1991 and 1992 (400+ meteors per hour), which originate from the comet 109P/Swift–Tuttle (period 133 years, last perihelion in 1992).

We look for a *possible approach* of a comet with helping of Starry Night Program and we found that *comet Halley* probably intersected the Earth's orbit, approaching the Sun just 0.15 AU (1 Astronomical Union is approximately equals to 150 x 10^6 km) from it, in the autumn of 1208 B.C. In this case, the comet could be observed Earth's different locations (approximately magnitude -4, like planet Venus) in the spring of 1207 B.C. In that case, the above mentioned comet could be observed during the autumn of 1208 B.C. from the Ionian Islands, exactly one year before Odysseus's return to Ithaca as proposed by Papamarinopoulos et al. (2012) date.

Halley's Comet approaches the Sun and the Earth's orbit every *76 years.* The latter was known among the ancient observers because there are ancient records of its passes. The oldest reference of it is on the 466th B.C. (Graham & Hintz 2010).

However, we do not know if these remnants near to Pleiades on 1207 B.C. belong to this comet.

Finally, in any case, Theoclymenus' experienced eye *being on the boat,* as Homer says, observed before sunrise this spectacular phenomenon: A meteor shower (that always seems falling down from the higher atmosphere to the ground, like feathers) coming from the Taurus constellation near Pleiades/Peleiades (dove's feathers) which at that time was diametrically posed over the sky (at the feet of the bird messenger of Apollo) from Corvus constellation and declared it *later* and *secretly* to Telemachus after *the boat's anchoring,* in the little port, and *after taking their breakfast* all together on the coast. In other words the sky's observation was conducted *when no light was available* because the dawn had not arrived yet.

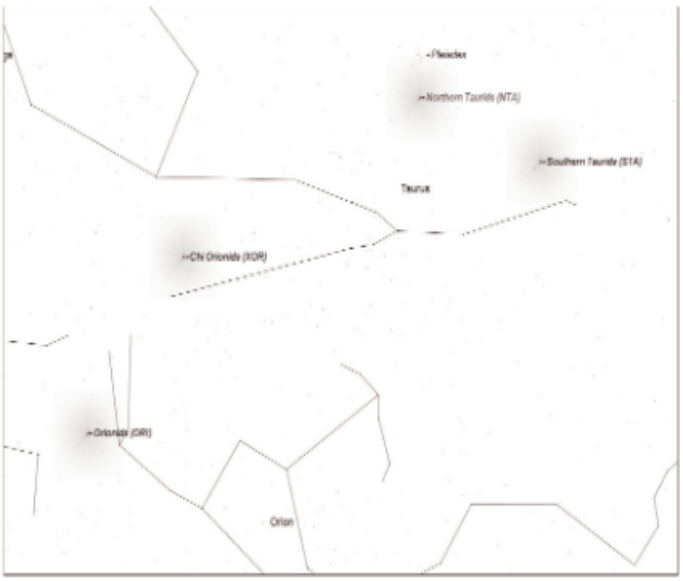

Figure 2. Radiant points of Taurids & Orionids meteor showers, for recent years.

3. CONCLUSIONS

In the paper Papamarinopoulos et al. (2012) we had demonstrated to the reader that Homer does contain material which can be used for scientific analysis. We had further concluded that a partial 75% solar eclipse had occurred on the 30th of October 1207 B.C. signifying Odysseus' exact return to the Ionian Islands. The same paper indirectly had dated the legendary Trojan War's end in which Odysseus had participated.

In the present paper, the authors project in the scientific community their continuation of their effort and they attempt to demonstrate the existence of the following astronomical phenomena.

a) The present day's Corvus constellation is the Homeric Circus.

b) A meteor shower that originated from a radiant point near to Pleiades of Taurus constellation, is pin pointed for first time as an observation in the Ionian Islands on the 28th of October 1207 B.C. (JD 1280867) and it is hidden within the nucleus of myth, as dove's falling feathers. Also as thunders in the clear sky (bolides, meteoroids erupted in the atmosphere), reddish sky after sunset (zodiac light) and a meteorite in the surface (remnant of a thunderbolt).

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This paper is devoted to the Professor of Astronomy of the University of Patras G. Antonakopoulos.

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