

# A Comet during the Trojan War?

S.P. Papamarinopoulos

*University of Patras, Greece*

This paper is dedicated to Victor Clube, Bill Napier, Alfred De Grazia and Bob Kobres. From their work I learnt to interpret the past.

**Abstract.** Plato, in *Timaeos*, describes the story of the sun's inadequate son who mimics his father. He is called Phaethon (shining) and caused hardships to several peoples on earth. In the past, Phaethon was associated with visible luminous electric phenomena and fires on the earth related to the volcanic explosion of Santorini. Plato regards Phaethon's story as a non-fabricated myth but on the contrary as true information from the past. In the text, time of the event is not given, but the general analysis of *Timaeos'* and *Critias'* passages in connection with Atlantis proves that the 12th century BC is the obvious century of the event. Plato claims it had happened thousands of years before Solon's 6th century BC. Herodotus, a century earlier, records that Egyptian history extends thousands of years before his time. However, centuries later, ancient Greek writers and Egyptologists illustrate the use principally of moon calendars by the Egyptian priesthood in all epochs. The priests, when recording the ancient history of their country used moon calendars whereas Pharaoh's high officials used solar calendar, when issuing governmental edicts. Dividing these thousands of years by the number of the full moons of the Metonic circle-year we come to the beginning of 12th century BC. A comet actually introduces a parallax in its orbit with respect to the orbits of the planets and their satellites as the myth describes. However, the luminous phenomena in volcanic eruptions do not. Homer, on the other hand, describes the same phenomenon with a variety of complex images as happening during the war between the Achaean Greeks and the Trojans. The comet appears as Athena coming from the west in the form of a shining "star", in other words, as Phaethousa. The female and male appearances of the same strange and rare phenomenon seen by different people in the Aegean can be explained as an optical illusion. Numerous traces of fires have been spotted in archaeological sites corresponding to 12th century BC in Bronze Age sites in East Mediterranean. They are assigned as results of earthquake activity. In fact, the seismic storm which occurred as a domino effect has left indisputable evidence at the above sites. The decisive scientific methodology may prove that, apart from fires caused by earthquakes, Phaethon could have also caused some fires. This may be proved by taking samples of burnt soil from 12th century BC horizon far away from palaces or settlements. The contact between falling burning cometary fragments and forests causes fires. Furthermore, its tail, consisting of ionized plasma, stardust and water particles, interacts with the atmosphere producing precipitation. For instance, Irish bog trees and Asia Minor oaks exhibit an anomalous precipitation event within their growing rings in 1159 BC and in the years after (see [2, 18] respectively). At exactly the same period, ice-cores present extreme high acidity peaks, whereas in Ireland, Greenland and Asia Minor a kind of climatic shift appears.

## 1 Introduction

Plato, in *Timaeos*, explains that the story he intends to describe has the form of a myth, meaning a non-fabricated myth but a myth imprinted on the memory of the people in the past. It is therefore a truth, in other words logos. Let us examine more closely the case step by step by clarifying the differentiation between fabricated and non-fabricated myth (Tim 22.c.3–22.c.7):

τὸ γὰρ οὖν καὶ παρ' ὑμῖν λεγόμενον,  
ὡς ποτε Φαέθων Ἥλιου παῖς  
τὸ τοῦ πατρὸς ἄρμα ξεῦξας  
διὰ τὸ μὴ δυνατός εἶναι  
κατὰ τὴν τοῦ πατρὸς ῥόδον ἐλαύνειν τα  
τ' ἐπὶ γῆς συνέκαυσεν καὶ αὐτὸς  
κεραυνωθεὶς διεφθάρη.

For in truth the story that is told in your country as well as ours, how once upon a time Phaethon, son of Helios, yoked his father's chariot ,and, because he was unable to drive it along the course taken by his father, burnt up all that was upon the earth and himself perished by a thunder-bolt.

Plato describes an entity, a kind of object which mimics the sun, as if it were its relative in shining capacity but smaller in size, in other words its child. However, it results in being catastrophic due to its incapacity to light the earth with the same respect as the sun. One wonders what sort of an object this Phaethon could be causing hardships to peoples on earth. Could it possibly be a usually fabricated Platonic myth after all? Plato himself clarifies the concept of this myth in the following passage (Tim 22.c.7–22.d.3):

τοῦτο μύθου μὲν σχῆμα ἔχον λέγεται,  
τὸ δὲ ἀληθές ἐστι τῶν περὶ γῆν  
κατ' οὐρανὸν ἰόντων παράλλαξις καὶ  
διὰ μακρῶν χρόνων γιγνομένη τῶν ἐπὶ  
γῆς πυρὶ πολλῇ φθορά.

that story, as it is told, has the fashion of a legend, but the truth of it lies in the occurrence of shifting of the bodies in the heavens which move round the earth, and a destruction of the things on earth by fierce fire.

But the planets and their satellites do not perform any parallax of their orbits in the sky except for the comets which clearly exhibit irregular orbits with respect to the orbits previously mentioned. Plato clearly defines the concepts of the myths by saying (Resp 377.b.6–377.b.6):

μύθους πλασθέντας ἀκούειν τοὺς παῖδας

fabricated myths for the children to listen.

He admits that he himself constructs fabricated myths in order to attract children's attention and then defines the case of the non-fabricated myths as follows (Tim 26.e.4–26.e.5):

τό τε μὴ πλασθέντα μῦθον ἀλλ' ἀληθινὸν λόγον εἶναι πάμμεγά που.

and the fact that it is no invented fable but genuine history is all important.

But Plato does not stop here. Moreover, in Critias, he also defines the concept of mythology (Criti 110.a.2–110.a.4):

τῶν ἐν τοῖς πρόσθεν καὶ πάλαι  
ποτὲ γεγονότων ἡμέλουν.  
μυθολογία γὰρ ἀναζήτησίς  
τε τῶν παλαιῶν μετὰ σχολῆς  
ἀμ' ἐπὶ τὰς πόλεις ἔρχεσθον,

and their talk was about them; and in consequence they paid no regard to the happenings of bygone ages. For legendary lore and the investigation of antiquity are visitants that come to cities.

In other words, Plato divides a myth into two parts. Firstly a fabricated myth is an attractive colourful sphere concealing a truth in its core constructed by him, whereas secondly a non-fabricated myth is also colourful but not constructed by him. The external surface of this sphere contains some of the initial observers' inventions and of other future users' added to it. This happens because it was transmitted from generation to generation throughout the centuries. Both the initial observers and the next users could not comprehend a fearful and rare past event. This event lies within the core of the non-fabricated myth. It is the traumatic memory of this event imprinted on the initial observers' memory which later on became a legend. This is the Phaethon case. Therefore it belongs to the second category of a non-fabricated myth. In both cases (fabricated and non-fabricated myth) Plato tells the truth. In the first category there is a philosophical truth whereas in the second there is a natural past event which can be identified scientifically and sometimes can be proved. Unfortunately Vida-Naquet [23] was unable to understand this difference, in spite of his 50-year effort in his study of Timaeos and Critias in connection with Athens and Atlantis.

Moreover, in Phaedrus, Plato defines science as follows (Phaedr. 277.b.5–277.c.3):

{ΣΩ.} Πρὶν ἂν τις τὸ τε ἀληθές  
ἐκάστων εἶδῃ περὶ ὧν λέγει ἢ γράφει,  
κατ' αὐτό τε πᾶν ὀρίζεσθαι δυνατός  
γένηται, ὀρισάμενός τε πάλιν κατ' εἶδη  
μέχρι τοῦ ἀτιμήτου τέμνειν ἐπιστηθῆ,  
περὶ τε ψυχῆς φύσεως διιδῶν κατὰ  
ταύτᾳ, τὸ προσαρμότιον ἐκάστη φύσει  
εἶδος ἀνευρίσκων, οὕτω τιθῆ καὶ διακοσμῆ τὸν λόγον,  
ποικίλη μὲν ποικίλους ψυχῆ καὶ παναρμονίους διδούς  
λόγους, ἀπλοῦς δὲ ἀπλῆ,

Socrates: First you must know the truth about the subject that you speak or write about, that is to say, you must be able to isolate it in definition, and having so defined it you must next understand how to divide it into kinds, until

you reach the limit of division, secondly, you must have a corresponding discernment of the nature of the soul, discover the type of speech appropriate to each nature, and order and arrange your discourse accordingly, express the nature of the complex and simple soul with panharmonic and simple analogies.

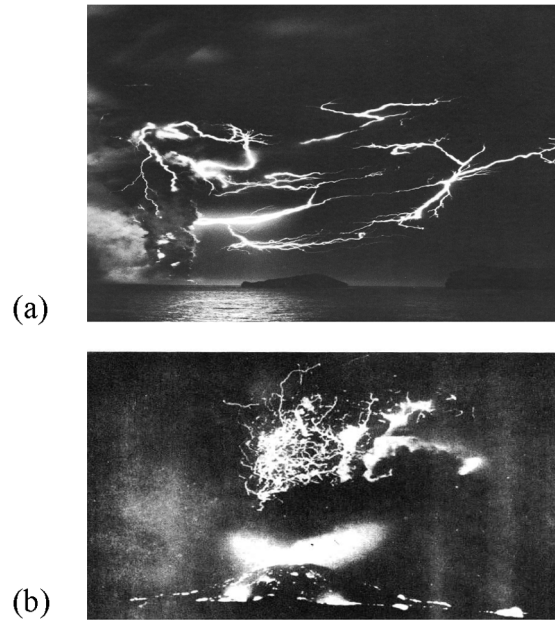
Thus it is deduced that the philosopher defines both science and mythology with complete clarity. He further divides the myths into two categories: those which were genuine legends of past events and remained in people's collective unconscious and those which were fabricated by him for the purpose of attracting the young to discover by themselves the concealed philosophical truth in its "dramatic", so to speak, fabrication. Therefore Phaethon should be treated by future analysts scientifically bearing in mind what Plato meant in terms of philosophy, science and mythology. Without recognizing Plato's genuine interest in the past of the Greeks, their country and the world respectively, they could easily mislead themselves to erroneous misconceptions.

## **2 An Old Interpretation of Phaethon Phenomenon**

Galanopoulos [12, 13] attempted to interpret the Phaethon phenomenon as a luminous image appearing during the explosion of the volcanic crater of Santorini in the Aegean Sea. He explained, in Figures 1 and 2, the platonic description as prehistoric information deduced from an already known, nowadays, electric phenomenon with luminous effects occurring before and during volcanic explosions. It has been repeatedly observed by different both scientific observers and laymen. Unfortunately such an image with a clear physical interpretation does not explain what Plato describes as parallax of the orbit of a phenomenon both round the earth and in the sky. The luminous image associated with a volcanic explosion cannot perform an orbit round the Earth and in other words perform a parallax mode with respect to the plane of the Earth's orbit.

## **3 A New Interpretation of Phaethon Phenomenon**

As Clube and Napier [6] pointed out, fragments of the initial giant comet Enke, which first appeared 20000 years ago, approach the Earth every 1000 years or so, causing disasters. These years are 1200, 2300 and 3300 BC In this paper we examine the case of the 12th century BC disaster. Kobres [17] was the first to perform a simulation on legends associated with the 12th century BC round the world. He demonstrated a plausible scenario illustrating that Phaethon was in fact a comet recorded by prehistoric observers in the Aegean, Middle East, Egypt, India, China and Central America. Phaethon approached then the Earth very closely and interacted with it. Flaming particles from its head possibly induced fires in Europe,



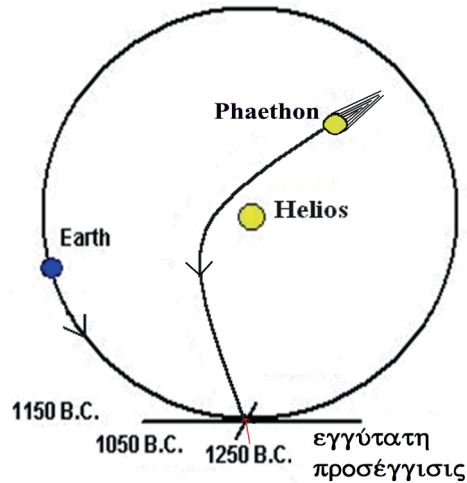
**Fig. 1** (a) A luminous electrical phenomenon during a volcanic explosion [12]. (b) Another electric luminous phenomenon resembling a flaming galloping rider. This feature does not exhibit parallax because it does not perform any orbit [13]. Reprinted with permission.

Anatolia and the Middle East. Ionized dust and water particles from its tail were released into the atmosphere and interacted chemically with it. Precipitating events occurred successively from this interaction. Apart from that, a late ancient Greek writer, Diodorus Siculus, mentions the elements of the earthquake and flood connecting them with the visual presentation of a comet in Peloponnesus. We do not have any means of dating the described event. One wonders if the air-vibrations of the passing cometary fragment induced some tremors on the ground or if an earthquake actually occurred, coinciding with the comet's passing in the area of the observers (Bibliotheca historica 15.p.1.32–15.p.1.33):

Περὶ τοῦ γενομένου σεισμοῦ καὶ κατακλυσμοῦ περὶ τὴν Πελοπόννησον  
καὶ τῆς φανείσης ἐν οὐρανῷ λαμπάδος.

About the earthquake and the flood round Peloponnesus and the appearance of the torch in the sky.

A description involving earthquakes and fires but not earthquakes and floods, as the above, remind us what Clube and Napier [5] reported in their book *The Cosmic Serpent*. They found similarities between the Tunguska impact in Siberia in 1908 AD, a medieval account in 1296 AD of a stony meteorite swarm which fell in what is now Russian Federation (as recorded by a local chronicler) and the two battles of the gods as described by Hesiod in his *Theogony*. The last one, written



**Fig. 2** A comet exhibiting the phenomenon of parallax in its orbit as it goes round Earth. Reprinted with permission.

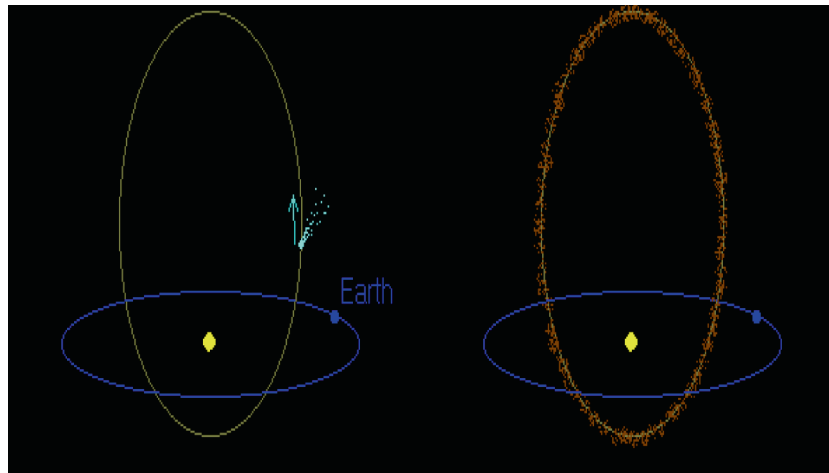
**Table 1** Characteristics of a comet's appearance as an extra close encounter to Earth.

Tunguska (1908 AD)	Velikii (1296 AD)
Blinding ball of fire "darkened the Sun"	
Thick cloud of dust	Dark cloud
Intense thunder	Intense thunder
Column of fire	Clouds of fire arose and collided
Blast (flattened forest) Charred trees signed clothes	Great heat from lightning and thunder
Ground tremors	Ground tremors
Lightning (ceaseless)	

about 800 BC, describes tales of vastly greater antiquity. The common characteristics of the events and the independent observations convince us that all these were not fabricated myths in connection with Hesiod's two stories. Whatever later added poetic trappings and misunderstandings of interpreters do not destroy the original kernel of the two Hesiodic stories. In Tables 1 and 2, Clube and Napier have tabulated the events of Tunguska in 1908 AD, in Velikii in Russian Federation in 1296 BC and the two Hesiodic cases of unknown time of occurrence. The reader may get some idea of what had happened, when Phaethon passed very close to the Earth in connection with fires.

**Table 2** Characteristics of a comet's appearance as an extra close encounter to Earth.

Hesiod I conflict (?)	Hesiod II conflict (?)
Gleaming brilliance of thunderbolt and lightning	Fire from the monster
Dust, smoky thunderbolts smoky thunderbolts	Blazing thunderbolts
Intense thunder, great din Immense flame reached upper air	Thunder harshly Flame shot out
Hot blast winds Burned forest	Blast, hurricane winds Earth caught fire
Earthquakes Lightning (thick and fast)	Lightning

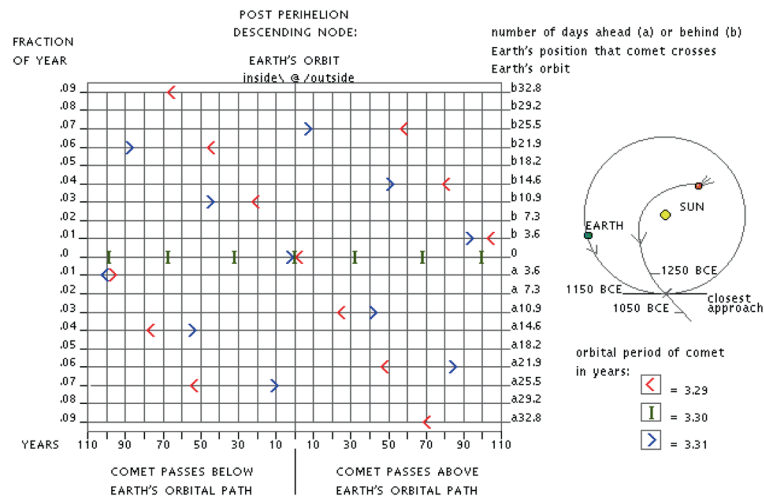


**Fig. 3** Plane of orbits, in vertical mode, offers a non-destructive meeting between a comet and the Earth.

The prehistoric observers saw Phaethon in a variety of forms. These various descriptions of the same object are the result of observers being in different pairs of longitude and latitude. It was also an optical illusion which occurs in the same pairs of longitude and latitude but occurring in different times that is just before sunset and immediately after dawn as Figure 6 illustrates. The words Phaethon (shining) meaning male and Phaethousa (shining) meaning female are the author's addition (Figure 6). This figure explains why Quatzacoatl in Figure 7, the celestial feathered serpent, appeared in paintings as the white god of South American Indians having a beard, whereas the Indians are neither white nor have beards due to genetic reasons. In Figure 7 the reader can see a drawing depicting Quetzalcoatl in the particular role



**Fig. 4** The results of the non-destructive meeting with a comet’s orbit full of ionised dust with Earth are innocent and lovely to look shooting stars.

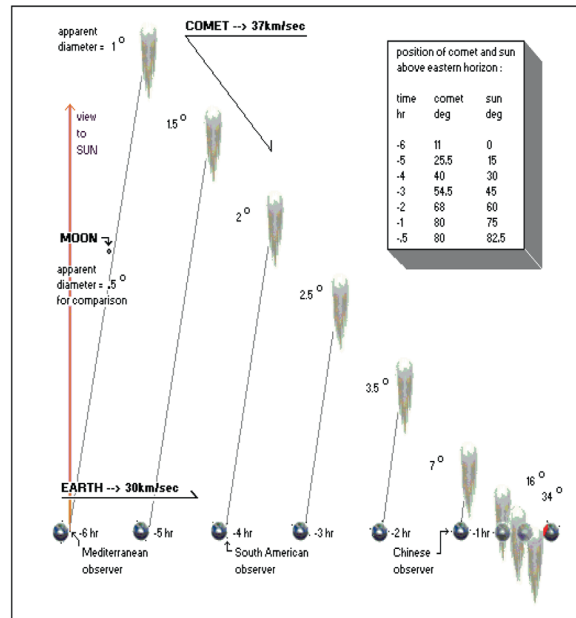


**Fig. 5** (a) Simulation parameters of Phaethon’s path according to Kobres [17]. Reprinted with permission.

of Atlas. Apart from the previous reasons, a combination of religious beliefs and lack of understanding of a very unusual and rare celestial phenomenon made people interpret this event as a “double fighting of either heroes or animals or gods”. Figure 3 shows a non-destructive “rendez-vous” between a comet and the Earth.

In Figure 4 shooting stars are presented in the blue sky. Figure 3 illustrates the intersection between the planes of the comet’s and Earth’s orbits at right angles without causing any fires on earth. However, in the 12th century BC the intersection of the planes of the same orbits was not serene. This allowed the Earth’s atmosphere

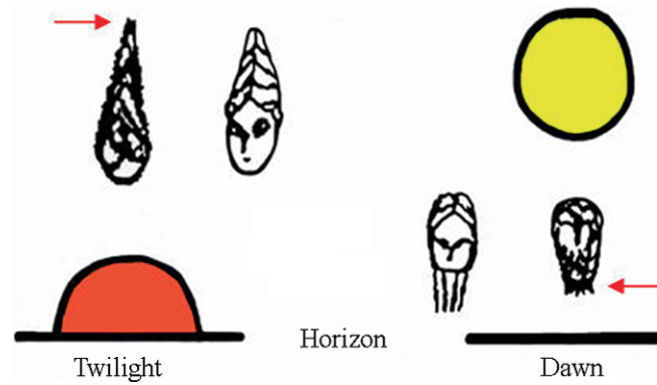




**Fig. 5 (b)** Different observers round the world in Greece, Egypt, Israel, India, China and Central America saw the object successively in its last six hours [17]. Reprinted with permission.

to interact with the comet’s head and tail. The complex coupling caused several problems to the populations on Earth at the time the “visit”. Even now we can not fully comprehend of what is happening on Earth during such an event. King [16] published his observations about a cometary fragment which passed above Alabama on the morning of the 5th December of 1999 inducing fires in the nearby forests. The observers whose houses were in a distance of 50 m from the foci of fires said that they started exactly at the moment of the observation of the light of the passing fragment. The three different foci started to devour the forest simultaneously. King [16] wonders through what mechanism the fires were caused. Was electric induction between the passing body and the ground responsible for the simultaneous fires or the fired particles? The Alabama fragment did not induce any precipitation.

Figure 5a shows the simulation results of Phaethon’s path, whereas Figure 5b illustrates what is happening during the last six hours from the initial observation of the object. Figure 5b explains how the prehistoric Greeks saw the object (comet), 1 hour before the end of the closest encounter, as a female war goddess, Athena, that is as Phaethousa (shining) coming to the region of Troy from the West. It explains why the Egyptians also saw the object hovering over the Nile’s delta and associated it with a female war goddess, the lioness, that is wingless Sekhmet causing heat. In other cases Athena and Sekhmet have some other depictions in both countries. Phaethon’s case can be proved or disproved in some known areas of catastrophes. It can be easily identified in archaeological sites in different countries on condi-

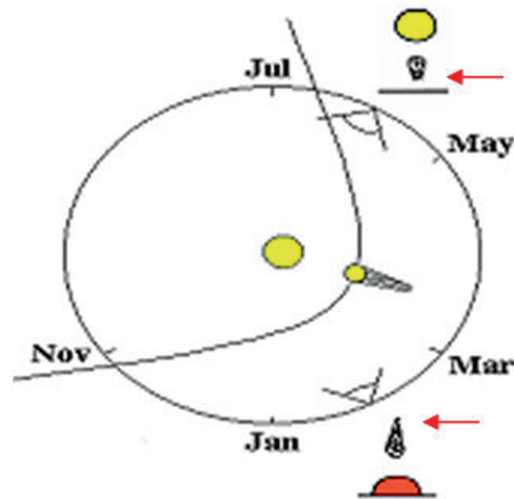


**Fig. 6** To the top comet Phaethon is mimicking the sun. Being an inadequate son, he does not simply light the Earth as the sun does, he induces fires on it. To the bottom an optical illusion of the comet conceived as female Phaethousa (shining) just before sunset and as male Phaethon (shining) just after dawn. The initial drawing was done by B. Kobres. They were modified slightly by the author. The words in Greek are added by the author. Reprinted with permission.

tion that the 12th century BC stratum is well defined. If there were forests in those sites, then a burnt horizon may still exist not in situ but accumulated in depressions close to them. Soil samples should be taken from such depressions and studied. The sampling sites should be away from the late Bronze Age settlements so as to avoid the implication of fires caused either by earthquake activity or advancing enemies. The mapping of the depressions will not be an easy procedure, since the possible fires due to Phaethon will not be expected to be found everywhere but only in the areas where fragmented fired tiny rocks from its disintegrating head would have fallen. The application of highly detailed micro-topographic, microgeological and geochemical mapping is the only way expected to offer hopeful results. The chronostratigraphic recording of past floods and the possible discrepancy of the pollen profile in these sites might offer a reliable list of hydrogeological and interesting bio-indices, which will further clarify the Phaethon's effect versus other slow advancing regular phenomena printed on the soil.

#### 4 Attempts to Date Phaethon's Passing

Spedicato [22], Clube [5] and Kobres [17] offer three different datings for comet Phaethon's passing. They all associate it with the Exodus of the Hebrew people from Egypt and other environmental events. The first researcher suggests 1447 BC, whereas the second, Victor Clube and Bill Napier 1369 BC and the third 1159 BC as the year of Phaethon's visit respectively. Who could be correct? Studying Homer and especially the *Odyssey*, we found a particular passage which we present below for the reader because we suspect that there was a total solar eclipse hidden in it.



**Fig. 7** (a) The drawing and the text, in the top, is done by B. Kobres. Ishtar, the goddess, is associated with different names and star systems in different times within a year. It was female or male as well due to the optical illusion in the same corresponding times within the year. It was confused, with planet Venus too. In fact it was a comet changing sex or names passing close to Venus and being associated with different star formations along its orbit during its passing close to Earth.

We found that such an event indeed happened on 16 April 1177 BC at 09.12, as Espenak [8] has proved. It is shown in Figure 8. Homer describes in Od. 20(350–356) a character Theoclymenus (whose name means godlike) who predicted in a dramatic way Odysseus' return to Ithaca, slaughtering of the suitors and in Od. 20.356–357 describing the following very characteristically:

*ἡέλιος δ' οὐρανοῦ ἐξαπόλωλε, κακή δ' ἐπιδέδρομεν ἀχλύς.*

and the sun has perished out of heaven and an evil mist covers all.

This is an exact example of a non-fabricated myth which has a colorful external surface full of invented dramatic events which attract attention to the young but in the center hides a real astronomical event, a total solar eclipse visible in Africa Asia, in Crete and other Aegean islands and Minor Asia that morning of 16th of April of 1177 BC. Due to the imposed Homeric meter and with the assistance of the recitation of the story, practiced even by illiterate people, the information remained alive up today in spite of the loss of written Linear B type of language in Greece during the turmoil of the 12th century BC.

Let us now come back to the comet. The second fall of Troy is generally accepted to have happened in 1184 BC. The first fall of Troy and the second (the legendary one) are assigned within the interval between 1250 and 1020 BC in the stratum called Troy VII. In accordance with Eratosthenes the war lasted between 1193 and 1184 BC. Taking into consideration Odysseus's ten-year length of adventures and



**Fig. 7** (b) God Quatzakoatl appears with a beard whereas his worshippers did not have any due to known genetic reasons. The working hypothesis of the author is that the “white Gods” in South America Quatzakoatl, Viracocha and others are possibly imitations of the comet. It was interpreted as such by the priesthood of the celestial phenomenon. Similarly certain shaved African chieftains and Pharaohs and beardless South American chieftains adding an artificial beard may exhibit not only a fertility symbol but power through distinction for the same reason as explained above.

also including the year of the solar eclipse in 1177 BC (the year he returned home), we define the end of the legendary war as 1186 BC. Zangger [25], on the contrary believes the war lasted just a few months and ended in 1186 BC. Accepting Homer’s statements about the war duration and also counting inclusively from 1186 BC (end of war), we define as the beginning of the legendary Trojan war as the year 1195 BC. This means that if we had interpreted correctly Homer, the comet appeared as Athena Phaethousa (shining) in the above mentioned interval. Accepting Zangger’s idea the comet consequently passed either in 1186 or few months later in 1187 BC. In Table 3 all data are tabulated.

## 5 Conclusions

Plato described in Timaeos a story which he himself calls a non-fabricated myth. His statement is accepted, as such, because the described phenomenon corresponds to our current astronomical understanding of a rare astrophysical phenomenon similar to a comet’s passing. The object was observed by different peoples round the world in the 12th century BC. It produced legends, in other words non-fabricated myths, of the second platonic category, as Kobres [17] describes. The partial evidence, as Kobres believes, supporting the cometary working hypothesis comes from Baillie and Munro [2] and Hodell [10]. All these data do not fit with the analysis

**Table 3** Some of the violent events of the 12th century BC.

1. 1224 BC:	The first fall of Troy is 30 years earlier than the beginning of the legendary Trojan war. It was conducted with a small army in which Ajax's father was present. It did not become an epic. The evidence of the event is presented in Aphaea's temple in Aegina as Kakridis [15] has demonstrated. It is calculated by adding 30 years inclusively to the beginning of the legendary war of Troy which was 1195 BC
2. 1225–1175 BC:	The seismic storm [19]. The beginning of the seismic storm almost coincides with the first fall of Troy by Ajax's father and his companions.
3. 1208 BC:	The first appearance of the Sea Peoples in the fifth year of Pharaoh Meneptach [25].
4. 1184 BC:	The second fall of Troy, as Homer describes it, with Ajax himself participating in the events (Eratosthenes 3th century BC). On the basis of the solar eclipse of 1177 BC and Homer's statement about the duration of the Trojan war, (ten years) Eratosthenes' statement is shifted from 1184 to 1186 BC.
5. 1190–1192 BC:	Acidity peaks found in Greenland. They were produced from volcanic eruptions in the Atlantic [26].
6. 1186–1195 BC:	The corrected length of the legendary Trojan war.
7. 1177 BC:	The total solar eclipse happens a few days before Odysseus' return to Ithaca. We say few days or weeks taking into account that the eclipse was visible somewhere in the Aegean Sea. From the latter to Ithaca the boat could sail in the previously mentioned time easily. It was visible in Africa, Crete and other islands and Asia Minor. It is proved that the event is related to the darkening of the sun. This is highly unlikely to have happened firstly because usual atmospheric fog can not be seen as evil in the Aegean. Secondly if it had happened, it would have been incapable of blocking the sun completely and having lasted for a short time. As Homer says "and the sun has perished out of heaven and an evil mist covers all", that event lasted 04m 34s which proves its short duration. The characteristics of total darkness impressed the prehistoric observers, which was imprinted in their memory (collective unconscious) as an extraordinary event. It was unexpected, abrupt and was interpreted as something evil by them. Two more possibilities could be examined apart from the above. The first is a volcanic veil which could have produced the same effect as the darkening of sun, if a very strong volcanic explosion had occurred. As Zielinski et al. [26] reported, there occurred volcanic activity in 1192 and 1190 BC. Obtained material from drilled cores from Greenland exhibited acidity peaks produced by the falling of volcanic dust in the snow. There is a 50-year difference from the event of 1178 BC (total solar eclipse). The second possibility is the cometary veil. Homer describes the darkening of the sun in silence. He does not describe, as Hesiod and others do, darkness and events of the kind tabulated in Table 1b. Cometary veils, and associated events and their dissimilarities with solar eclipses in the prehistory and history of India are discussed by Ivengar [14]. The total solar eclipse offers a clear absolute dating of the above mentioned events independent of archaeological or archaeometric datings. We disagree with those who wonder, if the Trojan war ever occurred [4]) because the burnt stratum of Troy VII, and in particular the street 710, contains an arrow head. It presents a small but real evidence of a possible Achaean missile.
8. 1176 BC:	The second assault of the Sea Peoples against Pharaoh Ramses the III [24], is close to Odysseus' return home!
9. 1159 BC:	The passing of the comet producing precipitation events as Kobres suggests.
10. 1159 BC:	Precipitation events are present in Irish oaks [2] and in Asia Minor oaks [18], respectively. They demonstrate anomalous ring growth in their trees of the same period. These events do not coincide with either the duration of the Trojan War (1186–1195) and the passing of "Athena" as shining comet or with the volcanic activity in the Atlantic.

## Total Solar Eclipse of -1177 Apr 16

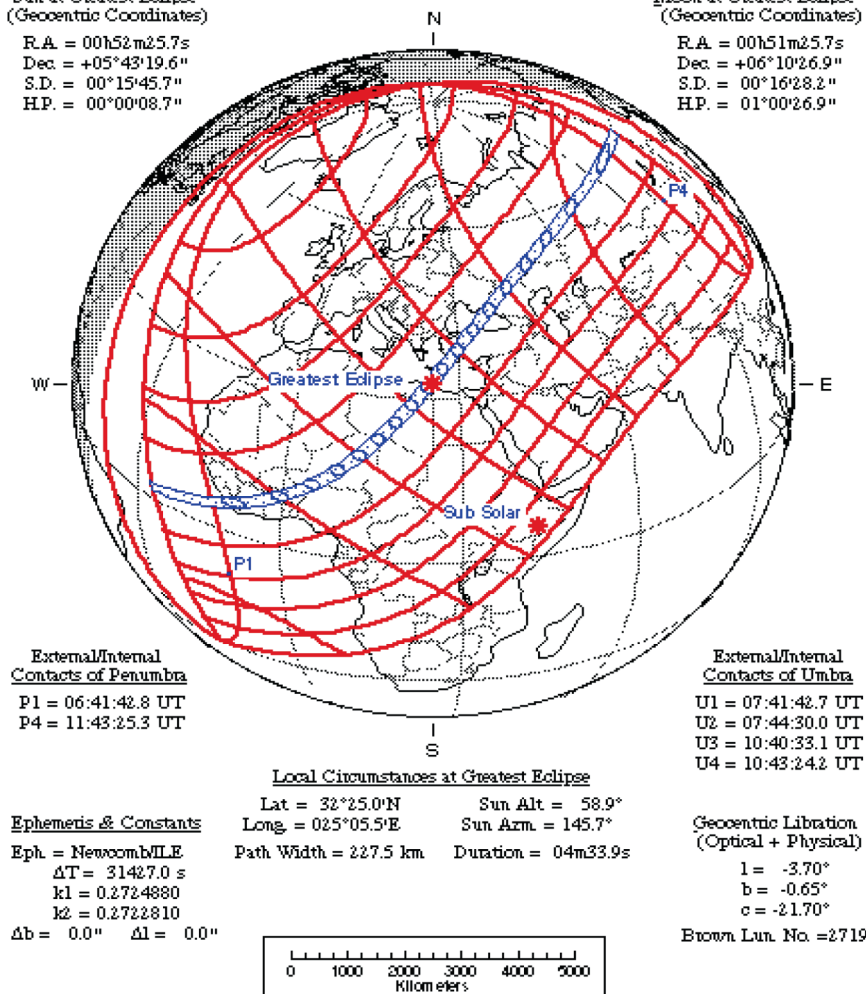
Geocentric Conjunction = 09:42:07.5 UT    J.D. = 1291263.904253  
 Greatest Eclipse = 09:12:41.7 UT    J.D. = 1291263.883816  
 Eclipse Magnitude = 1.06010    Gamma = 0.51322  
 Saros Series = 39    Member = 31 of 72

Sun at Greatest Eclipse  
 (Geocentric Coordinates)

R.A. = 00h52m25.7s  
 Dec = +05°43'19.6"  
 S.D. = 00°15'45.7"  
 H.P. = 00°00'08.7"

Moon at Greatest Eclipse  
 (Geocentric Coordinates)

R.A. = 00h51m25.7s  
 Dec = +06°10'26.9"  
 S.D. = 00°16'28.2"  
 H.P. = 01°00'26.9"



F. Espenak, NASA/GSFC - 2001 Aug 23  
[sunearth.gsfc.nasa.gov/eclipse/eclipse.html](http://sunearth.gsfc.nasa.gov/eclipse/eclipse.html)

**Fig. 8** The path of the total solar eclipse. Its absolute date it signals the end of the ten years time interval of the adventures of Odysseus and defines absolutely the end of the legendary Trojan war. (The computer output was constructed by the NASA expert Fred Espenak.) Reprinted with permission.

presented in this paper. The climatic shift recorded in the oaks in Ireland and Asia Minor, is concordant with the abandonment of sites in Peloponnesus in Greece by the population during LHIII late phase as Betancourt [3] suggests. Therefore, this climatic shift could have been caused through some other mechanism rather than a comet. Although we do not have yet direct proof locked in the soil in connection with the comet's passing, we do not wish to abandon the search for this case. The complexity of the phenomenon producing either only floods with its tail's content, or just fire with its disintegrating flaming head in different parts of the world, illustrates our modern partial understanding of its function and requires multiple archaeometric and geoarchaeological attention to study it. A hope to detect exogenous carbon in a burnt stratum arises from the phenomenon of fullerenes. In the case of carbon originating from a comet, advanced laser spectroscopy may offer a solution, because this carbon locks noble gases within its structure which can be released and consequently detected if a carbon molecule is hit by a laser beam. Another hope arises from the mountainous lakes of the world. In these lakes events may be found from either past explosions or from fallings of comets in the oceans. Albot [1] has a brilliant idea which if it follows may offer results. A stratum produced by sea water in a mountainous lake can be easily recognised in its stratigraphy, studied and dated. Albot's idea is a new scientific horizon in the study of past comets. In the ancient Greek literature we have a Homeric window of 12th century BC, centralised on Troy, where the comet appears principally as a female flying entity which we call Phaethousa (shining) and a broader non-Homeric window, described and called Phaethon (shining) by Plato corresponding in the same century. In our symposium another theory connected with Phaethon was presented by Spedicato [22]. All Phaethon's theories are offered for further examination and comparison. This study is based on a previous study conducted by the author [21].

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## Notes

The translation into English of the above mentioned passages from ancient Greek authors are based on the popular Loeb Classical Library. Phaethousa originates from Homer.

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