

The Astronomical Meaning of the Mythical Phoenix

By Felice Vinci*

The article presents the results of a study aimed at giving a rational meaning to the figure of the phoenix, the mythical bird that dies but is then reborn from its ashes. It is found with very similar characteristics in mythologies even far apart in space and time. It is usually a bird of prey, an eagle or a hawk, or a rooster, perched on a large tree corresponding to the Cosmic Tree, or the Axis of the World. This image is well suited to symbolize the North Star, toward which the Earth's axis points. Indeed, the North Star remains seemingly fixed in the night sky while the other stars revolve around it. However, the phoenix is destined to die because the Earth's axis does not always remain fixed, but instead follows a very slow circular motion similar to that of the axis of a spinning top. This extremely slow but continuous motion, over the course of millennia, causes both the precession of the equinoxes and the alternation of the stars that, one after another, approach the North Celestial Pole. Therefore, each of them, when it becomes the North Star, can be metaphorically considered the reincarnation of the one that preceded it in that role. This explains why each era has had only one phoenix, why it was considered very long-lived, and even why in various cultures it was a symbol of royalty, which in each dynasty is passed down from the reigning king to his successor in a way similar to that of the North Star. This astronomical metaphor also explains the quarrels, attested in various mythologies, between the bird perched atop the Cosmic Tree and the serpent gnawing at its roots. Finally, we will explore the hypothesis that some characteristics attributed to the phoenix may have been initially inspired by the look and behavior of a real bird, the capercaillie.

Keywords: phoenix, Benu, Turul, Simurgh, Great Year, Cosmic Tree, precession, North Star, capercaillie.

Introduction

In this article, we will first examine the characteristics attributed to the phoenix—the mythological bird endowed with extraordinary longevity and the power to be reborn after death—in various historical and literary contexts of the ancient world, and then focus on its association with a great tree, which, as we will see, can be identified with the Cosmic Tree. On this basis, we will develop the hypothesis that the figure of the phoenix perched on the tree may conceal an astronomical metaphor referring to the Pole Star, which periodically "dies" and then "is reborn" in each of the stars that, one after the other, alternate near the celestial pole over the millennia due to the motion of the Earth's axis which produces the precession of the equinoxes.

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To this end, we will adopt a methodology consisting of a new critical examination of reliable sources, not only classical but also from other literary and scientific contexts, comparing and exploring analogies and similarities, but also anomalies and enigmas. These, particularly in the field of mythology, can sometimes reveal hidden metaphorical meanings capable of opening up new hermeneutic horizons. This is what we saw in a previous article (Vinci, 2024a), where we showed that behind the secret of Samson's prodigious strength, linked to his uncut hair, lies a suggestive metaphor for a specific astronomical phenomenon. Incidentally, throughout this work, we will always keep in mind that, to adequately address topics such as the one we are discussing here, “a rationalistic approach is sterile without the effort to immerse oneself in the mentality of the times and people we are dealing with” (Ferri, 2010, p. 219).

We would also point out that, given the novelty of the hypothesis proposed here and considering that this particular topic could be of interest beyond the academic world, we have aimed for maximum clarity and readability in this article, even at the cost of occasionally repeating certain concepts.

Including this introduction, the article is organized into seven sections. The second section provides general information on the figure of the phoenix and its characteristics. The third section delves into the close relationship between the phoenix and a particular tree, identifiable as the Cosmic Tree or World Tree, on which it perches. The fourth section focuses on the hypothesis that the phoenix is a metaphor for the cyclical succession of stars that one after another assume the function of the North Star near the celestial pole. The fifth section explores the metaphor behind the constant quarrels between the eagle and the serpent, which in several mythologies are associated with the Cosmic Tree, and the connection with the World Mill, human destinies and cosmic cycles. The sixth section develops the hypothesis that certain characteristics traditionally attributed to the phoenix may have been initially inspired by the appearance and behavior of a particular bird, identifiable as the capercaillie. The final section offers concluding remarks.

General Information About the Phoenix

First of all, only one phoenix existed at any time, and it was very long-lived. It is found in many mythologies with more or less similar forms. It has an appearance similar to that of an eagle, and sometimes also of a rooster, with which the phoenix shares the ability to sing. Furthermore, it is often associated with the sun and with a large tree.

Here is what the Greek historian Herodotus (c. 484 - c. 425 BC) says about it, citing it when he focuses on the animals that live in Egypt:

There is another sacred bird, too, whose name is phoenix. I myself have never seen it, only pictures of it; for the bird rarely comes into Egypt: once in five hundred years, as the people of Heliopolis say. It is said that the phoenix comes when its father dies. If the picture truly shows its size and appearance, its plumage is partly golden and partly red. It is most like an eagle in shape and size. What they say this bird manages to do is

incredible to me. Flying from Arabia to the temple of the sun, they say, it conveys its father encased in myrrh and buries him at the temple of the Sun (*Hist.* 2, 73).

An original inspiration of the Greek phoenix may have been Benu, an ancient Egyptian deity linked to the Sun, the creation and rebirth. According to Egyptian mythology, Benu was a self-created being who was said to have played a role in the creation of the world. A title of Benu was "He who came into being by himself", and his name is related to the Egyptian verb *wn*, meaning "to arise in splendor". Benu also appears on funerary scarab amulets as a symbol of rebirth. The name of the phoenix may derive from "Benu", and its rebirth and connections with the sun are similar to beliefs about Benu (Hart, 2005, p. 48). Because Benu was a symbol of rebirth, he was associated with Osiris and was called "Lord of Jubilees", an epithet referring to the belief that he periodically renewed himself "like the sun rising at dawn" (Wilkinson, 2003, p. 212). In fact,

An epithet frequently applied to the Sun god is "the self-generated one", and (...) in the Classical literature great emphasis is put on the spontaneous generation of the phoenix and its close relationship with the sun (Van den Broek, 1972, p. 16).

Here is the passage in which the Roman writer Pliny the Elder (AD 23 - 79) dwells on the phoenix:

Aethiopia and India, more especially, produce birds of diversified plumage, and such as quite surpass all description. In the front rank of these is the phoenix, that famous bird of Arabia; though I am not quite sure that its existence is not all a fable. It is said that there is only one in existence in the whole world, and that that one has not been seen very often. We are told that this bird is of the size of an eagle, and has a brilliant golden plumage around the neck, while the rest of the body is of a purple colour; except the tail, which is azure, with long feathers intermingled of a roseate hue; the throat is adorned with a crest, and the head with a tuft of feathers. The first Roman who described this bird, and who has done so with the greatest exactness, was the senator Manilius, so famous for his learning; which he owed, too, to the instructions of no teacher. He tells us that no person has ever seen this bird eat, that in Arabia it is looked upon as sacred to the sun, that it lives five hundred and forty years, that when it becomes old it builds a nest of cassia and sprigs of incense, which it fills with perfumes, and then lays its body down upon them to die; that from its bones and marrow there springs at first a sort of small worm, which in time changes into a little bird: that the first thing that it does is to perform the obsequies of its predecessor, and to carry the nest entire to the city of the Sun near Panchaia, and there deposit it upon the altar of that divinity. The same Manilius states also, that the revolution of the Great Year is completed with the life of this bird, and that then a new cycle comes round again with the same characteristics as the former one, in the seasons and the appearance of the stars¹ (*Nat. Hist.* 10. 2).

Still in Latin literature, the main characteristics attributed to the phoenix, and in particular its relationship with a very tall tree, are found in a poem, the *De ave*

¹Translation by Karl Friedrich Theodor Mayhoff.

phoenice (“the Phoenix bird”), traditionally attributed to Lactantius (c. 250 – c. 325), of which we will now examine some passages.

The *De ave phoenice* begins with a description of the fabulous place where the phoenix lives:

There is a joyous place removed on the tip of the East,
 From which the greatest gate of the Eternal City lies open;
 It is not, however, near to the risings of summers or winters,
 But there the sun spreads the day from the spring axis (1-4).
 (...)
 Here is the forest of the Sun, and his sacred grove,
 Made up of many trees, green with the honor of perennial leaves (9-10).
 (...)
 But a fount is in the middle, which they call ‘living’ by name, (25)
 (...)
 A one of a kind bird, the phoenix, inhabits the forest, the sacred grove.
 She is unique but lives, having restored herself through death. (31-32)
 (...)
 She is lifted up and sits down in the top of the highest tree,
 Where she looks down upon the whole grove,
 And, turned toward the new rays of waking Phoebus
 She awaits the dawn and approaching radiance.
 And when the Sun knocks upon the threshold of the shining gate
 And the nimble daylight of the first lamp darts forth,
 That bird begins to pour out measures of sacred song,
 And muster the new light with her wondrous voice, (39-46)
 (...)
 After she has just completed a thousand years of life,
 As if the long time has grown burdensome,
 In order that she might recover the lost age by turning back time
 She flees her accustomed, sweet nest of the grove.
 And when she leaves the holy places for the desire of rebirth,
 Then she seeks out this world, where death reigns supreme (59-64)².

Here the phoenix builds a new nest and prepares to die, until “her body burns, and, roasted, crumbles into ashes” (l. 98). However, the phoenix rises from its ashes, resumes its previous appearance (beautiful and colorful, with a prevalence of red and gold), then flies to Egypt and finally returns to the celestial place from which it had descended.

These verses are not lacking in references to a setting that is not earthly but heavenly. This appears already at the beginning of the poem, where the paradisiacal world in which the phoenix lives is described, where “the sun spreads the day from the spring axis” (l. 4). This is a precise astronomical reference to the day of the equinox, when the sun rises at the vernal point (the point where, in astronomical language, the celestial equator intersects the ecliptic). This astronomical placement

²Translation by Teresa M. Hooper. Here the translator considers the phoenix to be female, but the sex of the phoenix is often undefined or a matter of debate, since the life cycle of the bird, which is reborn from its own ashes, is not based on sexual reproduction.

is confirmed by a subsequent verse: “And when the Sun knocks upon the threshold of the shining gate” (v. 43), which is not just any gate, but rather an astronomical gate³ corresponding to “the gates of heaven which the Hours had in their keeping” (Hom. *Il.* 5, 749, where the Hours are the seasons of the year, marked by the equinoxes and solstices). Ovid mentions them when in the *Fasti* (1, 125) he has Janus, the Roman god of doors, say: “I sit at the gates of heaven with the gentle Hours”.

The diffusion of the figure of the phoenix both in space and time, as well as its intrinsically celestial dimension, is attested by the so-called “Chinese phoenix”, as the mythical bird called feng or fenghuang in China has been renamed in the West (it is also found under other names in other countries of the Far East). The feng appears to announce the beginning of a new era, descends from heaven to earth and then returns to his celestial home to await the next era. In China it is also called the “august rooster” and is said to have originated in the sun; it can be multicolored—black, white, red, yellow and green—and is sometimes depicted with a ball of fire, or has the appearance of a red rooster, and there are legends that praise his singing (Nozedar, 2006, p. 37).

The image of the feng was linked to the figure of the Emperor, to the point that only the Emperor and the Empress, who lived in the Forbidden City in Beijing, were authorized to wear the symbol. The name of the Forbidden City in Chinese was Zijincheng, 'Purple Forbidden City', where Zi, “purple”, refers to the North Star, around which all other stars revolve in the night sky. In ancient China, it was called Ziwei, the “purple star”, considered the abode of the celestial Emperor. Its earthly counterpart was the Purple Forbidden City, residence of the earthly Emperor, the priest-king, intermediary between the Earth and the Cosmos, in the center of our world, reflection and image of the celestial world (Barmé, 2008, p. 26).

All this confirms the importance as well as the widespread diffusion of the figure of the phoenix, but no less extraordinary is its continuity over time, up to the modern age, as attested by some verses from *Henry VIII*, a collaborative history play written by William Shakespeare and John Fletcher, which refer to Queen Elizabeth I (with a final reference to a star):

...but as when
The bird of wonder dies, the maiden phoenix,
Her ashes new create another heir,
As great in admiration as herself;
So shall she leave her blessedness to one,
When heaven shall call her from this cloud of darkness,
Who from the sacred ashes of her honour
Shall star-like rise, as great in fame as she was (Act V, Sc. 5, 3423-3430).

As for the Hungarian phoenix, called the Turul bird, we see that

³The concept of an astronomical gate is also found in some archaeological finds dating back to the Early Bronze Age: “The Nebra disk and the Bush Barrow lozenge both appear to have been designed to reflect the annual solar cycle” (MacKie, 2009, p. 41). Indeed, the angles corresponding to the arc of the horizon between the two points where the sun rises on the winter and summer solstices, at the latitude where the respective finds were found, appear in some of the specific characteristics of those important finds.

the hawk or Turul (...) persevered for longer as a device belonging to the ruling house (Rady, 2000, p. 12).

The reference here is to the Árpád dynasty, the ruling dynasty of the Principality of Hungary in the 9th and 10th centuries and of the Kingdom of Hungary from 1000 to 1301. It took its name from the Hungarian Grand Prince Árpád, and was also known as the Turul dynasty. Its origin "was traced back to Attila, the Great King of the Huns" (Neparáczki, 2022 p. 260), who was depicted with a shield bearing the image of the Turul bird (Figure 1). The relationship of the Turul with royalty shows the importance attributed to this mythical bird, but above all it is comparable to the previously mentioned relationship of the feng with the Chinese Emperor and of the phoenix with Queen Elizabeth I. It may not be a coincidence, in fact, that Elizabeth, in addition to being compared by Shakespeare to the phoenix, was depicted in the "Phoenix Portrait" (c. 1575), so called after the phoenix jewel that she wears at her chest.

Figure 1. *The Image of the Phoenix in the "Phoenix Portrait" of Queen Elizabeth I (c. 1575), and King Attila with the Turul Bird in his Shield (c. 1360)*



But now, after outlining the figure of the phoenix in various mythologies, it's time to delve deeper into some of its distinctive features, particularly its relationship with the Cosmic Tree. This will prove crucial to understanding the hidden meaning behind the figure of the mythical bird that dies and is reborn.

The Phoenix and the Cosmic Tree

Let us compare the very high tree, on which, according to the *De ave phoenice* (ll. 39-42) mentioned above, the phoenix sits waiting to sing its song to the rising sun, with the mythical ash tree Yggdrasill of Norse mythology:

A tall tree, wet with white frost;/ from there comes the dew that falls in the valleys/ and it stands ever green by the fount of Urdh (*Völuspá*, str. 19).

This “tall tree” is the image of

the Cosmic Tree, the ash tree Yggdrasill, which is at the centre of the universe and supports it. Its evergreen branches (symbolising eternity) extend over the entire world and cover the sky. It has an eagle perched on its branches, which in turn constantly exchanges bad words with the serpent Nidhöggr, which ceaselessly gnaws at the roots of the tree (...) The connection of the eagle with the Cosmic Tree appears confirmed (...) even where there is talk of an eagle that is found above Valhalla, Odin's home, in the same area where the tree Léradhr grows, to be identified with the Cosmic Tree. The eagle is, therefore, a sacred bird (Chiesa Isnardi, 1996, pp. 548-549).

The concept of the Cosmic Tree or Axis of the World (*Axis Mundi*), represented by Yggdrasill, is central to Norse mythology:

The Cosmic Tree embodies the concepts of power, divine wisdom and sacredness (...) Its might is the vital force of the cosmos. When it falters, there will be a sure sign of the imminent end of the world. Symbol of the three spatial layers of being (hell, earth and sky) and their interrelation, the Cosmic Tree also embodies the three fundamental moments of time: past, present, future (Chiesa Isnardi, 1996, p. 533).

Furthermore,

In many primordial traditions the Cosmic Tree, expressing the sacredness of the world itself, its fertility and its perpetuity, is related to the ideas of creation, fertility and initiation (...) It always presents itself to us as the receptacle of life and the lord of destinies (Eliade, 1983, p. 294).

A similar concept is found among the Saxons, who

worshipped a large tree trunk as a deity, calling it in their native language Irminsul, which in Latin means universal column, as if it supported everything (...) The column of extraordinary height, which according to Ebbon (3, 1) stood in the sanctuary on the island of Wolin, expressed the same concept as the Irminsul: the world was supported by a sacred support (Modzelewski, 2008, p. 444).

As for the eagle perched on the branches of the Cosmic Tree, we saw earlier that, according to the passage from Herodotus that we read previously, the Egyptian phoenix “is very similar to an eagle in appearance and size”. Furthermore, in some mythologies the phoenix is compared to a bird of prey, and both the eagle and the hawk—think of the Turul in Hungarian mythology—are well suited to this metaphor. As for the rooster, which is compared to the Chinese feng, in Norse mythology the animals perched on the branches of the Cosmic Tree are

the eagle or the rooster, which due to its habit of promptly signalling the arrival of dawn is considered the herald of light and messenger of victory over the evil influences of

the night. In its function as an animal that immediately perceives solar and divine light, it is the equivalent of the eagle, as shown by the figure of the shining golden rooster named Vidhófnir, '[the one whose] song [is heard] at a great distance' or 'luminous on the tree' or '[the one that] moves on the tree', perched on the tree called Mímameidhr, equivalent of the Cosmic Tree (...) The sources also mention a golden rooster named Gullinkambi (but it is probably the same one) that crows near the homes of the Aesir; it is said that it will awaken Odin's dead to fight the last day against the forces of evil (Chiesa Isnardi, 1996, pp. 549-550).

Here we note on the one hand that Gullinkambi means “golden crest” (Mastrelli 1982, p. 313)—which corresponds to the “radiant crown” on the head of the Phoenix, compared by Lactantius to the shining head of Apollo (Lact., *De ave Ph.*, 139-140)—and on the other hand that the cock Vidhófnir, “which, shining, stands on the branches of the tree of Mimir” (*Svipdagsmál*, Str. 24), has in its tail a “shining feather”, which is considered a jewel to be “carried in a casket” (*Svipdagsmál*, Str. 29) and seems, therefore, comparable to the precious tail of the phoenix, which “is streaked with metallic yellow,/ it blushes with mixed purple in those spots” (*De ave Ph.*, 131-132).

At this point, even the enigmatic statement "in the body of Vidhófnir there are two roasted wings" (*Svipdagsmál*, Str. 18), seems to find a logical explanation in the context of its identification with the phoenix. In fact, if the latter is reborn from its own ashes after being burned, it is reasonable to assume that its previous wings, consumed by the fire, have left a trace in its new body.

Furthermore,

Another soot-red rooster crows underground in the realm of the dead. The rooster is therefore presented (...) also as an animal connected to the realm of the dead, that is, to the darkness of which it is the master because it knows its secrets (Chiesa Isnardi, 1996, p. 550).

In fact, gleaning from Norse mythology, one finds that the protagonist of a singular episode of death and rebirth, between this world and the afterlife, is precisely a rooster. We are referring to the passage in which Saxo Grammaticus, in narrating an adventure of the hero Hadingus, who had suddenly been transported underground to the world of the afterlife, says that here at a certain point a woman

cut off the head of a rooster, which she was carrying with her, and threw it over the wall; and immediately the bird, resurrected, gave proof with a shrill song that it had actually regained the breath of life (Saxo, *Gest. Dan.* I, 8, 14).

Death and resurrection, or the cyclical nature of life, that is, the dominant theme of the figure of the phoenix returns, linked to a rooster, a bird that, as we have just seen, in Norse mythology finds significant points of contact with the sacred bird that, according to Lactantius, sings every morning to announce the return of the sun.

Thus the comparison between the eagle perched on the branches of the ash tree Yggdrasill and Lactantius' phoenix, on the top of its very tall tree, is highlighting very significant analogies.

This image of the mythical bird on the sacred tree is also found in Hungarian mythology, where the Turul, mentioned above for its connection with royalty,

perched upon the Tree of Life connecting the earth with the netherworld and the skies (Rady, 2000, p. 12).

Furthermore, pre-Islamic Persian mythology mentions a sacred bird, called Simurgh (Figure 2), which lived for 1,700 years before throwing itself into the flames, and which perched on the Cosmic Tree of Persian tradition, called Gaokerena, that two fish protected from the attack of an evil frog (Farmanyan & Mickaelian, 2016, p. 248). This destructive being may correspond to the serpent Nidhhögg, which, as we saw above, “ceaselessly gnaws at the roots of the tree”.

Figure 2. *Simurgh Mosaic on front of Nadir Divan Begi Madrasah in Bukhara, Uzbekistan*



Furthermore, the Simurgh was so ancient that he witnessed the destruction of the world three times and, by living so long, he acquired knowledge of all the ages (Aro, 1976, p. 25). As for the Persian term *sīmurǧ*, it derives from the Middle Persian *sēnmurw*, which in turn derives from the Avestan *mərəγō Saēnō* "the Saēna bird," which was originally thought to be a bird of prey, probably an eagle, a falcon, or a sparrowhawk (Christensen, 1941, p. 66).

Let us now note that another mythical tree, inhabited by characters comparable to the strange tenants of Yggdrasill and Gaokerena, is found in a Sumerian text: the Huluppu tree, in which

At the base the serpent that knows no enchantment had made its nest, in the crown the bird Zu had laid its chicks, in the middle Lilith had built her house (Kramer, 1938, p. 5).

Here one immediately notices the correspondence, on the one hand, between the birds found at the respective tops of the two trees, and on the other between the two serpents at their bases. Furthermore, the similarity between the name of Zu, the

Sumerian bird on the Huluppu tree, and Zi, the name of the Pole Star⁴ in China, appears curious, especially considering that the feng, or Chinese phoenix, is often linked to the dragon, even in the images (Figure 3). Likewise, it may not be a coincidence that the image of the eagle, the tree, and the serpent is also found in the foundation myths of two very distant cities, the Phoenician city of Tyre (Medlej, 2013) and the Aztec city of Tenochtitlan (Bahr, 2004), as well as at the center of the Mexican flag (Figure 3).

Figure 3. Image of the Chinese Feng Opposite the Dragon, and the Eagle in the Center of the Mexican Flag with a Snake in its Beak



One should also consider that a similar image is found in the *Iliad*. While the Trojans are attacking the Achaean camp, an eagle appears on the battlefield "holding a huge red serpent in its talons" (*Il.* 12, 202); however, the serpent manages to wound the eagle (204) and forces it to let go (205-206). This is considered a "prodigy" (τέρας) of Zeus (209), with prophetic value, as a Trojan soldier reiterates in the following verses, when he vainly advises Hector to desist from the attack (216-229),

⁴It is also curious that the names of the two male and female principles of Chinese philosophy, *yang* and *yin*, seem to be similar to the roots of the words that in Greek indicate respectively *man* and *woman* and that are found paired in a verse of Homer: ἀνὴρ ἦδὲ γυνή (*Od.* 6, 184). It is also striking that the word that in Chinese indicates the king, *wang*, is almost identical to the Homeric ἄναξ (*Il.* 1, 7) and the Mycenaean *wanax*, which have the same meaning. All this would seem consistent with Christopher Beckwith's hypothesis about Indo-European influences on ancient China, namely the Shang dynasty (Beckwith 2011). At this point, the singular assonance between the name of the Chinese feng and that of the Greek phoenix might perhaps deserve some further investigation (also considering that recently, as we have seen previously, a relationship has been hypothesized between the Greek name for the phoenix and that of the Egyptian god Benu, two mythical figures who are in some ways comparable). In short, one might almost suspect that the similarity between feng, Benu, and phoenix is not entirely due to chance, despite the distances, both in space and time, that separate those three civilizations. It will presumably be very difficult to definitively resolve this issue.

which will have a disastrous outcome for his army. The image of the eagle and the serpent, therefore, was connected to human destinies.

But now, after having verified that in various mythologies there is a close relationship between the figure of the phoenix and the Cosmic Tree, the time has come to investigate its metaphorical meaning.

The Phoenix and the North Star

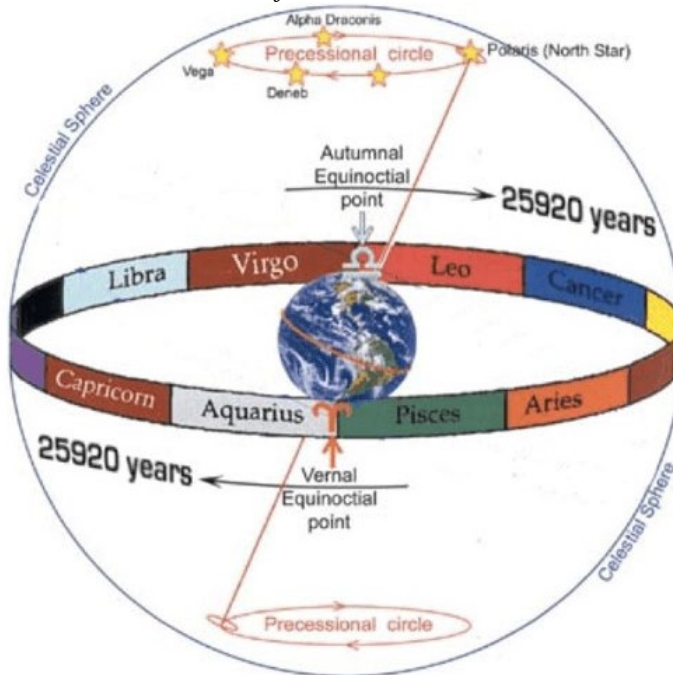
In the close relationship between the phoenix and the Cosmic Tree, which, as we have just noted, is common to several mythologies, an anomaly immediately emerges. Indeed, it seems contradictory at first glance to connect the figure of the phoenix—a being subject to an infinite cycle of death and rebirth, and which, being a bird, more than any other animal seems to embody an idea of lightness and instability—with that of the Cosmic Tree, which instead seems to stand as an emblem of stability and permanence over time.

However, a little while ago we heard a phrase that casts doubt on its immutable stability: “When it falters, it will be a sure sign of the imminent end of the world” (Chiesa Isnardi, 1996). The Earth's axis, in fact, does not remain fixed at all, but gradually moves over time with a very slow but inexorable motion, called ‘the precession of the equinoxes’. It is a rotation similar to that of the axis of a spinning top, which completes a full rotation in just under 26,000 years, the so-called “Great Year” or “Platonic Year” (which, as we have seen previously, Pliny directly correlates with the myth of the phoenix). As a result, the celestial coordinates of the stars visible in a given location gradually vary over time, according to the slow wobble of the axis.

Among the consequences of precession is that the zodiac sign corresponding to the sun's rise at the spring equinox tends to shift over time, albeit very slowly, and thus, after about two millennia, eventually gives way to the sign preceding it in the sequence of the zodiacal signs. During the Neolithic this sign corresponded to the constellation of Taurus, which was then, due to precession, replaced by Aries and subsequently (around the time of the birth of Christ) by Pisces, which continues to this day. In the near future, it will be Aquarius's turn, and so on, until the entire cycle begins again from the beginning.

Furthermore, this movement of the Earth's axis, in addition to determining the alternation of the zodiacal constellations in which the sun rises at the spring equinox, shifts the north celestial pole, toward which it points, along a circular path over time. This determines the alternation, over the millennia, of stars that, one after another, assume the role of North Star, that is, the star visible to the naked eye closest to the north celestial pole at a given time (Figure 4).

Figure 4. *The Spinning-top Motion of the Earth's Axis, which gradually shifts the Point where the Sun Rises at the Spring Equinox from one House of the Zodiac to the Previous one, and causes some particular Stars to Cyclically Assume, one after the other, the Position of North Star*



In fact, starting in the next century, the north celestial pole will begin to move away from the current North Star, Alpha Ursae Majoris, and will slowly move towards Gamma Cephei, which is therefore destined to become the next North Star. The subsequent North Star will be Deneb, which will then be replaced by Vega (which had already been the North Star around 12,000 BC). Vega will then be replaced by Alpha Draconis (which was the North Star at the time of the Pyramids), until the cycle begins again when, in about 24,000 years, Alpha Ursae Majoris will take over from Kochab (Beta Ursae Minoris) and will once again be the North Star.

Thus, over a period of time far longer than human generations, the spinning-top motion of the Earth's axis gives rise, during the Great Year, to a slow but inexorable succession of the twelve signs of the Zodiac. This corresponds to the alternation of stars that, one after another, assume the role of the North Star, that is, the visible star that, by definition, is closest to the north celestial pole, toward which the Earth's axis points. The North Star, therefore, gives the impression of marking the beginning and end of the cycles corresponding to the ages named after the zodiac signs and which, according to astrological beliefs—in ancient times, astronomers were often also astrologers—have a strong impact on the events and destinies of men and peoples.

In short, considering that an abstract concept such as the Earth's axis can be represented by an archaic mentality in the form of a very tall tree, namely the Cosmic Tree, which "was seen to bind together heaven and earth, representing a vital connection between the world of the gods and that of humans" (Crews, 2003, p. 42), it is natural to think of the Pole Star, motionless on its summit, as a bird

perched atop the Axis of the World, while the other stars, with their circular motion around the north celestial pole, can be seen as birds flying around it. Indeed, we note that the name of the star called Vega means "gliding vulture" (Schaaf, 2008), while the Pleiades are called "the doves" (πελειάδες) in Greek (Pindar, *Nemean* 2, 11).

We can, therefore, reasonably assume that the image of the tree on which the phoenix perches is a metaphor for the Earth's axis pointing toward the North Star, around which the night sky rotates. This is confirmed by the fact that the phoenix's relationship with the Great Year, or the phenomenon of precession, is clearly expressed by Pliny the Elder in the passage cited above.

We also point out a fragment attributed to Hesiod, according to which

The crow lives nine times as long as men in the prime of life; the stag four times as long as the crow; the raven three times as long as the stag; the phoenix nine times as long as the raven; and we ten times as long as the phoenix, we long-haired nymphs, daughters of Zeus who bears the aegis⁵ (Hesiod, fr. 304 Merkelbach-West).

But what does "to be men in the prime of life" (ἀνδρῶν ἡβόντων) mean? If we consider that the average age for setting world records in various sports is around 26 years⁶, the age of the phoenix comes out to be a number, around 25,000 years, which is very close to that of the Great Year. Incidentally, this convergence with the duration of the cycle of the precession of the equinoxes is surprising and deserves to be studied in depth, since the time of Hesiod precedes by several centuries that of Hipparchus (c. 190 - c. 120 BC), who is generally recognized as "discoverer of the precession"⁷ (Jones, 2010, p. 36).

This picture is also supported by the fact that the red or golden color often attributed to the phoenix corresponds to the orange-red color of Kochab, the North Star preceding the current one.

The astronomical dimension of the phoenix can also immediately explain the image of the very strange rooster to which the Italian poet Giacomo Leopardi⁸ dedicated one of his *Operette morali* (1827; "Minor Moral Works"), entitled 'Il Cantico del Gallo Silvestre' ('The Song of the Wild Rooster'), the beginning of which we report here:

⁵ Ἐννέα τοι ζῶει γενεὰς λακέρυζα κορώνη/ ἀνδρῶν ἡβόντων· ἔλαφος δέ τε τετρακόρωνος/ τρεῖς δ' ἐλάφους ὁ κόραξ γηράσκειται· αὐτὰρ ὁ φοῖνιξ/ ἔννεα τοὺς κόρακας· δέκα δ' ἡμεῖς τοὺς φοίνικας/ νύμφαι εὐπλόκαμοι, κοῦραι Διὸς Αἰγιόχοιο.

⁶Cf. <https://www.wired.com/2011/07/athletes-peak-age/> (If we assume that "the prime of life" corresponds to the age of 26, the result of multiplying 26 x 9 x 4 x 3 x 9 equals 25,272).

⁷In this regard, apart from the fact that the issue requires further investigation by specialists, it should be noted that, according to a controversial thesis by Giorgio de Santillana and Hertha von Dechend (1969), the discovery of the precession of the equinoxes should be dated to an earlier era than that currently believed.

⁸"Giacomo Leopardi, (born June 29, 1798, Recanati, Papal States-died June 14, 1837, Naples) was an Italian poet, scholar, and philosopher whose outstanding scholarly and philosophical works and superb lyric poetry place him among the great writers of the 19th century" (<https://www.britannica.com/biography/Giacomo-Leopardi>).

Some Jewish teachers and writers claim that between the sky and the earth, or we mean half in one and half in the other, there lives a certain wild rooster, which stands on the earth with its feet, and touches the sky with its crest and beak (Leopardi, 1827).

The cosmic dimension of this singular rooster suspended between the earth and the sky is evident, which here even seems to be one with the tree on which it usually perches in the other myths we have previously examined. In the continuation of the story, Leopardi explicitly mentions the “Morning Song of the Sylvester Rooster”, but he remains vague about the source of this: “It was found on an ancient parchment, written in Hebrew letters”.

However, at first glance, this astronomical picture seems to encounter a serious difficulty. Indeed, a fundamental characteristic of the precession of the Earth's axis is its slowness, corresponding to the fact that the alternation of the pole stars over the course of millennia occurs over periods of time far longer than that of a human lifetime. This implies that in some ancient, long-lasting civilization, there existed astronomers capable of passing down the positions of the stars in the firmament from generation to generation, and consequently were able to measure their movements even over very long periods of time. It may therefore be no coincidence that the oldest evidence of a mythological bird comparable to the phoenix is found precisely in ancient Egypt, which remained essentially stable for millennia and possessed considerable astronomical knowledge, as evidenced, for example, by the accurate orientation of Egyptian monuments to the stars⁹.

One might also wonder how it was possible that other civilizations less long-lived than the Egyptians also knew about the phoenix. This can be explained by the fact that, according to recent studies,

Even in the Bronze Age complex and far-reaching trade routes must have existed between Europe and the Eastern Mediterranean¹⁰.

Now, on the one hand, the art of navigation undoubtedly favored the dissemination and exchange of astronomical knowledge even among distant peoples; on the other, it also required adequate astronomical knowledge (and, therefore, may have stimulated its development). Here it comes naturally to think of Odysseus who, sailing from Ogygia towards Scheria,

sat and guided his raft skilfully with the steering-oar, nor did sleep fall as he watched the Pleiads, and late-setting Boötes, and the Bear (Hom. *Od.* 5, 270-273).

Furthermore, another recent study has shown that “advanced maritime and navigation technology” had already developed during the megalithic age (Paulsson,

⁹For example, the ka statue of Djoser in his tomb at Saqqara was in a serdab (a type of chamber) in the north-eastern base of his pyramid, tilted at 17 degrees to enable it to observe the circumpolar stars through two holes (Warburton 2012, p. 139); the temple of Amun-Re at Karnak was aligned on the rising of the midwinter Sun (Krupp 1988, p. 487).

¹⁰Heidelberg University, Press Release No 98/2019, “The Enigma of Bronze Age Tin. Researchers use methods of the natural sciences to uncover geographic origin of archaeological tin artefacts from the Mediterranean” (<https://www.uni-heidelberg.de/en/newsroom/the-enigma-of-bronze-age-tin>).

2019). In this context, it is not surprising that knowledge of astronomy, presumably linked to the development of navigation, is found even in the megalithic age. Consider, for example, the astronomical orientation of the megalithic quadrangles of Stonehenge, Crucuno (France) and Xarez (Portugal) (Sparavigna, 2016), not to mention the Goseck Circle, a Neolithic structure in Saxony-Anhalt, Germany, considered one of the oldest "solar observatories" in the world, built around 4900 BC (Literski-Henkel, 2017, p. 70).

In short, the development of navigation and trade even in remote times lends plausibility to the idea that astronomical information could also circulate among distant peoples. In this regard, it seems reasonable to assume that, given this development of navigation even over long distances, not only merchants but also scholars and intellectuals, often belonging to noble and wealthy families, could take advantage of it to increase and exchange their knowledge. For example, Pythagoras is said to have traveled to Egypt, Persia, and Mesopotamia (Riedweg, 2005).

It should also be noted that the great distance separating the cultures involved in this study could support the idea that there may have been a prehistoric civilization, although it will be far from easy to prove it, that must have possessed considerable knowledge of both astronomy and the art of navigation.¹¹

But let us now return to the phoenix, whose identification with the North Star immediately clarifies its relationship with royalty, which we mentioned earlier. Indeed, the metaphor of the phoenix fits well not only with the North Star, but also with the concept of royalty, in which the successors of the founder of a dynasty assume the office of king or queen one after the other (the perfect example is the figure of the Emperor of China, who, as we have seen, is directly connected to feng and resides in the Purple Forbidden City, the earthly counterpart of the North Star, around which the entire night sky revolves).

In short, from this perspective, the mythical phoenix seems to reveal itself as the image and symbol of the North Star, which—despite being subject to a perennial cycle of deaths and rebirths, a suggestive metaphor for the succession of stars that one after the other come to occupy that position—remains perpetually on the top of the Cosmic Tree, that is, the Earth's axis projected onto the sky towards the celestial pole. From here it is the spectator and witness, in each of its successive incarnations in the star in turn destined to assume this role, of the perpetual renewal of the cycles of life, marked by the periodic changes in the arrangement of the zodiacal constellations, of which human destinies on Earth are a reflection—"As above, so below", an ancient quote coming from the Emerald Tablet (Weisser, 1979, p. 54)—in the eternal carousel of the celestial sphere. This explains why only one phoenix existed at any time, and why it was very long-lived.

¹¹There are reasons to suppose that this hypothetical prehistoric civilization, favored by the fact that during the megalithic era the Holocene Climatic Optimum (HCO) made the Arctic Ocean navigable, perhaps extended as far as the Pacific Ocean and Polynesia, where the mythical Elysian Fields may even be located (Vinci 2023). In fact, the HCO, which from the 7th to the 3rd millennium BC made the current Sahara Desert green and humid (Gwin, 2024), simultaneously made the Arctic Ocean navigable during the summer and made its coasts habitable, where lush fir forests extended to the sea, while the current tundra had disappeared (Pinna, 1977). In fact, at that time average temperatures were significantly higher than today (Beierlein et al., 2015).

But now the time has come to clarify the metaphorical meaning of the serpent that various mythologies associate with the eagle and the Cosmic Tree.

The Serpent Under the Tree, the World Mill and the Cosmic Cycles

The hypothesis of identifying the phoenix, the mythical bird perched on the Cosmic Tree, with the North Star also allows us to give a metaphorical meaning to the serpent, which in some mythologies is associated with a bird and a tree. Consider, for example, the eagle perched atop Yggdrasill, the sacred Norse tree, which

constantly exchanges bad words with the serpent Nidhöggr, which ceaselessly gnaws at the roots of the tree (Chiesa Isnardi, 1996, p. 548).

The identification of the eagle with the phoenix, or the North Star, and of Yggdrasill with the Earth's axis immediately explains the reason for these constant squabbles: the serpent corroding the tree's roots will, over time, compromise its stability, and will thus ultimately cause the "death" of the eagle, that is, the replacement of the star that serves as the North Star with the star that will take over that role. Indeed, in astronomical terms, the precession produced by the slow, spinning-top motion of the Earth's axis delays the moment of perihelion (the Earth's closest point to the Sun) by approximately 20 minutes per year. This annual delay compared to the Earth's revolution corresponds to a delay of approximately 3 seconds per day, which, accumulating over the centuries, will eventually cause the "death" of the current Pole Star, or the eagle (or the phoenix).

Therefore, if the tree corresponds to the Earth's axis and the eagle to the North Star, it follows that this serpent, "which ceaselessly gnaws at the roots of the tree", represents a very apt metaphor for the rotation of the Earth's axis, which, with its slowing, in a certain sense causes the mythical tree to sway and consequently, over time, ends up causing the eagle's death.

In short, the hatred between the eagle and the serpent fits perfectly into the astronomical metaphor hidden behind the myth of the phoenix, and at the same time completes and confirms it.

Let us now return to the fact that the spinning top motion of the Earth's axis produces not only the alternation of stars that take turns assuming the role of Pole Star, but also the cyclical succession, approximately every two thousand years, of the zodiacal constellations corresponding to which the sun rises at the spring equinox (Figure 4). The ancients believed that this had a profound influence on human affairs.

The importance attributed to the movements of the stars and constellations, which marked the cyclical nature of events and human destinies, is clearly evident in the concept of the World Mill, which in Norse mythology

is the very image of time that incessantly grinds the eras, bringing to completion the measure assigned to them (...) The mill par excellence of the Norse myth is Grotti, who grinds the prosperity and abundance of the god of fertility. After the progressive decline of the eras it will be swallowed up by the depths of the ocean (...) The handle that turns

the mill seems to be the image of the earth's axis which in its movement draws a cone. The very nature of celestial movements, the passage of the sun from one zodiac sign to another and the phenomenon of the precession of the equinoxes are linked to the idea of the succession of cycles (...) The World Mill disappears into the depths of the celestial ocean when the old cycle must be replaced by the new (Chiesa Isnardi, 1996, p. 183).

Norse mythology also tells that the current cycle is destined to end with Ragnarök, the terrible “twilight of the gods”, which will see the final battle between the powers of light and order and those of darkness and chaos. However, after a series of terrifying catastrophes that will upset the universal order,

In the end Surtr will set fire to the Earth and the whole world will burn (...) But when Surtr's fire, after having consumed everything, is extinguished, the destroyed world will be regenerated and a new era will begin. Then the Earth will resurface from the waters of the sea, will become green and beautiful again and unsown crops will grow (Chiesa Isnardi, 1996, p. 189).

All this is consistent with the fact that, according to Norse mythology,

The eagle is (...) the first to fly over the world when a new cycle begins (Chiesa Isnardi, 1996, p. 549).

This cycle of death and destruction by fire, as well as the subsequent rebirth, echoes the story of the phoenix, whose legend, in perfect harmony with the image of the Tree-Axis of the World, foreshadows the perennial unfolding, conclusion and renewal of the cycles of life and eras, marked by the succession of stars that one after another assume the role of the North Star.

We also note that the memory of the phoenix, despite the loss of its original astronomical significance, has continued to be transmitted thanks to its extraordinary evocative power, even though over time it has become a metaphor for concepts such as immortality, resurrection, and even for something that does not exist or whose whereabouts no one knows, as in the comic opera “Women are like that, or The School for Lovers” by Wolfgang Amadeus Mozart, in which Don Alfonso states: “Everyone swears it exists/ But no one knows where”. One might even wonder if its last, unconscious memory might perhaps be traced in the star adorning the top of the Christmas tree.

Finally, to seal these considerations, we would like to report here the last verses (101-110) of the poem *Phoenix* by the Latin poet Claudian:

Oh thou happy heir of thyself! That for which we all dissolve
gives thee strength; thou drawest thy origin
from thine own ashes, thine old age dies without perishing.
Thou hast seen all that has been; thou art witness
to the turning of all the ages; thou knowest in what age
the sea poured its waves upon the immovable rocks,
in what year the fire caused by Phaeton's errors blazed,
and no calamity takes thee away, the sole survivor

of the subdued Earth; for thee the Fates do not spin
their fatal threads, nor have they the power to harm thee.

The Phoenix and the Capercaillie

At this point we can still ask ourselves whether the appearance of the mythical Phoenix was originally inspired by a real bird: but which one? To try to make a reasonable hypothesis on this question, let's start from the fact that the ancient writers who dealt with the Phoenix on the one hand praised its song, on the other they compared it to a rooster or an eagle, usually perched on a big tree. That said, let's read the passage of the Iliad in which Hypnos, the god of sleep,

mounted up on a fir-tree exceeding tall, the highest that then grew in Ida; and it reached up through the mists into heaven. Thereon he perched, thick-hidden by the branches of the fir, in the likeness of a clear-voiced mountain bird, that the gods call Chalcis, and men Cymindis (Hom. *Il.* 14, 287-291).

But what bird is it? It has never been identified until now. However, it is clear that the image of this extraordinary tree with its mysterious bird seems to correspond to what we read in *De ave phoenice*, where the phoenix, perched atop the tallest tree, sings a wondrous song. This correspondence is strengthened by the fact that this "clear-voiced mountain bird"—mentioned by Homer along with a god and a fir-tree exceeding tall that "reached up through the mists into heaven"—had two names, one given by men and the other by the gods, which supports the idea that it was an animal to which the poet attributes great importance.

In short, on the one hand, it has never been possible to ascertain the identity of that clear-voiced bird, hidden among the branches of a fir tree, which was called Chalcis by the gods and was linked to the god of sleep. On the other hand, the phoenix appears to be a mythological singing bird comparable to both the rooster and the eagle. However, the identity of the real bird that may have inspired its image has remained a mystery to this day.

But at this point, the correspondence between the Homeric Chalcis with some of the characteristics of the mythical phoenix suggests a hypothesis that seems capable of resolving both enigmas simultaneously. In fact, considering that χαλκίς has the same root as χαλκός ("bronze or copper"), with probable reference to the metallic tints of its plumage, this enigmatic "clear-voiced bird" among the branches of a fir tree seems to be identifiable with a very particular bird. It is the capercaillie, or wood grouse (*Tetrao urogallus*), the largest of the gallinaceous birds, which is "frequent in the northern fir forests, on whose buds it feeds" (Tripodi, 2013).

The male capercaillie displays a splendid plumage with bright colours and metallic tints, in which the shiny steel-green chest, the head with blue neck and back, the bronze-coloured wings, a beautiful fan-shaped blue tail streaked with white, and a characteristic fiery red membrane around the eyes stand out (Figure 5).

Figure 5. *The Male Capercaillie with its Bright Metallic Plumage and Red-rimmed Eyes, and its stylised Image in the Emblem of the Central Region (Keski-Suomi) of Finland*



But what is most typical of this large bird is its extraordinary ability to sing. The singing of the male capercaillie begins at the first light of dawn, when for other birds spring has not yet arrived and the forest is still silent. The capercaillie, positioned with a proud posture on a large branch of a tree where it keeps watch, with its tail feathers raised like a fan, its neck erect, its beak pointed towards the sky, begins its typical warbling to impress the females, emitting intense and guttural calls that echo in the forest, audible up to great distances (Klaus, 2012, p. 183). At this point, it seems clear why this large fowl, which with its unmistakable song at sunrise awakens all of nature, has a special relationship with Hypnos, the Homeric god of sleep.

Regarding its size, much larger than that of a rooster, the male can reach 90 cm in length and 5 kg in weight. It is therefore roughly the size of an eagle, which Herodotus compares to the Egyptian phoenix. This seems consistent with the fact that, when ancient mythologies attempt to identify the phoenix with a real bird, they vacillate between the rooster and the eagle. The capercaillie, in fact, has the bright plumage of the rooster (to which it is closely related) and its morning call, but is the same size as the eagle; furthermore, it shares their proud bearing. And certainly, this large, proud, and beautiful bird, with its clear voice, does not go unnoticed: it's no coincidence that its silhouette is the emblem of Keski-Suomi, a region of Finland (Figure 5). Incidentally, the fact that Homer places the capercaillie in Ida (Il. 14, 287), the name of a mountainous region behind Troy—which the poet considers not a single mountain but rather a wild, mountainous region (Il. 8, 47-48)—also seems consistent with our hypothesis regarding the original Nordic setting of the Homeric poems¹² (Vinci, 2017; Vinci, 2024b), which explains all their apparent geographical absurdities.

¹²According to this hypothesis, supported by lots of clues, the Homeric poems refer to events preceding the descent of the Achaeans into the Mediterranean and the beginning of the Mycenaean civilization in Greece. This can immediately explain all the countless contradictions, geographical and otherwise, found in the two poems. In particular, the mountainous region of

In short, the first trace of the phoenix and the Cosmic Tree in Western literature seems to be found in the passage from the Iliad we read earlier, in which the naturalistic aspect is also linked to a mythical dimension, which emerges from the relationship between the capercaillie and the god of sleep, as well as from the fact that one of its two names was given to it by the gods (not to mention that "fir-tree exceeding tall" that "reached up into heaven").

We also note, regarding Giacomo Leopardi's "Gallo Silvestre", cited above, that this expression is the literal translation of "cock-of-the-woods", one of the names for the capercaillie in the Anglo-Saxon world.

To all the clues that seem to indicate that the singular bird mentioned in the Iliad is the capercaillie, we would like to add a further element. It refers to a very particular behavioral characteristic of the capercaillie, which stands out by its very aggressive attitude during the mating season, to the point that some individuals even challenge humans and even large animals such as wild boars and roe deer. The level of testosterone in some "deviant" males can even exceed five times that of other males (Milonoff, 1992, p. 556). This anomalous, extremely strong aggressiveness suggests a plausible meaning for the name that, according to Homer, humans gave to this bird: κύμνδις. This word is similar to the verb κυμαίνω, "to be furious, angry"¹³, which is well suited to the particular nature of this animal.

We entrust this hypothesis to linguists for further investigation, which, if positive, could confirm the hypothesis that this enigmatic bird is identifiable with the capercaillie, especially considering that the other name, καλκίς, attributed to it in the Iliad, fits very well with one of its distinctive characteristics, namely the metallic sheen of its plumage. In short, if the plausibility of the affinity between κύμνδις and κυμαίνω were confirmed, we would obtain the simultaneous convergence between two of the most typical characteristics of the capercaillie—one linked to its appearance, the other to its behavior—and the respective meanings of the two names that Homer attributes to the "clear-voiced mountain bird, that the gods call Chalcis, and men Cymindis".

It is clear, however, that the capercaillie can only reflect some of the characteristics attributed to the phoenix (such as its weight and size, its extraordinary beauty, its morning song, and its connection to the rising sun), not its immortality. Indeed, it is normal for a metaphor, no matter how apt, to never capture all the characteristics of the entity it is meant to represent. As for its habitat, the capercaillie lives neither on the Mediterranean coast nor in Anatolia, which explains the impossibility of identifying it in the traditional context of the Homeric world.

But how can we explain the memory of certain unique characteristics among peoples far from the fir forests? In this regard, we have already mentioned that during the Bronze Age, complex and extensive trade routes must have existed between Europe and the eastern Mediterranean. Furthermore, we have seen that, according to recent studies, the art of navigation was presumably already developed

Ida, which Homer places behind Troy, can be identified as a very specific territory in Finland (Vinci, 2006; Vinci, 2024b), which is indeed rich in fir forests, the habitat of the capercaillie.

¹³The verb κυμαίνω (from κύμα, "foam", also referring to the foam of the stormy sea, which appears as if in anger) corresponds to the English "to foam, to froth". In fact, we say "to froth at the mouth" to indicate a very angry person.

during the megalithic era, when, thanks to the Holocene Climatic Optimum (HCO), average temperatures were significantly higher than today. However, the colder climate following the end of the HCO forced populations living in the far north at the time to migrate to lower latitudes, away from the fir forests that constitute the capercaillie's natural habitat. Although the entire topic requires further study and exploration, this consideration may help explain how, despite its disappearance, the memory of some features of this eagle-sized songbird has persisted until today.

Conclusions

In this article, we first compared the figure of the mythical phoenix handed down by classical sources with similar figures present in the mythologies of peoples and cultures even very distant in space and time. At this point, also considering that the traditional names of some stars correspond to the names of birds, the hypothesis emerged that the image of the phoenix perched on the World Tree conceals an astronomical metaphor: the mythical bird that dies and is reborn could be a symbol of the North Star, which, due to the precession of the Earth's axis, does not always remain the same but is periodically replaced by another star, which over time moves closer than the previous one to the celestial north pole, becoming, in a certain sense, its reincarnation. This explains why the phoenix has been directly linked to royalty, as it can also effectively symbolize the passing of the crown from the deceased king to his successor.

At this point, we noted that the development of navigation and long-distance trade even in very ancient times, as revealed by recent studies, lends plausible credence to the hypothesis of the exchange of astronomical information, which could explain the diffusion of the phoenix figure among diverse and distant cultures.

Subsequently, when we wondered whether the phoenix's features were inspired by a real bird, a comparison with a passage in the *Iliad* mentioning a previously unidentified mythological bird led us to hypothesize that some aspects of the phoenix figure may have been initially inspired by the capercaillie's splendid plumage, size, and peculiar behavior. We discussed the limitations associated with this identification, both in terms of its symbolic aspects (a metaphor, no matter how apt, can never fully correspond to the characteristics of the entity it is intended to represent) and its geographical aspects, since the capercaillie lives neither on the Mediterranean coast nor in Anatolia. Regarding this last point, we have speculated on the reasons—presumably related to climate change due to the end of the Holocene Climatic Optimum—that may have led some ancient populations to abandon the lands they had previously shared with the capercaillie.

In any case, the memory of the bird that inspired the phoenix has been lost over time, presumably due to population migrations to lower latitudes, away from the fir forests that constitute its natural habitat, thus creating the myth of its disappearance. Furthermore, over the centuries, the astronomical meaning hidden behind the metaphor of the phoenix perched on its majestic tree has also been lost. However, this symbolic image, thanks to its extraordinary evocative power, has continued to

be transmitted despite the loss of its original meaning, to the point of becoming a metaphor for other concepts, such as immortality and resurrection.

Finally, it would be appropriate for future studies to thoroughly investigate the direct or indirect contacts between the various civilizations whose mythology features a phoenix-like figure. This broader context is beyond the scope of this analysis, but we believe it merits further exploration and future research. After all, it's well known that in every field of knowledge, a proposed solution to a problem often leads to the need to address new ones.

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