

# The northernmost constellations in early Greek tradition

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## Abstract

During the analysis of the archaeological finds from Petsophas and Traostalos and the attempt to reconstruct the early Greek star map, the most northern constellations turned out to be problematic. The group Draco, Ursa Major, Ursa Minor, and Boötes did not really fit together, nor can they be found to have been imported to Greece, as no other culture in Europe seems to have had a constellation Ursa (Bear) until after the Greek Archaic period.

The early Greek authors mention only one constellation Ursa and give also an alternative name, the Wain, wagon. Not until Classical times are two constellations with the name Bear given, for example by Aratos. There are also doubts about when the Greeks began to recognise the constellation Ursa Minor, as Homeros did not mention that constellation. The question is whether he did not mention it because he did not recognise its stars as a constellation or because he had another name for it, but found it not worthwhile mentioning, as it was not used for navigation. Close to Ursa Major we have Boötes, which means the Ox Driver; but he has no Ox to lead if he has the Bears on either side of him; the name is not logical. The name Arktophylax, meaning Bear Warden, seems more appropriate under the circumstances, but it is a late name.

These questions are discussed and the different suggestions in the literature are analysed. A new proposal for the original Greek early northern constellations is presented. For the sake of clarity, whenever the Latin name of a constellation is used it refers to the modern star map and the modern constellation. When an older constellation is discussed, the original name or the translation of that name is used.

## The northern constellations in the literature

When studying the early constellations found in Greek texts, there are some problems relating to the northernmost constellations. Especially Ursa Major is a problem. The name Great Bear is strange, as it seems not to have any background in Greek culture or in any of the surrounding cultures. It is also difficult to understand its relationship to the nearby constellation Boötes, which means the Ox-Driver. The oldest text that gives the names of Greek constellations is Homeros' *Odyssey*. For example when Odysseus was instructed by Calypso to keep Ἄρκτος, normally translated as the Bear, on his left when sailing home (Murray 1919: 189 [*Odyssey* 5.262–281]). While sailing he also watched the Pleiades, Boötes, and Orion (Hannah 1997: 15–33). In this passage there follow some comments that are of great interest for us. First Homeros writes that ἡ Ἄρκτος (the Bear) is also called the Wagon, ἡ Ἄμαξα in Greek. The Bear is said to circle or rotate where it is; the Greek word used is στρέφω meaning to twist or turn oneself around. He also mentions that Boötes sets slowly into the sea. This is the first time we meet the identification and the name of Bear for a constellation. Homeros also mentions other constellations with the comment that the Bear is the only one that does not go down below the horizon; i.e. it is circumpolar (Murray 1919: 189, 189 [*Odyssey* 5.270–276]). From the Greek name Ἄρκτος we have our Latin translation Ursa, which we use for two constellations, Ursa Major and Ursa Minor. Homeros, however, does not mention either a Large Bear or a Small Bear and he uses Ἄρκτος in the singular.

The alternative name, the Wagon or Ἄμαξα, designates a four-wheeled wagon. It is clear from early texts that it would be the correct word for a wagon pulled by one or several oxen (West 1978: 117–118 [Hesiodos 425, 453]). Both names for the constellation, Ἄμαξα and Ἄρκτος, are feminine and used only in the singular by early authors such as Homeros. But later, by e.g. Aratos (3<sup>rd</sup> cent. BC) and Nonnos (5<sup>th</sup>–6<sup>th</sup> cent. AD), they are in the plural and thus designate two constellations, Ursa Major and Ursa Minor (Kidd 1997: 75 [Aratos 27]; Keydell 1959: 16 [Nonnos 1.252]). Close to these two constellations we also have Boötes, the Ox-driver, sometimes translated as the Ploughman. On our modern star map, however, he has no ox to drive. Boötes is used from the beginning of Greek



literature, but later, e.g. by Eudoxos (4th cent. BC) and Aratos, he is also called ἄρκτοφύλαξ, the Bear Warden (Lasserre 1966: 44 [Eudoxos fr. 24,3]; Kidd 1997:78 [Aratos 92]).

Close to the pole, between Ursa Major and Ursa Minor, we have Draco, a constellation that appears with the Greek name Δράκων, but it is not mentioned in the Greek texts until after 500 BC (Scherer 1953: 178), so I leave it out of this discussion.

The major problem we face is what Homeros meant by the Bear and, if it is the same as our Big Dipper, why he did not recognize Ursa Minor as a separate constellation. The second problem is why was the constellation named Ursa. As many scholars have said, it does not look like a bear. The name of the nearby constellation, Boötes or Ox-driver, is difficult to understand as it is close to the Bear but far away from Taurus, and at the same time he has a wagon nearby.

When trying to understand how the Greeks saw these northern constellation from the beginning and to understand the background for the constellations Ursa Major, Ursa Minor, and Boötes, a search began for possible origins for these different names and how they were used by the early people living in the Greek-speaking areas and on Crete, especially the Minoans.

We have two names in the early Greek texts for the northern constellation Ursa Major, the Bear (ἄρκτος) and the Wagon (ἄμαξα). The oldest texts do not mention Ursa Minor and therefore there seems to have been only one constellation. Many scholars have commented upon this, saying that Homeros did not know the constellation called Ursa Minor, as he did not mention it (Martin 1956: 13, comment to Aratos line 27). The background is that Homeros mentions some constellations together with ἄρκτος and then says that *she* is the only one that does not go down below the horizon and that she rotates. This can of course mean that ἄρκτος was the only one amongst the constellations mentioned that does not go down into the ocean, but it may also mean that it was the only circumpolar constellation defined and used then. The idea prevailing in the 20<sup>th</sup> century was that Ursa Major was the only circumpolar constellation of the Greeks at the time of Homeros. The constellation Ursa Minor is not mentioned in Greek texts before Thales (6<sup>th</sup> cent. BC), who is said to have introduced it to facilitate navigation (Scherer 1953: 176). Aratos said that the ancient Greeks sailed using Ursa Major, whereas the Phoenicians navigated using Ursa Minor (Kidd 1977: 75 [Aratos 37-39]). It is not known when the Greeks and Phoenicians began sailing, but they sailed in the Mediterranean well before Mycenaean times. As the early Greeks and the Phoenicians are said to have used different constellations for navigation, the ancient Greeks seem not to have learnt about the heavenly bodies from the East, which is the general opinion we find in the literature.

Kidd, in his comments to Aratos, says that Κυνόσουρα (dog's tail) must have been the original Greek name for Ursa Minor, but does not discuss its age or give his reasons (Kidd 1997: 188)

### **The enigma ἄρκτος**

The name Bear is a problem. It comes from the Greek texts on astronomy and navigation (Murray 1919: 189, [*Odyssey* 5.270-276]). It is in them that we for the first time meet the name Bear for a constellation.

There are no constellations called Bear anywhere in Europe or in the Near East. Many scholars have suggested several backgrounds for the name, but it is not clear how that constellation came to be called ἄρκτος by the Greeks. The Latin Ursa can be explained simply as a translation from the Greek, but why the Greeks chose ἄρκτος is a mystery. The name is an enigma. No European popular culture has a name meaning Bear for a constellation. In Sweden the popular name is Karlavagnen, i.e. Charles' Wagon, and almost all European peoples see a wagon or some specific wagon. Many cultures see also some oxen that pull the wagon. There are also cultures that see the seven stars of the Big Dipper just as seven stars or even seven oxen, the Romans for instance. Roscher was of the opinion that the Greeks may have known the seven oxen and says that the name Boötes may have come from these oxen (Roscher 1937: col. 873-874, s.v. *Sternbilder*). Gundel (1981 [1922]: 55) states that the Greeks and Romans saw seven oxen before Homeros and, furthermore, that it was after Homeros' time that the Bear became a constellation (Gundel 1981 [1922]: 56). In Babylonia there seems to have been a wagon and oxen (Roscher 1937: col. 1489, s.v. *Sterne*). Jakob Grimm (1854: 687-688) clearly states that the Bear was not used in any old German texts and that it is not found in Slavic, Lithuanian, or Finnish. The same result is found by Rene Basset who published a number of



notes on popular names for different constellations in the *Revue des traditions Populaires* from 1886-1905. Even in the Basque Provinces, where the myth of the sky bear is strong, he finds that Ursa Major is represented as two oxen led by a boy pulling a wagon (Basset 1902: 342). It is clear that there was no constellation of the Bear amongst European peoples, not even where the animal bear had a sacred position.

There does seem to have been a mythic sky bear, understood differently amongst several different European peoples, but not as the constellation Ursa Major. In Greece bears are rarely pictured in art, although they do exist in myth, even if they are not common there.

The most common suggestion during the 20<sup>th</sup> century has been that the name is a misunderstanding of an eastern name for the constellation of Ursa Major. Two possibilities have been given. According to the first it comes from the old Indian word meaning bright or radiant. That word was then corrupted via *árcati*, *arká-*, *arcís-*, into *arktos* (Scherer 1953: 134). The second suggestion is that ἄρκτος is derived from the Akkadian word *ereqqu*, meaning wagon (Heubeck et al. 1988; Szemerényi 1962). This suggestion is based on sound linguistic principles. The Greeks should thus have confused the sound of the Akkadian name for wagon with their own word for bear. This is not entirely logical, as they seem already to have understood the constellation as a wagon, just as the Akkadians did.

It seems that the background for the interpretation of ἄρκτος as a misunderstanding is partly based on the popular belief that Greek astronomy is derived from Babylonian astronomy. In a speech on linguistics in London it was emphasised that one of the main tasks of the speaker was to show the *Semitic influence on Greek language and culture* (Szemerényi 1962: 19). Such a mission can very well have influenced explanations as to the origin of the Greek constellation of the Bear.

A much earlier explanation is from Classical and Hellenistic Greek commentators on Homeros who discussed his use of ἄρκτος. Their interpretations built on other meanings of the word ἄρκτος, which also meant north in Greek and, in combinations, being strong, etc. Today we still have Strabon's *Geography*, in which he comments on the navigation instructions that Odysseus received and explains ἄρκτος as being the circumpolar stars or the *Arctic Circle* as defined by the early Greeks, i.e. the circle that encloses the circumpolar stars. The Arctic circle of the Greeks changed locally, as its position in the sky changed with latitude. Other early authors sharing this view, according to Strabon (Jones 1969: 9-13 [Strabon 1.1.6]), were Heracleitus (6<sup>th</sup>-5<sup>th</sup> cent. BC.) and Krates (1<sup>st</sup> cent. BC). According to Strabon, Krates even emended Homeros' feminine form for the adjective 'alone' to the masculine form so as to make it agree with 'Arctic Circle' and not with the feminine 'Bear' (Jones 1969: 9-13 [Strabon 1.1.6; 11, n. 1]). These three authors are especially interesting as they lived in the Greek tradition and used the Greek language and, in the case of Heracleitus, lived just at the time when the *Odyssey* was written down in the form that has reached us. For the northern constellations Strabon used τὰ ἀρκτικά and ὁ ἀρκτικός for the Arctic Circle (Jones 1969: 9-13 [Strabon 1.1.6]). He also uses these words in his description of how a shadow falls if the object is between the two tropic circles and north or south of them (Jones 1969: 519 [Strabon 2.5.43]). This interpretation was totally accepted by the English scholar Robert Brown (1899: 250-251) who translated Aratos in the 19<sup>th</sup> century and had difficulties with the constellation ἄρκτος.

ἄρκτος as originally referring to the north or the circumpolar stars seems to be the most logical explanation, especially as there are several cases in the literature where it is used for north; Herodotos (Godley 1990: 189 [Herodotos 1.148]) says of a place that faces north, ἄρκτον. This very early understanding of ἄρκτος for the Greek circumpolar stars makes it very easy to understand why two names were used by several early authors, one for the circumpolar stars—amongst which the main constellation is the one we call Ursa Major, and another for Wagon, which today in English is called the Big Dipper.

I subscribe to the understanding that for the ancients Greeks ἄρκτος was used to mean the circumpolar stars and also north, while I see Ἄμωξα as the original name for the Big Dipper.

### Arktophylax

Interesting in this context is the name Ἄρκτοφύλαξ for Boötes, meaning bear warden. The name can also very well be understood as the name for a constellation that indicates the Arctic Circle, being

partly circumpolar, partly not. According to Aratos, Boötes' left hand never sets (Kidd 1997, 125 [Aratos 721-723]) and it would thus make the circumpolar stars fairly easy to identify for a navigator. During Middle Minoan times Boötes' main star Arkturus, positioned in the southern extremity of Boötes, rose and set at about 38 degrees from true north. Earlier and in the more northerly part of Greece, where Homeros is said to have come from, the star was circumpolar and very near the Arctic Circle, i.e. the constellation and its brightest star could have been used for identifying the limits of the circumpolar stars. The method of using a northern constellation to determine the latitude is described by Strabon (Jones 1969: 507, 515 [Strabon 2. 5. 35, 2.5.41-42]), who used Ursa Minor and Cassiopeia as indicators of the Arctic Circle for the cinnamon-producing people. In Greece, Boötes and Ursa Major are more relevant.

### **The Wagon, Boötes, and the Oxen**

Let us return to the Wagon. As seen above, it was understood as a wagon in most cultures around Greece and even as a wagon drawn by one or several oxen. The Latin word *Septemtriones*, the Roman name for the Big Dipper, means seven oxen, and the *Thesaurus Graecae Linguae* from the first half of the 19<sup>th</sup> century gives *Septemtriones* as translation for ἑπταόξω (Stephano 1831: vol. 1:2 col. 24, s.v. ἑπταόξω). It is clear that the Romans took their astronomy from the Greeks and, as many scholars have in the past, we can thus say it is clear that the Greeks saw the Big Dipper as one or several oxen with a wagon.

When Aratos describes Boötes in relation to the surrounding constellations, he says that he comes, 'like a man driving' (Kidd 1997: 70 [Aratos 91]). Later, when he describes the motion of this constellation (Kidd 1997: 115 [Aratos 581-585]), he says:

No more will Boötes bulk large above and below the horizon, the lesser part being above, and greater already in darkness. It takes four signs of the Zodiac together for the Ocean to receive Boötes' setting. When he is sated with daylight, he occupies more than half the passing night in the loosing of his oxen, in the season when he begins setting as the sun goes down. These nights are named after his late setting.

The Greek word used for loosing the oxen is βουλευτός, a noun formed by βοῦς (ox) and λύω (to loosen, unyoke). It is usually understood as indicating the time of day when the oxen are unyoked, i.e., the late afternoon or evening. Its use here, however, may indicate that Aratos refers to a lost tradition in which Boötes drives a wagon drawn by oxen. This possible tradition will be searched for in the future.

### **Conclusions**

The northern stars may now be understood in the following ways:

- The group that was circumpolar was called ἄρκτος, and this word had also the meaning north.
- The main constellation, our Big Dipper, was called ἑπταόξω and seems to have been understood as a wagon pulled by one or several oxen.
- Boötes was leading the wagon, which was most likely driven by one or several oxen.
- Ἀρκτοφύλαξ was the star Arkturus or the constellation Boötes and was used to aid in the recognition of the circumpolar stars.

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