Center for Open Access in Science ▪ https://www.centerprode.com/ojsh.html
Open Journal for Studies in History, 2024, *7*(2), 87-98.
ISSN (Online) 2620-066X ▪ https://doi.org/10.32591/coas.ojsh.0702.04087b

Astronomical Observatories in Thrace: Archaeoastronomical Data as Indication of Ancient Sun-Related Spiritual Practices (3rd-1st millennia BC)

Asen Bondzhev

New Bulgarian University, Department of History, Sofia, BULGARIA

Received: 5 October 2024 ▪ Revised: 16 December 2024 ▪ Accepted: 30 December 2024

Abstract

In the past rock-cut monuments were used for horizon or meridional observations of solstices and equinoxes. This study focuses on three of the better studied through the means of archaeoastronomy monuments in Thrace – Tangardak kaya, Harman kaya and Zaychi vrah (Cabyle). The additional carvings of Tangadak kaya womb-cave suggest that it was used not simply for Sun-observation, but also for ancient Sun-related spiritual practices during the winter solstice. Similar practices were used two millennia later in the Golyama Arsenalka Thracian Tomb's domed chamber, which shows that in Thrace there was a millennial continuity of ancient spiritual beliefs.

Keywords: Thrace, rock-cut sanctuaries, Thracians, Sun-related practices, archaeoasronomy.

1. Old Europe and the emergence of cult places

Several conditions were required for the emergence of long-term settlements in prehistoric times: mild climate, fresh water, fertile soil and materials for tool production. These conditions mostly correspond to the strip of the globe between 23° and 43° North latitude. The fertile valleys of Tigris and Euphrates, the Yellow River and the Yangtze, the Indus, the Nile, the Mediterranean coast and the mountainous foothills of present-day Syria and Iran are located in this vast and favorable territory.[1] During the Neolithic – late 7th millennium BC – farmers from Southeastern Anatolia started migrating to the Balkan Peninsula and would later establish the first cultures of Old Europe.[2]

The Chalcolithic Balkan cultures experienced incredible prosperity during the second half of the 5th millennium BC, when the earliest gold metallurgy center in the world appeared – the Varna culture.[3] At the end of the 5th millennium BC, the culmination of the climatic maximum caused a severe global ecological crisis to which the Chalcolithic population fell victim. This brought technological development to a halt not only in Bulgaria but over the whole region. But it

[1] Stoev et al., 2023: 2-3.

[2] The term "Old Europe" was coined by Marija Gimbutas (1973) and indicated Southeast European lands during the Neolithic and Copper Age (c. 6000-3500 BC). See also Anthony, 2009.

[3] See Leusch, 2015.

Correspondence: Asen Bondzhev, New Bulgarian University, Department of History, Sofia, BULGARIA.

was mainly in the Chalcolithic that natural caves or holes cut in the rock, oriented in the plane of the meridian, appear to have been used for observations of solar culminations.[4]

The research interest of Bulgarian Thracologists in the role of the rock in ancient Thrace was marked by Ivan Velkov (1952), which he called "a cult of the Thracians". Since 1972, rock-cut sanctuaries and megaliths in the Bulgarian part of ancient Thrace have been actively studied by interdisciplinary teams, organized mainly by the Institute of Thracology at the Bulgarian Academy of Sciences (now the Institute of Balkan Studies with a Centre for Thracology). Scientists have extensively studied dolmens and dolmen-like constructions in the Strandzha, Sakar, Rhodope and Eastern Balkan Mountains, as well as some of the most impressive rock-cut cultic complexes: Harman kaya, Tatul, Perperek, Belintash, etc.[5] But these complexes, like many others around the world, are not limited to a particular ethnicity and religious affiliation, but are marked by much deeper understandings related to faith and certain cosmogonic and natural principles.

The term "cult place" covers all categories of places of worship.[6] Cult places are believed to be of two types: outside the settlement (extra-urban) and within it. Intra-urban locations could be a priest's house, a palace, or a separate quarter. For extra-urban places, natural features such as cliffs, caves, and springs are assumed to be basic distinguishing features of the local cult. Sacred natural caves and rock-cut caves in the form of a womb (further called "womb-caves") are often thought to instill the notion of Mother Earth's all-creating function. But this view usually eliminates the other functions of the sacred sites – being places of initiation, we might assume they were used to make contact with the divine intelligence.[7]

2. Astronomical observatories in Thrace

When in c. 4500-4000 BC ancient people in Thrace started choosing sites for rock-cut astronomical observatories, they were interested in the number of clear days and nights within the tropical year, which determined the possibility of observing the heavenly bodies.[8] In the period between 5000-3800 BC average annual temperatures in Thrace were 2-3° C higher than today. Such climate ensured very good astroclimatic conditions for observations of the Sun near the horizon and allowed increased accuracy in determining the time of occurrence of its extreme positions on the horizon.[9]

Alexey Stoev et al. identified two groups of rock-cut monuments used for astronomical observations.[10] For the first group (Belintash, Zaychi vrah (Cabyle), Tatul, Harman Kaya, Buzovgrad, Tsarevi Porti, Markov Kamak, Lilyach, Kovil, Bailovo cave and Magura cave) ancient observers used the method of "horizon" astronomy because of the climatic optimum (stable average annual temperature and low humidity), with good visibility of the Sun, the Moon and

[4] Stoev & Maglova, 2014: 1378.

[5] Fol, 2007: 140. The greatest contribution to the international popularization of sacred rock sites has been made by Valeria Fol: Fol, 2000; 2000a; 2003; 2003a; 2004; 2004a; 2004b; 2005; 2006; 2006b, 2006c and especially 2007.

[6] For the criteria defining certain location as a cult place see Renfrew, 1981; 1985: 18-21.

[7] Fol, 2007: 10, 18.

[8] Images of astronomical objects can be found on places from much earlier period. Solar, lunar and stellar images and solar calendars have been found in the cave complexes near the villages Baylovo and Lipnitsa (Sofia), Tsarevets (Mezdra); in the Topchika cave (Asenovgrad), and in the Magura cave (Belogradchik), dated 8000–6000 BC (Stoev et al. 2023: 5). For rock art of heavenly bodies see Coimbra 2012.

[9] Stoev et al., 2023: 2, 15.

[10] Stoev et al., 2023: 15.

bright stars on the horizon line at sunrise and sunset. In the second group (Zaychi vrah (Cabyle), Tangardak kaya cave, Lilyach and Parmakla kaya cave), observers used the method of meridional culminations of the same celestial bodies, as it was difficult to observe sunrises and sunsets on the horizon due to high humidity, precipitation and the predominance of cloudy days. From Fig. 1, it is evident that earliest prehistoric observatories (dated about 3000 BC) were designed for the observation of meridional culminations.[11]

This study will focus on three of the better studied through the means of archaeoastronomy monuments – Tangardak kaya, Harman kaya and Zaychi vrah (Cabyle).

No	Rock-Cut Monument Type of Observations	Orientation of the Facility	Observed Phenomenon	Archaeoastronomical Dating
1.	Tangarduk kaya cave meridional culminations	Winter solstice	Solar culminations	3000 BCE
2.	Harman kaya horizon observations	Summer and winter solstices and equinoxes	Sunrise, sunset	2500 BCE
3.	Zaychi vruh (Cabyle) horizon observations meridional culminations	Summer solstice and equinoxes	Sunrise, sunset, stellar and solar culminations	2200 BCE

Figure 1. Ancient astronomical observatories in Thrace (Stoev et al., 2023)

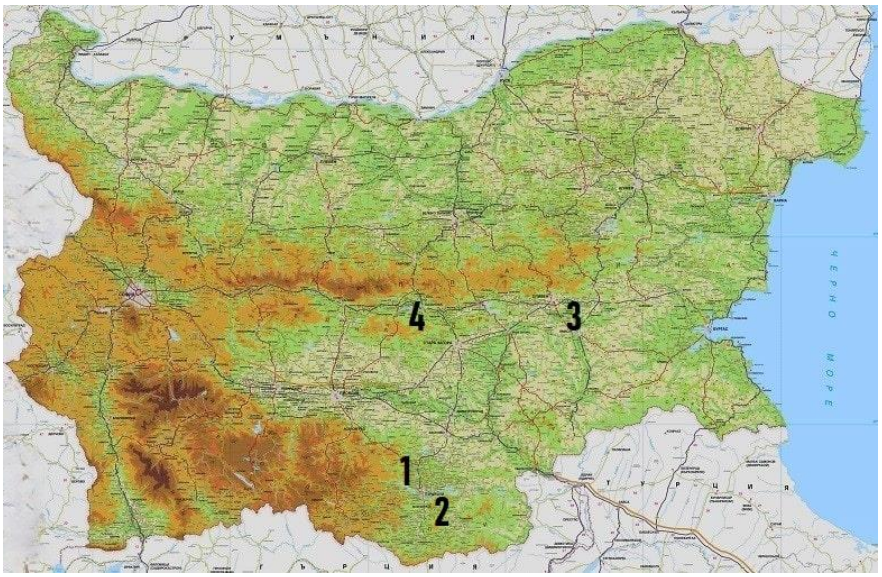

Figure 2. Locations: 1 – Tandargak kaya (The Womb), 2 – Harman kaya, 3 Zaychi vrah (Cabyle/Kabile), 4 – Thracian Tombs located in the Valley of the Thracian Kings.

3. Tangardak kaya (The Womb)

Tangardak kaya is a womb-cave, also known as The Womb or The Womb-Cave, and is the fist womb-cave found in Bulgaria in 2001. Since than similar caves have been found in twenty-five locations, some of which have more than one womb-cave. These natural caves, formed after natural processes of karst formation, are called “wombs” because of their shape. They are found all over the world where there are four climatic seasons. They form when snow melts and moisture

[11] Cf. the full list with 13 observatories in Stoev et al., 2023: Table 2.

seeps into a crack. The water deepens the crack and gives it a droplet shape. A cross-section in the shape of a “spade” sign is formed, resembling a female genital organ.

Figure 3. Tangardak kaya womb-cave near the village of Nenkovo (Kardzhali)

Figure 4. Entrance of The Womb. Source: Kostadin Dimov

At some time the womb-caves in Thrace came to be used for Sun-related practices. They were shaped by human hand so that at some point the Sun could penetrate better into the interior of the cave. For south-oriented caves, such as The Womb, this is the winter solstice – when the Sun is at its lowest and penetrates the deepest. Most obvious is the additional treatment of Tangardak kaya, carved by ancient craftsmen a few meters inwards. Having in mind that the Sun is at its lowest only a few days a year for 10-15 minutes and is observable only if there are no clouds, it must have taken a long time not only to calculate the exact extent of the sun rays, but also to carve the cave with the imperfect tools of the age.

Figure 5. The Entrance is facing to the south.

Figure 6. The cave's bottom was shaped to fulfil a specific role (Stoeva et al., 2016)

Tangardak kaya is 22m long, the longest womb-cave in Thrace, with an average width of 1.5 m. It has a north-south orientation and an entrance to the south. In the central part of the cave, the ceiling is domed, resulting in an impressive acoustic effect: amplification of low sound frequencies and continuous reverberation (a loud noise repeated as an echo).[12] In the period between 3000-2000 BC the projection of the entrance aperture during the winter solstice reached 0.4 m from the base of what some call an altar and others – place for sacred initiation practices.

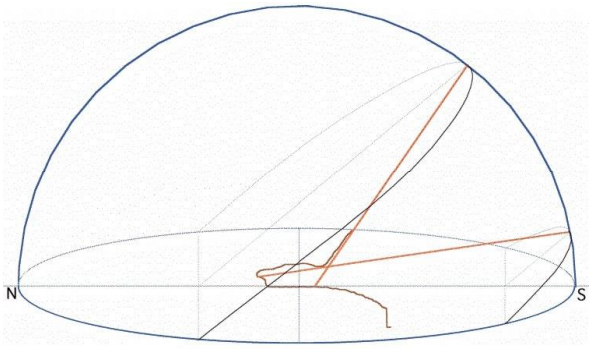

Figure 7. Vertical plan of the Tangarduk Kaya cave in the meridional plane. The light projection of the entrance could be used for defining the summer and winter solstices or for determining the longest and the shortest day of the year (Stoeva et al., 2016)

4. Harman kaya

The impressive rock-cut complex Harman kaya was studied in 1941.[13] The sanctuary developed on a low plateau around a small 7m long natural cave. In front of it the largest concentration of pottery is found, the earliest of which is dated to the Late Chalcolithic. At the foot of the plateau there is a 20 m long womb-cave (and the tallest one in Bulgaria) with traces of additional processing by a human hand. On the basis of the pottery found, Mikov concludes that

[12] Stoev et al., 2001: 230-231. Fol, 2007: 92, 214.

[13] Mikov, 1941.

the site was in constant use from the late Chalcolithic to the 1st century AD.[14] The northeastern site of the rock complex is artificially leveled and was used as an observation deck. The eastern peripheral part offers convenient reliefs which, after a little further processing, were used as tool for Sun observation. Archaeoastronomical data dates the observatory to about 2500 BC.

Figure 8. Harman kaya womb-cave. Figure 9. The observation deck

Figure 10. The system for sunrise observation: 1 – summer solstice, 2 – spring and autumn equinox, 3 – winter solstice (Stoev et al., 2023)

5. Zaychi vrah (Cabyle/Kabile)

Cabyle was a Thracian royal city founded in the 4th century BC. The pottery discovered from the 10th-6th centuries BC proves that the settlement already existed in the early Iron Age, but the oldest cultural layer, although scarce, is from the Bronze Age.[15] Cabyle was situated on a plateau and had a rocky acropolis that also served as a sanctuary and observatory.

[14] See also Stoev et al., 2003; Fol, 2007: 206.

[15] During the 5th-4th centuries BC Kabile and the Odryssians maintained active trade links with almost all urban centers in the Aegean and Black Sea coast (Vasilev, 1993).

Figure 11. Cabyle and the rock-cut sanctuary Zaychi vrah on the top of the mountain hill

The foundations of a public building, and two rectangular rooms, most likely of cultic nature, have been discovered on the sanctuary-observatory and also, according to some scholars, a rock relief of Cybele.[16] This makes Velizar Velkov posit that the name of the settlement derives from Cybele.[17] Artificially carved in the rock trenches, oriented East–West and North–South, were used for Sun observation during equinoxes. An additionally leveled rock, located in the northeast, allowed determination of the summer solstice. Archaeoastronomical data dates the observatory to about 2200 BC.

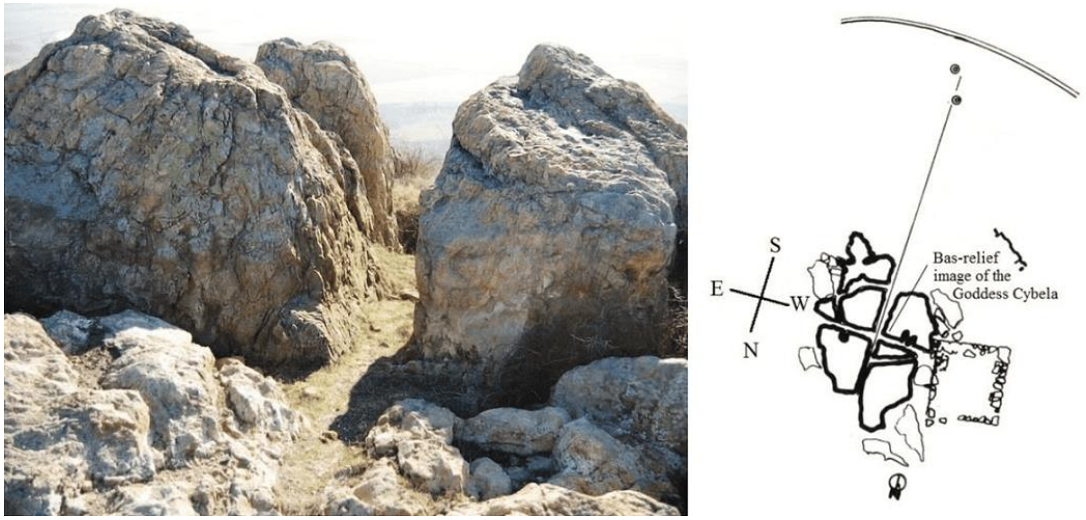

Figure 12. Rock trenches used for Sun observation during equinoxes

[16] Velkov, 1982; 1986: 7; Naydenova, 1982.

[17] Velkov, 1982a: 14. See also Fol, 2007: 149.

6. Temples and tombs in the Valley of the Thracian kings

The research so far has shown that ancient rock-cut sites were used for Sun observation. But the additionally carved bottom of Tangardak kaya womb-cave is an argument in favor of the use of some, if not all, of the monuments as places for spiritual practices. This assumption is strongly in alignment with the archaeoastronomical data of Thracian tombs after the middle of the 1st millennium BC. Before finally turning into tombs, they were clearly used as temples – e.g., the domed chamber's doors of Golyamata Kosmatka Tomb (c. 450 BC) can be closed only from the inside, indicating that it was used for ritual purposes.

Figure 13. Golyamata Kosmatka Thracian Tomb: the doors of the domed chamber can be closed only from the inside

Another example is the Golyama Arsenalka Thracian Tomb (end of 5th century BC): at the winter solstice sunlight reached the exact center of the putative solar symbol on the floor of the domed chamber.

Figure 14. Thracian Tomb Golyama Arsenalka's antechamber and domed chamber

Figure 14.1. Position of the sun at winter solstice

Figure 15. A putative solar symbol on the floor of the domed chamber (Maglova & Stoev, 2014: 1392)

Investigations of the magnitude of the vertical angle at which the entrances of all major Thracian tombs (temples) in the Valley of the Thracian kings has a maximal projection, and is

visible for an observer situated in the central ritual chamber, show this angle to be about 18.5° (Figure 16). Beams of sunlight, at the culmination of the Sun, reach a specific place in the main ritual chamber of the temple at the summer and winter solstices.[18]

№	Name of tumulus	Height of the entrance, m	Angle, degrees
1.	Ostrusha	1.55	18.4
2.	Golyama Arsenalka	1.74	18.5
3.	Helvetia	3.17	18.6
4.	Grifoni	2.17	18.3
5.	Shushmanets	2.96	18.5
6.	Golyama Kosmatka	2.50	18.4

Figure 16. Height of the temple entrance and magnitude of the angle at which the entrance of the temple has a maximal projection and is visible for on observer situated at the central ritual chamber (Maglova & Stoev, 2014: 1394)

This means that Sun-related practices were part of the spiritual belief system of the Thracian tombs builders and were an intentionally sought after effect. The sacred solar force related practices most probably lead to enlightenment and divine inspiration. Although archaeoastronomy focuses on certain specific positions of the Sun as solstices and equinoxes, the solar circles on several rock sanctuaries in Thrace – Paleokastro, Mochukovi Kamani (Elhovo), Kamaka (M. Tarnovo) – some of them existing from at least the middle of the 3rd millennium BC, show that Sun-related practices are attested also as an everyday tradition related to the sunrise.[19] These practices were purely based on faith as a private and personal belief system – not a belief in gods, but a belief in the divine that has dominion over all. The submission to, the acceptance and awareness of a higher authority from which all originates and all will return to.

Just as many later philosophical societies, such as the Pythagoreans, Essenes, Bogomils in Bulgaria and their ideological successors in France – the Cathars, the solar force from the sunrise was used as a tool to reach a higher consciousness and connection with the one creator. Some of these teachings believed that on certain days of the year, like the equinoxes and solstices, this solar force was of its highest magnitude. And that might give us a different understanding of the beliefs of the ancient people not just in Thrace, but all around the world.[20] The question of how would they know this and who gave them this cosmic knowledge remains of utmost interest.

7. Conclusion

Archaeoastronomy studies the archaeological monuments of antiquity as living testimony to certain knowledge of ancient peoples about the sky. But some sacred sites also reveal part of the spiritual beliefs of the ancients. Tangardak kaya womb-cave and some of the Thracian Tombs show that the solar cult in Thrace was not an agricultural cult, as 19th-century anthropologists claimed, but was used most probably as a tool with the ultimate goal of enlightenment and divine inspiration.

[18] Maglova & Stoev, 2014: 1394.

[19] See Bondzhev, 2024.

[20] In recent years in Bulgaria more and more people start to follow the traditions of the Thracians. These people, whom Western anthropology calls “neo-pagans” (cf. Magliocco, 2010: 4; see also Dimitrova, 2007), believe that Thracians were bearers of ancient spirituality, sacralise nature and seek to restore their magical connection with it. This also includes sunrise related practices. See also Troeva, 2018.

Acknowledgements

This research did not receive any specific grant from funding agencies in the public commercial, or not-for-profit sectors.

The author declares no competing interests.

References

Anthony, D., & Chi, J. (Eds.) (2009). *The lost world of Old Europe: The Danube valley, 5000-3500 BC*. Princeton University Press.

Archibald, Z. (1998). *The Odrysian Kingdom of Thrace: Orpheus unmasked*. Oxford, New York: Clarendon and Oxford University Press.

Bondzhev, A. (2024). Orpheus: From a mythological figure to a Thracian king-priest. *Open Journal for Anthropological Studies*, *8*(2) (forthcoming).

Coimbra, F. (2012). Astronomical representations in rock art examples of the cognitive and spiritual processes of non-literate people. In E. Anati, L. Oosterbeck & F. Mailland (Eds.), *The intellectual and spiritual expression of non-literate societies. Proceedings of the XVI World Congress of the International Union of Prehistoric and Protohistoric Sciences*. Oxford: British Archaeological Reports (2360), 37-44.

Dimitrova, N. (2007). Bulgarian neo-paganism and the problem of National/European identity. In S. Kaneva (Ed.), *Philosophy bridging civilizations and cultures. Universal, regional, national values in United Europe*. Proceedings XXIV Varna International Philosophical School, June, 1st-3rd. IPhR-BAS, 171-173.

Fol, V. (2000). The rock and the fire. In A. Fol, K. Jordanov, K. Porozhanov & V. Fol (Eds.). *Ancient Thrace*. Sofia: International Foundation "Europa Antiqua" & Institute of Thracology, 171-192.

Fol, V. (2000a). The wolf in Hyperborean Thrace [Вълкът в Хиперборейска Тракия]. In T. Lazova et al. (Eds.), *Seminarium Thracicum 4. Tradicia i transformacii na kulturni yavleniya v drevna Yugoiztochna Evropa*. Sofia: Institute of Balkan Studies & Centre of Thracology (Bulgarian Academy of Sciences), 143-152.

Fol, V. (2003). Rock-cut caves with two entrances of the model of the cosmos. In In K. Yordanov, K. Porozhanov & V. Fol (Eds.), *Thracia XVI in Honour of Alexander Fol's 70th Anniversary*. Sofia: Institute of Balkan Studies and Centre of Tracology (Bulgarian Academy of Sciences), Tangra TanNakRa Publhing House, 239-250.

Fol, V. (2003a). Spatian and temporal continuum of the rock-cut *Topoi* of faith. An Essay on a Preliminary Reconstruction of the Faith-Ritualism. In D. Mitrevski (Ed.), *Pyraichmes 2*. Kumanovo: National Museum – Kumanovo, 215-228.

Fol, V. (2004). Knowledge in *Beyond*. *Orpheus 13-14*, 31-44.

Fol, V. (2004a). The rock antiquity of Eleusis. In V. Nikolov & K. Băčvarov (Eds.), *Von Domica bis Drama. Gedenkschrift für Jan Lichardus*. Sofia: Archäologisches Institut mit Museum der Bulgarishen Akademie der Wissenschaften, 171-180.

Fol, V. (2004b). Interpretative possibilities for rock-cut topoi of faith in and around natural caves. In *Proceedings of the Eight National Conferences on Speleology devoted to the 100th anniversary of the Surnena Gora Tourist Society*, Stara Zagora, 11-13 October 2002. Stara Zagora: Bulgarian Federation of Speleology & Surnena Gora Tourist Society, 82-86.

Fol, V. (2005). Heroons – Tombs – Sanctuaries. In K. Yordanov, K. Porozhanov & V. Fol (Eds.), *Thracia XVI. In Honorem X Congressus Studiorum Thracicorum Graecia 2005*. Sofia: Institute of

Balkan Studies and Centre of Tracology (Bulgarian Academy of Sciences), Tangra TanNakRa Publhing House, 67-78.

Fol, V. (2006). The rock antiquity of Delphi. In N. Tasić & C. Grozdanov (Eds.), *Homage to Milotin Garašanin*. Belgrade: Serbian Academy of Sciences and Arts and Macedonian Academy of Sciences and Arts, 513-521.

Fol, V. (2006b). La Thrace – patrie des rois immortels. In V. Fol (ed.), *L'or des Thraces. Trésors de Bulgarie*. Paris: Musée Jacquemart–André – Institut de France, 19-41.

Fol, V. (2006c). Faith and the cosmos. In V. Fol (Ed.), The Thracian cosmos – The sacred realm of kings. Sofia: Professor Alexander Fol Institute of Thracology – Bulgarian Academy of Sciences, 19–21.

Fol, V. (2007). *Rock topoi of faith in Southeast Europe and Asia Minor in antiquity* [Скални топоси на вяра в Югоизточна Европа и Мала Азия през древността]. Sofia: Institute of Thracology "Prof. Alexander Fol" (Studia Thracica 10).

Gimbutas, M. (1973). Old Europe c. 7000-3500 BC: The earliest European civilization before the infiltration of the Indo-European peoples. *Journal of Indo-European Studies 1*, 1-21.

Leusch, V., Armbruster, B., Pernicka, E., & Slavcev, V. (2015). On the invention of gold metallurgy: The gold objects from the Varna I Cemetery (Bulgaria) – Technological Consequence and Inventive Creativity. *Cambridge Archaeological Journal, 25*(1), 353-376.

Magliocco, S. (2010). *Witching culture: Folklore and Neo-Paganism in America*. Philadelphia: University of Pennsylvania Press.

Maglova, P., & Stoev, A. (2014). Thracian sanctuaries. In C. Ruggles (Ed.), *Handbook of archaeoastronomy and ethnoastronomy*. New York: Springer, 1385-1394.

Mikov, V. (1941). Archaeological finds in the Eastern Rhodopes [Археологически находки в Източните Родопи]. *Rodopa*, *1*, 3-4.

Naidenova, V. (1982). Cults and deities in Kabile [Култове и божества в Кабиле]. In *Parvi nacionalen simpozium "Kabile". Poselishten zhivot v Trakia*. Yambol, 126-140.

Renfrew, C. (1981). Questions of Minoan and Mycenaean cult. In R. Hägg & N.Marinatos (Eds.), *Sanctuaries and cults in the Aegean Bronze Age. Proceedings of the first international symposium at the Swedish Institute in Athens, 12-13 May*. Stockholm: Swedish Institute in Athens, 27-33.

Renfrew, C. (1985). *The archaeology of cult: The sanctuary of Phylakopi*. Oxford: British School of Archaeology at Athens.

Stoev, A., Muglova, P., Gumarov, M., Stoeva, M., Tashev, Y., & Videnov, B. (2001). Spatial Orientation and Acoustic Reverberation in the Tangardak Kaya Cave Sanctuary, Near the Village of Ilinitsa, Kardzhali region [Пространствена ориентация и акустична реверберация в пещерното светилище Тангардък кая, край с. Илиница, Кърджалийска област]. In V. Fol (ed.), *Perperek, Vol. I. Perperek and its Adjacent Microregion. A Comprehensive Study of a Millennial Multireligious Center in the Eastern Rhodopes*. Sofia: New Bulgarian University, 226–235.

Stoev, A., Maglova, P., Stoeva, M., Tashev, Y., Videnov, B., Velkov, R., & Velkov, V. (2003). An archaeoastronomical investigation of the Harman kaya rock-cut megacomplex in the Region of Dolna Chobanka village, Momchilgrad Municipality. In K. Yordanov, K. Porozhanov & V. Fol (eds.), *Thracia XV in Honour of Alexander Fol's 70th Anniversary*. Sofia: Institute of Balkan Studies and Centre of Tracology (Bulgarian Academy of Sciences), Tangra TanNakRa Publhing House, 323-334.

Stoev, A., & Maglova, P. (2014). Astronomy in the Bulgarian neolithic. In C. Ruggles (Ed.), *Handbook of archaeoastronomy and ethnoastronomy*. New York: Springer, 1378-1384.

Stoev, A., Shopov, Y., Maglova, P, Ognyanov, O., & Raykova, L. (2023). Prehistoric astronomical observatories and paleoclimatic records in Bulgaria estimate astroclimate during 4000–4500 BCE: A critical assessment. *Quaternary, 6*(1), 6.

Stoeva, P., Stoev, A., & Spasova, M. (2016). Late Chalcolithic solar-chthonic rock-cut structures for time measuring in the Eastern Rhodopes, Bulgaria. *Mediterranean Archaeology and Archaeometry*, *16*(4), 401-406.

Troeva, E. (2018). The Bulgarian neo-paganism and the Thracians [Българското неоезичество и траките]. In E. Tsaneva, M. Marinova & P. Hristov (Eds.), *Living antiquity. The scientific legacy of Dimitar Marinov (1846-1940)*. Sofia: Prof. Marin Drinov Publishing House of Bulgarian Academy of Sciences, 204-220.

Vasilev, V. (1993). Cabyle [Кабиле]. In A. Fol, D. Popov, K. Yordanov, R. Georgieva & T. Lazova (Eds.), *A brief encyclopedia. Thracian antiquity*. Sofia: Agres, 130-131.

Velkov, I. (1952). Der Fels im Kultus der Thraker. In *Beiträge zur älteren europäischen Kulturgeschichte. Festschrift für Rudolf Egger, Band 1*. Klagenfurt 1954, 28-36.

Velkov, V. (1982a). Kabile. Location, studies, sources [Местоположение, проучвания, извори]. In *Kabile, Vol. 1*. Sofia: Bulgarian Academy of Sciences, 7-17.

Velkov, V. (1982). Ten years of archaeological excavations in Kabile. In *Parvi nacionalen simpozium "Kabile". Poselishten zhivot v Trakia*. Yambol, 7.