

M. A. van der Sluijs, 'Concepts of Sun and Earth in the Ancient World', a review of T. Bilić, *The Land of the Solstices. Myth, Geography and Astronomy in Ancient Greece* ('BAR International Series', 3039; Oxford: BAR Publishing, 2021), ISBN 978-1-4073-5862-8, in *The Classical Review*, 72. 1 (2021), 297-300.

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The solar mythology championed by Max Müller was rightly criticised for its fanciful interpretations and etymologies. So was the astral mythology of the pan-Babylonists, who stretched credulity further by crediting the Babylonians with sophisticated knowledge such as axial precession, spread through the entire world. In retrospect, the combined backlash was almost as extreme: the study of celestial bodies in myth was shunned, notably in comparative settings and for the ancient Near Eastern and classical worlds. This climate endures, but Bilić's erudite study proves that the tide is turning and that Old World 'cosmomythology' can indeed be pursued responsibly.

Graeco-Roman myth distinguishes itself by having been recorded mostly at a time that also saw the incipience of philosophy and the expansion of knowledge through extensive travelling. Thus, the mythologist must factor in the profound cultural transition from naïve folklore to protoscience; Homer's cosmology was a world away from Plato's. In practice, the earliest stages of astronomy need to be pieced together from fragmentary data that include solar myths. Unsurprisingly, this reconstruction is fraught with difficulties.

In this monograph Bilić makes considerable strides in disentangling the intertwining strands of thought. Focussing on ancient Greek myths of solar movement, he commendably limits the analysis to sources that explicitly mention the sun or inseparably related phenomena such as day and night. He divides the material into annual and diurnal movement. His main exhibits are Homer's Laestrygonians, Apollonius' 'Bear Mountain', 'turning islands', Pytheas' Thule, Hyperborean Apollo, the sun's cup, Hesiod's 'house of Night' and the land of Ae(ae)a. Gilgameš's and Alexander's journeys are explored at length. Two appendices review diurnal solar movement in Mesopotamian and Egyptian lore. Mostly comprised of chapters published earlier as standalone articles, the book is a little repetitive and wordy, if thoroughly researched and referenced.

The distinction between diurnal and annual variation breaks down for polar days and nights. Instead, the sources could have been serviceably arranged around a paradigm shift that Bilić touches upon repeatedly but always peripherally – that from flat-earth to spherical-earth systems. This dichotomy is as fundamental as that between geocentricity and heliocentricity (D. Couprie, *When the Earth Was Flat* [2018], p. 1). The flat-earth model comes with an internally consistent worldview that is quite foreign to the modern mind, but must be mastered in order to appreciate archaic thought.

For example, when it is day above the earth's surface, it is night below. For all locations, the sun rises and sets at the same times; the lengths of day and night vary through the year, but not between locations. Sunrise and sunset happen at actual geographical locations, which can be visited. Every day of the year has its 'latitudes' where the sun rises due east, northeast and southeast, respectively. The sun appears to the south all day and all year as seen from the 'latitude' of its northernmost rising and setting places, and to the north as seen from that of its southernmost ones. Hypothetical mountain ranges impeding the sun may explain the solstitial turning

points, implying perpetual darkness just beyond them. Seeing the sun rise halfway between the solstitial rising points on the equinoxes, people anywhere could imagine being at the centre. At night, as imagined from the northern hemisphere, the sun may pass from west to east on or below the northern horizon just as it passes from east to west above the southern horizon by day.

Eventually, travellers like the amber traders reported new realities. Accounts of the long nights or days of the far north could initially fuel belief in wondrous places of permanent darkness or light, of which the model could only accommodate the former at best. Journeying poleward, the horizon positions of sunrise and sunset would perplexingly be found to move further poleward for any day between the spring and autumn equinoxes, and antipoleward the rest of the year. Thus, there should be a place in the extreme north where they coincide on the northern horizon at the summer solstice, creating a 24-hour day, and on the southern horizon at the winter solstice, producing a 24-hour night. Philosophers would realise that the only cogent solution is curvature. The coalescence of sunrise and sunset occurs at the polar circles. This is only one way in which the notion of a spherical earth could have been arrived at, but it is germane in this context.

Situating historical conceptions in this framework might be more illuminating than using categories of diurnal *vs.* annual. Homer's Aeaëa and Cimmerian abode, like Gilgameš's world, fit the most primitive system. Reaching a geographically fixed sunrise *locus* would logically result in the bafflement of *Od.* 10.190-192 (*pace* p. 89). Perpetual darkness could be expected further east, at a level below the surface or just behind the Rhipaeans or some gateway (*cf.* pp. 106, 139). Laestrygonia's short nights could be based on boreal rumours, unlocatable on a flat earth. If κέλευθοι means 'goings' (H. Vos, *Mnemosyne* 16 [1963], p. 21) or 'outgoings' (A. T. Murray, *Odyssey* [1919], p. 351; *cf.* 'journeys', A. H. Coxon, *Parmenides* [2009], p. 50), *Od.* 10.86 surely references proximity of the places of sunrise and sunset, where night goes out as day goes in and *vice versa*. Pindar's Hades with 'equal nights and equal days' (p. 116), as a flat-earth take on the tropical condition, would be the logical inverse of that inexplicable condition – minimal *vs.* maximal daylength variability.

In philosophy, Xenophanes (p. 41) *may* have grappled with geographically varying lengths of day and night, while Heraclitus (pp. 21 [misrepresenting Marcovich], 56) probably just meant that the twilight locations in the Greek world annually vary within bounds well away from north and south. Hippocr. *Aër.* 1, 19 still epitomised the crudest worldview. The spherical theory of earth and cosmos, devised by Pythagoreans, was popularised by Plato. Eudoxus' variation in solstitial sunrises (pp. 22 n. 75, 47) was not in geographical but ecliptic latitude – a venial fiction in a geocentric cosmos, where the sun orbits planet-like in a differently defined ecliptic plane. Pytheas bolstered the spherical-earth theory with observations from extreme latitudes; like Crates and Plutarch (*Mar.* 11.6), he explained the Homeric themes by it, rightly or wrongly. Growing awareness of the polar night influenced efforts to locate Alexander's 'Land of Darkness' as much as the dark zones of Gilgameš and Homer's Cimmerians did.

Bilić makes much of a supposed nocturnal path of the sun along the southern horizon, combined with D. Nakassis' 'unipolar model' of Tartarus as a 'cosmic nadir' at the *axis mundi* where sunrise and sunset meet (*TAPhA* 134 [2004]). However, the southern route seems unwarranted and the night sun could only intersect the central axis by detour except on the equinoxes. 'Axis mundi' should signify the polar axis, which is ill-defined on a flat earth (M. A. van der Sluijs, *APh* 41 [2021]), but could have been prefigured by the above-mentioned far-northern 'merger' of sunrise and

sunset. Hes. *Th.* 746-757 is not concerned with a paradoxical coincidence of sunset and sunrise but the swapping of day and night in the west, presupposing the reverse in the east in the mornings. As for Stesichorus, does not Helios traverse the night(sky)'s 'depths' just below the northern horizon like he traverses the day(sky)'s 'heights' to the south?

Apollo's return from Hyperborea was likely a Frazerian spring feast akin to 'bringing in the summer'. With this timing and the winter sun 'coming' from the south, Bilić's solstitial interpretation founders. The Hyperborean sojourn best reflects hearsay of the long northern days before their seasonality was understood.

There is more to the sun than motion. Keen observers would have been impressed by mirages, haloes and the corona revealed during eclipses. Perhaps solar inferior mirages inspired the goblet, the corona the Near Eastern winged disc, and the zodiacal light – appearing as two and yet one – Mounts Māšu (M. A. van der Sluijs, *Talanta* 52 [2020]) and Leukas. I. Liritzis & H. Vassiliou (*A&G* 47 [2006]) noted that two temples of Apollo were oriented towards the *aurora borealis*, then more commonly seen in Greece due to the eastern inclination of the north geomagnetic pole. Was the occasional aurora conceived as the sun's glow as it nightly passed below the northern horizon, or Apollo 'dancing through the nights' of spring in Hyperborea (D.S. 2.47.6) as some 'light spirit' who then came to augment the summer sun in the οἰκουμένη?

Bilić could have included 'solar anomalies', which tend to involve the diurnal cycle: Hera hastens the sunset (*Il.* 18.239-242; compare 2.411-420); Athena delays the dawn (*Od.* 23.241-246); Helios returns to the east at midday in Atreus' time (p. 34 n. 16). And was the 'failed sun' Phaethon a meteorite?

Lastly, 'eschatology' is persistently misapplied to 'afterlife/netherworld' instead of 'end times'.

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