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# Hellenistic astronomy: The science in its contexts

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► **To cite this version:**

Victor Gysembergh. Hellenistic astronomy: The science in its contexts Edited by Alan C. Bowen j  
Francesca Rochberg. Centaurus, Wiley, 2021. hal-03830248

**HAL Id: hal-03830248**

**<https://hal-cnrs.archives-ouvertes.fr/hal-03830248>**

Submitted on 30 Oct 2022

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Victor Gysembergh

The volume under review brings together 40 chapters written by 30 contributors concerned with ancient astronomy in the Near East and the Mediterranean. As a “Companion” volume, it raises the expectation that it will provide an overview of relevant historical evidence as well as a summary of consensual knowledge and ongoing debates in the field. This is certainly the case for most of the chapters, and thus, the volume will offer a welcome point of departure for non-specialists as well as a useful bridge between various areas of specialization such as Egyptology, Assyriology and Greek and Roman studies.

In their “Preface” and “Prolegomena”, the editors state that their purpose was twofold: “the description and analysis of Hellenistic astronomy as an exact, or mathematical, science” and “to emphasize as well its cultural reach and, in particular, the central role played by astrology” (p. XVI). Departing from common usage, they define “Hellenistic” as “the period from the late fourth century BCE”, when “Babylonian mathematical astronomy and astrology” began to instigate a “great change” in Greek “astronomical theorization”, “to the mid-eighth century CE”, “when the Arabs took Greco-Roman science in new directions” (p. 3). At p. 6, they include within the geographical range of the study “the various regions brought into contact by Alexander the Great”; yet this would imply, at least, a chapter each on Sanskrit and Syriac astronomy. Other conspicuous absentees are Latin astronomy after the fall of the Western Roman Empire (e.g. Gregory of Tours), and Greek astronomy after the decline of Alexandria (e.g. Stephanus of Alexandria).

Although much ground is well covered, some topics are arguably missing: thus, in describing ancient astronomy, only passing reference is made to the possibility of heliocentrism; in contextualizing it, no mention is made of the astronomical features of buildings, as studied by archaeoastronomy. Without multiplying examples, suffice it to say that the Hellenistic period in its conventional definition (323-30 BCE) would have provided quite enough material for a companion volume on astronomy and its cultural contexts. On the other hand, chapters occasionally overlap and may even contradict each other (e.g. pp. 31-33 and ch. 9.2 on the Antikythera mechanism).

The difficulty of providing an adequate overview for an entire millennium’s worth of history across several cultures is one possible explanation for some major gaps in the bibliography. One might have expected some reference to founding figures like Paul Tannery and Carl Bezold. Many recent scholars have also gone missing – to name but a few for lack of space: R. Goulet, G.L. Huxley, Jean Lempire, Lucio Russo, Denis Savoie, Hugh Thurston; while for others, one bibliographical reference must suffice despite dozens of significant contributions.

Now to turn to select individual chapters. 4.2 claims to be a brief history, by Bowen (one of the co-editors), of the term “hypothesis” in Greek and Latin texts concerning planetary motions. Much of its argument rests on (1) the claim that the Greeks and Romans were unaware of planetary stations and retrogradations before the 2<sup>nd</sup> c. BCE, and (2) references to his 2013 monograph on Simplicius. (1) has been at the center of Bowen’s scholarly agenda since 1983 (“A New View of Early Greek Astronomy”), but is contradicted by evidence dating back to the 4<sup>th</sup> c. BCE, and has failed to convince other scholars in the field; no new arguments are given here. (2) are, at best, hard to follow without in-depth study of Bowen’s book on Simplicius; more importantly, they often turn out to be hardly demonstrative, if at all, of the claims they should substantiate. On the other hand, the chapter contains little close study of the meaning of ὑπόθεσις. In similar fashion, a well-attested meaning of the verb ὑπέρχω is summarily dispatched in a few lines (p. 93).

In 4.3, Bowen goes on to give an overview of the planetary models that he accepts as dealing with stations and retrogradations, but several of his analyses are ill-informed: thus, he does not seem aware of the important monograph by G. Reale and A.P. Bos on the pseudo-Aristotelian *De mundo*, and treats Vitruvius’ description of planetary motions as if it were crystal-clear. Indeed, while he is

tackling passages that are fraught with difficulties of interpretation, Bowen dispenses almost entirely with previous scholarship.

Finally, Bowen's chapter 7.3 is entirely ahistorical, and, for reasons beyond the understanding of this reviewer, limits the list of practitioners of astronomy in the Greco-Roman world to "Ptolemy, his commentators, those who copied and sometimes adapted Babylonian arithmetical schemes for planetary positions, and perhaps even to Pliny, as well as the astrologers".

Chapter 5.2 on "Experience and Observation in Hellenistic Astronomy" (R.L. Kremer) elicits further surprise because of its vast subject, which would deserve a full-blown monograph. Little use is made of relevant scholarship: for instance, the claim that Eudoxus' star map fits a date around 2000 BCE is based on speculative and antiquated studies (n. 3) rather than, e.g., B.E. Schaefer's rigorous statistical study in *JHA* 2004; of course, this fit does not have to mean that Eudoxus used a "Minoan star-globe". Even worse, what is one to make of unsubstantiated claims such as that Ptolemy's predecessors "had no kinematic hypotheses or tables for predicting planetary motions" (p. 208)? Be that as it may, Kremer concludes that his own opening question is "anachronistic either way" (p. 218).

Despite occasional oversights and omissions, other chapters meet, and often surpass, the standards of a "Companion" volume. Accordingly, the book is successful in describing significant parts of ancient astronomy while highlighting some of its cultural contexts. On p. XVII, the editors express the hope that the volume under review has "set the study of Hellenistic astronomy on a new footing for future research". If this is so, then it isn't an entirely sound footing as far as Greek astronomy is concerned. Nevertheless, potential readers should not be discouraged from engaging with this very rich collection of evidence and scholarship, which provides fascinating glimpses of what a truly collaborative and interdisciplinary history of premodern science could look like.