
Archaeology and the Origins of Philosophy by Robert Hahn

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Reviewed by

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In his *oeuvre* on ancient Greek philosophy, Robert Hahn, in the course of the years, has chiseled out his own niche, asking what light can be thrown on the teachings of these ancient philosophers by studying the contemporary archaeological data. In the first part of his latest book, he adds some new material to that of his former publications; and in the second part, he offers a methodological and even meta-physical reflection on his way of working. This book, and Hahn's enterprise over the years, may be called courageous, as it intends to lay bare lines of investigation that have hardly been explored before, if at all. It is also courageous in its effort to row up the stream of a historic study of ancient philosophy by choosing explicitly to place the ancient thinkers in their historical and social contexts. The book is written in an enthusiastic style that easily carries his reader with him, especially where he does not possess the same amount of archaeological knowledge as the author has acquired. Sometimes, however, Hahn seems to be dragged along by his own enthusiasm to such an extent that his argument tends to be suasive rather than convincing. I will discuss some examples that at least did not convince me. There are many informative illustrations, although some of them, as we will see, lack the required kind of precision.

The title of the book links archaeology and (the origins of) philosophy. 'Philosophy' has to be taken here in a rather broad sense, as the whole first part is about Anaximander's cosmology, which some would not even count as part of philosophy. Hahn's claims are only accidentally applied to the interpretation of what traditionally are regarded as Anaximander's genuine philosophical items: the Boundless as the origin of everything and the only surviving fragment [94]. Hahn recommends especially that those who are acquainted with his

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earlier work read the second part first. In this review, I will follow his advice.

In the second part of his book, Hahn argues against the analytic philosophers who hold that historical inquiry is irrelevant for the understanding of ancient philosophers. This position is well expressed in Barnes' statement that 'philosophy lives a supracelestial life beyond the confines of space and time' [180]. Hahn, to the contrary, is deeply convinced that 'Anaximander, indeed all thinkers, think through and by means of their cultural and historical context' [211], that 'meaning is never divorced from background' [213], and that there are no brute facts, 'or, better yet, all facts are institutional facts' [220]. These more general statements are narrowed down in the both modest and rather surprising claim to show that archaeology has some relevance to philosophy and especially to an understanding of the historical origins of philosophy [183].

Hahn practices a method that he calls 'a kind of inverse archaeology' [189]. This method starts from the technological objects and procedures referred to in the writings of, or in the reports on, ancient philosophers and proceeds to investigate the material stuff that inspired them in order to discover what new light they can shed on the interpretation of the ancient texts [189, 229–230]. His ideal is to catalogue all the references to *technai* that can be gathered from our doxographical sources and to discuss them with the archaeologists [184].

In line with the pragmatist and hermeneutic traditions in philosophy, Hahn maintains that objects are not just objects and artifacts are not just artifacts, but that they can be understood only by a process of imaginative interpretation that is not predetermined by a set of rules [204, 208]. The interpretation of archaeological artifacts is a matter of educated guesswork in which the material-embodied experience is connected to the domain of imagined thought. The obvious danger is that the interpretations turn out to be imaginary, accidental, or irrelevant. This risk, however, is reduced because the process is always open to falsification through ongoing archaeological and doxographical evidence [203, 207, 211].

In Anaximander's case, Hahn says, the contextual environment was dominated by the astonishing building of huge temples in his backyard. Hahn's main claim is that 'Anaximander interpreted and projected metaphorically onto the cosmos what he discovered at the

building site(s)' of the big temples [196–197], viz. column drums of different dimensions prepared so as to fit exactly upon each other to make columns, the use of modules and simple ratios in designing the plan of the temple, turning wheels of various sizes and constructions used to perform diverse tasks, and bellows in the blacksmith's shop. Given that Anaximander compared the Earth to a column drum with the dimensions of its diameter being three times its height, that he visualized the celestial bodies as huge wheels, that he used simple ratios for the distances of these celestial wheels, and that he said—according to an unfortunately generally accepted translation—that the light of the celestial bodies comes to us as through the nozzle of a bellows, these are arguable claims. But Hahn's ambitions go much farther when he writes that

Anaximander's use of architectural and material terms *should not be considered accidental or additive, but rather constitutive, in any exegesis of his philosophical thought.* [223–224, my italics]

And again:

Only through an understanding of these literal concepts [scil. of the architecture culture of his time]. . . are we able to direct our attention back to the relations that Anaximander wished to intimate. [228, my italics]

In other words, according to Hahn, Anaximander did not use column drums, simple ratios, wheels, and bellows as simple images to illustrate his cosmological ideas in a way that his contemporaries could easily understand; rather, these images make up in some metaphorical way the very heart of what he wanted to say about the cosmos: 'Anaximander came to see the cosmos in architectural terms' [230]. I will suspend my judgment until we have seen what the results of the method of 'inverse archaeology' are when applied to concrete cases.

In the first part of the book Hahn delivers several case studies of 'inverse archaeology', all of which are about Anaximander's cosmology, which he considers as a test case for his method.

Chapter 1 gives a quick survey of the subjects treated in the first part of the book, which together aim to make up 'Anaximander's Cosmic Picture', as well as a charming and well-illustrated section called 'An Imaginative Visit to an Ancient Greek Building Site'.

The starting point of Hahn's studies is Anaximander's identification of the Earth with a column drum, which 'was no throwaway at all, as scholars must have assumed by their silence, but rather the so-called tip of the iceberg' [15]. This is also the subject of chapter 2, and it is here that Hahn gets his most convincing results. The ancient Greeks thought of their flat Earth as somewhat concave. Hahn shows (as he has in previous studies) how the column drum was prepared by the technique of ἀναθύρωσις to get a slightly concave surface in order to make it fit perfectly to the other drums [42]. This provides an elegant support for the translation 'concave' of the Greek γυρόν as applied to Anaximander's Earth in the doxography (with Roeper's generally accepted emendation of γυρόν for the ὑγρόν of the manuscripts).

Hahn argues that Anaximander chose the column drum, and not the column base, because the drum readily revealed nature's hidden structure, namely, that the Earth, supported by nothing, remains motionless in place [49–50]. Here one wonders what could be meant, for although it is true that column drums in a column remain motionless in place, one cannot maintain that they are supported by nothing.

Column drums existed in a great variety of proportions. Why exactly Anaximander chose the ratio 3:1 has, as far as I know, never been explained conclusively. If I understand Hahn's argument, Anaximander chose it because he adopted a modular technique for expressing cosmic dimensions. The module of temple building, Hahn argues, was the 3:1 column base; and, therefore, Anaximander took this as the ratio of his column drum-like Earth as well. To me this argument is not completely convincing.

In chapter 3, Hahn argues that Anaximander, having chosen the column drum with the proportions 3:1, introduced the number 3 as a base for his other numbers, indicating cosmic distances as multiples of 3. Hahn also expresses this by saying that he took the diameter of the Earth as his cosmic module, just as the architects used the lower column diameter as a module for intercolumnar measuring. Taking the Earth's diameter as a module is, I would say, not the same as taking the number 3 as a module, even if the Earth's diameter is three times its height. However this may be, it results in Anaximander's numbers, as is shown in Figure 3.5 [73: cf. 29 (Figures 1.16), 17

(Figure 1.2)¹. The same image has appeared in numerous earlier publications.² Indeed, the fact that this image is used so many times obviously indicates that it is an essential illustration of Hahn's ideas. There are slight differences between the several versions but not as regards the issue to discuss here.

Looking carefully at these images, one discovers that something is wrong: when we count the little circles to the right of the Earth we have $2 \times (9 + 1) = 20$ Earth-diameters instead of 19 up to and including the Moon wheel, and $3 \times (9 + 1) = 30$ Earth-diameters instead of 28 up to and including the Sun-wheel. In other words, in order to get the right totals of 19 and 28 there will have to be 8 little circles instead of 9 between the wheels of the stars and the Moon, as well as between the wheels of the Moon and the Sun. However, this result does not go well with Hahn's idea that '*the cosmic numbers appear as iterations of the $9 + 1$ formula*' (my italics), also expressed as 'the appearance of the formula $9 + 1$ in Anaximander's map of the cosmos' [84]. So far as I know, everyone (myself included) has overlooked thus far that this image contains a serious error in calculation.

My remarks are based on the hard cover edition of the book. I have been informed that in the paperback edition a new image will be offered with eight little circles instead of nine between the wheels of the stars and the Moon, as well as between the wheels of the Moon and the Sun. I guess that some textual changes are needed as well. As long as these are not available, the best we can do is to suspend judgment on this point.

Hahn suggests, as he did in former publications, that the number $9 (+ 1)$ has to do with the length of the Ionic column which, 'based on surviving examples from Delphi, has been generally reckoned to reach a height of 9 or 10 times the lower column diameter' [83]. In a footnote, he makes a *proviso*, to which I would add that one of the conclusions of a thorough study on the mathematical foundations of ancient temple architecture is that looking for 'round' relations between diameter and length of a column does not correspond to the practice of the architectural design [see De Jong 1994, thesis 6]. In

¹ Here reproduced as Figure 1 on p. 83.

² Hahn 2001, 189 (Figure 4.5 (4)), 191 (Figure 4.6), 218 (Figure 4.21); Hahn 2003, 84 (Figure 2.4), 145, (Figure 2.22), 47, (Figure 2.23). See also Hahn, 2007, section C.

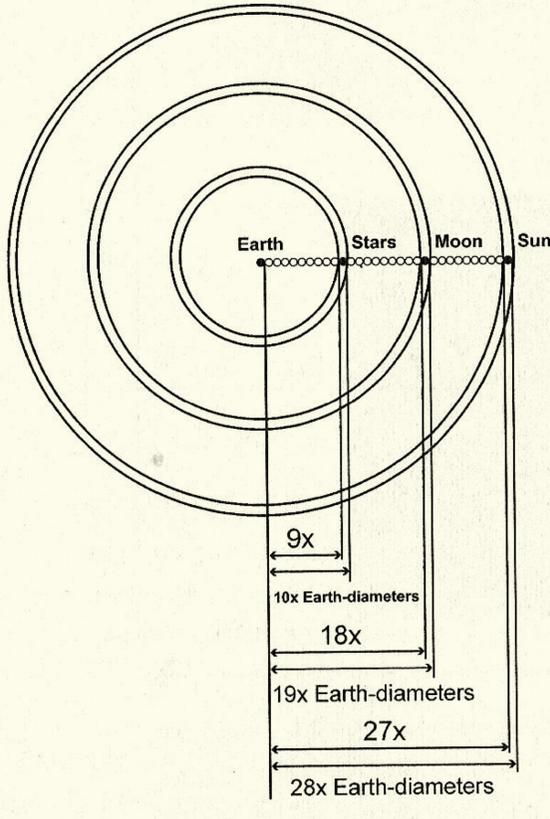


Figure 1. Anaximander's cosmos in *plan* view, showing too many modular circles

terms of cosmology, the only reasonable explanation of Anaximander's numbers, which Hahn fortunately also mentions, is that in the Greek counting system the number 9 expressed the notion of 'big', 'many', or 'a great distance' [see 83–84], so that the number 9 may indicate that the stars are far away, the number 18 that the Moon is even farther away, and the number 27 that the Sun is farthest away. In other words, the revolutionary cosmological insight that the celestial bodies are behind each other came first, and the question of how to express this conception in a way that was understandable to his co-citizens was secondary. I will return to this point at the end of the review.

Hahn claims that Anaximander made use of two ways of viewing that he borrowed from the architects: plan (as in [Figure 1](#), p. 83) and elevation (as in [Figure 2](#), p. 85). From an architect's point of view, however, in both something strange is at stake. Anaximander's plan view is, according to Hahn, a horizontal cross section through the plane of the Earth [66, 72]. On such a cross section, the celestial wheels would not even appear as wheels, as they are tilted with regard to the plane of the Earth. Strangely enough, Hahn writes in this context:

Imagining a cross section through the plane of the earth. . . he could proceed as if the heavenly wheels lie obliquely to the surface of the earth, though in fact they do not, as an elevation view of Anaximander's cosmos makes clear. [72]

This should be the other way round:

Imagining a cross section through the plane of the Earth, he could proceed as if the heavenly wheels lie in the same plane as the surface of the Earth, though in fact they do not, but lie obliquely to the Earth's surface, as an elevation view of Anaximander's cosmos makes clear.

The elevation view in the architectural sense is a front view (as in Hahn's [Figure 1.15](#) [29]), whereas Anaximander's alleged elevation view sees his cosmos under an angle, in perspective [29: [Figure 1.16](#)]. In a front view the celestial wheels would—again—not even appear as wheels but as lines and the virtual cylinders along which they slide up and down would not appear as cylinders but as rectangles.³

In chapter 4, Hahn discusses the interpretation of an expression used in the doxography to describe how the light of the celestial bodies escapes from an aperture in the celestial wheels, ὤσπερ διὰ πρηστῆρος ἀυλοῦ or οἶον πρηστῆρος ἀυλόν. The connection of the words πρηστῆρ and ἀυλός is a unique occurrence that is usually translated as 'through the nozzle of a bellows.' This translation goes back to Hermann Diels and is defended by Hahn as well. Accordingly, he shows several examples of ancient bellows. As he is arguing against an article of mine in which I maintain that Diels' translation is wrong, I will take the opportunity to make a few remarks [cf. [Couprie 2001](#)].

³ Cf. [Figure 2](#) on p. 85, in which 'Virtual Earth' should be simply 'Earth'.

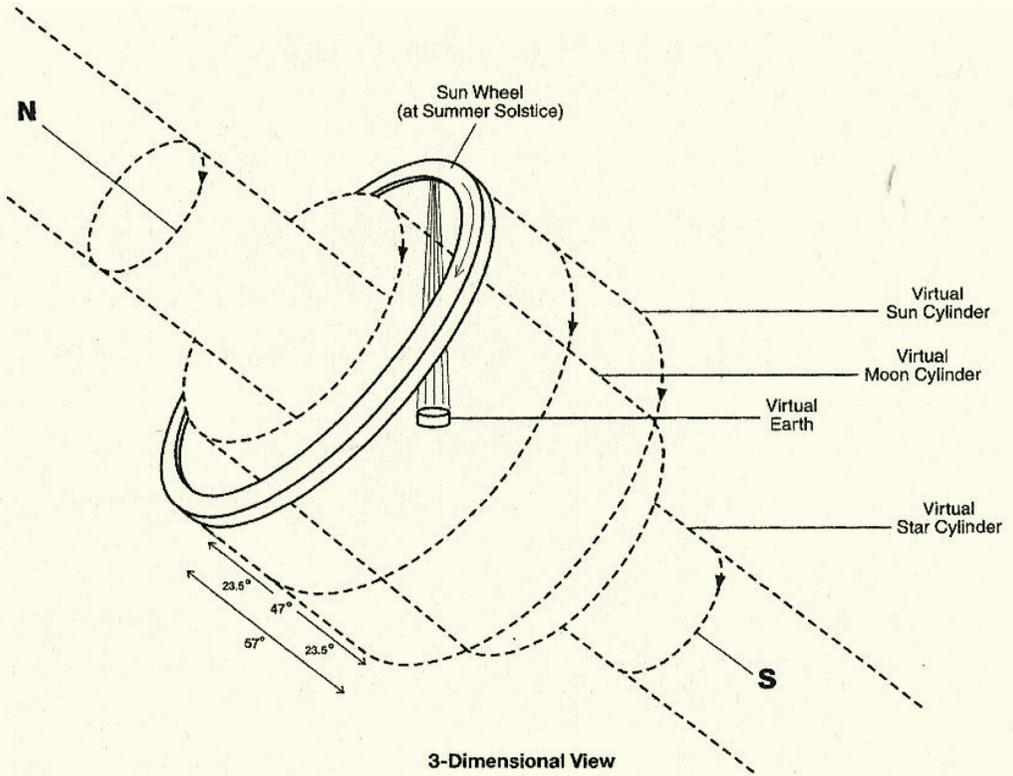


Figure 2. Hahn's version of Anaximander's cosmos in 'elevation view'

First of all, in defense of his translation, Diels [1954] adduces two texts from Hippocrates' *De articulatione* in which is described how a sack ($\acute{\alpha}\sigma\kappa\acute{o}\varsigma$) is blown up (like a child's balloon) by means of a brazen pipe ($\alpha\acute{\upsilon}\lambda\omicron\delta\varsigma \acute{\epsilon}\kappa \chi\alpha\lambda\kappa\acute{\epsilon}\omicron\upsilon$) that is attached to it. This instrument was placed under a dislocated hip joint with the intention of getting it back in place again. The very word $\pi\rho\eta\sigma\tau\acute{\eta}\rho$ is not used in this text, which makes it hard to see how it can be used as a defense of the translation of $\pi\rho\eta\sigma\tau\acute{\eta}\rho\omicron\varsigma \alpha\acute{\upsilon}\lambda\omicron\delta\varsigma$ as 'the nozzle of a bellows.' The words $\alpha\acute{\upsilon}\lambda\omicron\delta\varsigma \acute{\epsilon}\kappa \chi\alpha\lambda\kappa\acute{\epsilon}\omicron\upsilon$ can certainly not be translated as 'the blacksmith's bellows', although Hahn would have us believe so [90]. In his *Doxographi Graeci*, Diels did not mention Hippocrates in this connection but pointed to Apollonius of Rhodes' *Argonautica*, where the word $\pi\rho\eta\sigma\tau\acute{\eta}\rho\omicron\varsigma$ is used in the context of Hephaestus' forge.

Hermann Fränkel has argued, however—and I think convincingly—that the meaning of *πρηστήρ* here is not ‘Blasebalg’ but ‘Gluthauch’ (‘scorching wind’). Afterwards, Diels never quoted this text again in defense of his translation. The context of a forge is completely missing in Anaximander’s text. On the other hand, in the doxography on Anaximander, the word *πρηστήρ* is said to indicate a weather phenomenon related to lightning and heavy wind. The simplest and most obvious interpretation of *πρηστῆρος ἀύλος*, which is a heavenly phenomenon, is to relate it to the meteorological phenomenon that is indicated by the word *πρηστήρ* and to take *ἀύλος* to mean ‘stream’, ‘jet’, or ‘squirt’, as it does sometimes in Homer. This would result in a translation of *οἶον πρηστῆρος ἀύλον* as ‘like a stream of lighting fire’, or perhaps ‘like a stream of scorching wind’.⁴

Stated briefly, Anaximander is trying to explain the phenomenon of the light of the celestial bodies on the analogy of a meteorological phenomenon. In order to appreciate this analogy one has to realize that Anaximander does not make, as does Aristotle, a sharp distinction between what happens in the heavens and what happens in the sublunary sphere. To the contrary, we are informed that according to Anaximander meteorological and celestial phenomena are immediately connected. The turnings of Sun and Moon, for instance, are caused by winds that originated from the water that covered the primeval Earth and evaporated under the influence of the Sun.⁵ My conclusion is that the expression *πρηστῆρος ἀύλος* has nothing to do with a bellows at all.

Hahn combines the idea of the alleged celestial bellows in Anaximander with the conception of a living and breathing cosmos, pointing to the words *στόμιον* (‘opening’, ‘mouth’) and *ἐκπνοή* (‘exhalation’) that are used in the doxography; and he concludes that Anaximander conceived of the cosmos as a living and breathing being [113]. It seems to me, to the contrary, that the two are incompatible: either

⁴ I take it that *οἶον πρηστῆρος ἀύλον* mirrors best the original wording, and that *ὥσπερ διὰ πρηστῆρος* is a free rendering of by doxographer who did not completely understand what was meant, as is also the case in another doxographical account, in which the word *ἀύλος* is replaced by *σάλπιγξ* (‘trumpet’).

⁵ See Aristotle, *Meteor.* 353b6 ff., and Diels and Kranz 1954, 12A27 and 64A17. Aristotle severely criticizes such theories in *Meteor.* 355a5 ff.

the image of the openings in the celestial wheels is that of an exhaling mouth-opening or it is that of the nozzle of a bellows; but it is not both together. The idea, though, of a stream of fire or a stream of scorching wind may be readily combined with the image of mouth-like openings blowing out that stream. Perhaps the combination of such heterogeneous things as a (celestial) wheel and a mouth-like opening looks less strange when we read that, according to Workman [1953, 46], the words *ἐκπνοή* ('exhalation') and *στόμιον* ('mouth-opening') are technical terms of bronze-founding and indicate the air-holes in the casting-mould. There, too, two heterogeneous things (casting-mould and mouth) are combined to describe how a stream of hot air escapes from an object. The use of such an image to elucidate a part of the celestial phenomena does not necessarily imply that the whole cosmos is conceived of as a living being, just as the use of architectural images does not necessarily imply that the whole cosmos is conceived of as a house, which we will come to speak about later on. This way of arguing typifies Hahn's inclination to jump enthusiastically to conclusions. Moreover, it is hard to see how the cosmos could be at the same time a house and a living, breathing being.

In chapter 5, Hahn goes deeper into the subject of the celestial wheels, linking it to the idea of the *axis mundi*. Anaximander imagined the celestial bodies as huge wheels made of thick air with fire inside that is only visible at openings in those wheels. It is generally accepted that what is meant are the rims or felloes of wheels. Hahn shows that such wheels with hollow felloes really existed in Anaximander's time. They were invented by the architect Metagenes for transporting monolithic architraves that were enclosed like axles in the wheels. In an attempt to elucidate Anaximander's cosmos, Hahn compares it with such a wheeled vehicle [142 (Figure 5.15c) = 19 (Figure 1.4), reproduced here as [Figure 3](#), p. 88].

The little disk in the center represents the Earth, the two circles represent the wheel of the Sun at summer and winter solstices, and the dotted lines suggest a cosmic axle, an *axis mundi*. This drawing has serious problems. First of all, the two 'wheels' are too far away from each other to give a right representation of the movements of the Sun as seen from a flat Earth. If in this picture, as Hahn indicates, the circles represent the Sun-wheel at the summer and winter solstices, it looks as though the Sun is in the zenith at the equinoxes in spring and in autumn. This is obviously done to obtain a better

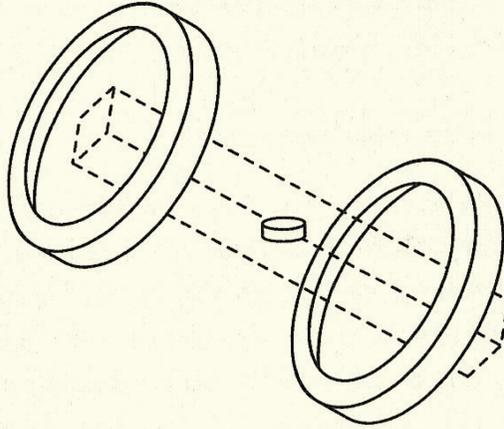


Figure 3. Hahn's picture of Anaximander's Sun-wheel
(in two positions) with axle

resemblance between Anaximander's universe and Metagenes' vehicle; but cosmologically speaking it is completely wrong [cf. [Figure 2](#), p. 85 above].

The axis of the heavens has to be thought of, according to Hahn, as a big column at the center of the world, around which the firmament revolves and of which the Earth is one of the drums [142]. In [Figure 2.9](#) [50] a pointer marked ' 3×1 Column Drum' indicates a drum in the middle of the column (Note: Hahn uses ' $3:1$ ' and ' 3×1 ' interchangeably). In cosmological terms, this signifies the drum-shaped Earth in the middle of the celestial axis. However, the drum to which the pointer points measures only 2×1 , as the reader of the book can easily verify. I think that drums with the dimensions 3×1 were usually applied at the top of the column, as they were relatively light and thus could be lifted easier to great heights. If so, the image of the Earth (drum) in the middle of the celestial axis (column) fails.

Another difficulty that Hahn pays insufficient attention to is that the axis of the heavens is tilted, whereas a column is meant to stand right up. The tilting of the celestial axis was a problem that bothered several Presocratics. Since ancient times, its interpretation is haunted by the failure to recognize the difference between how things are seen from a flat and from a spherical Earth, as I have

explained extensively elsewhere [Couprie 2009]. Hahn, too, falls into this trap when he mentions ‘the stunning reality’ for the archaic Greeks who thought that the Earth was flat, ‘that either the cosmos is inclined 23.5° north or that the Earth is inclined 23.5° north’ [176]. First of all, the last ‘north’ is obviously a slip of the pen, and has to be read as ‘south’, as some Presocratics are said to believe not that the celestial axis was tilted toward the north but the Earth toward the south. Essential, however, is that the celestial axis, which coincides with the axis of the *spherical* Earth, is tilted 23.5° with respect to the ecliptic pole (and not ‘north’); or, said otherwise, the ecliptic is inclined 23.5° with respect to the celestial equator, which is a projection of the Earth’s equator. On a *flat* Earth, to the contrary, there is not such a thing as an equator coinciding with the celestial equator, and the celestial axis (which is the line between the celestial pole and the center of the Earth) does not coincide with Earth’s axis. This means that the amount of the tilting of the celestial axis toward the north depends on where you think the center of the flat Earth to be. For those who think, e.g., that Delphi is the center of the flat Earth, the tilting of the celestial axis is 51.5° to the north with respect to the zenith.

Moreover, Hahn defends the idea that not Delphi but Syene⁶ (modern-day Aswan) was the center of Anaximander’s flat Earth because in this location the Sun at noon on the day of summer solstice stands in the zenith, with the result that a gnomon throws no shadow [157–158]. This would imply that the celestial axis was tilted at an angle of 66.5° to the north with respect to the zenith, which means that the celestial axis is almost lying down instead of standing right up. As said already, elsewhere Hahn extensively shows how column drums are prepared to fit exactly upon each other in order to make a perfect column [42–44 and Figure 2.5]. How the Earth as a column drum is thought to fit into a column that is tilted that much he does not tell.⁷

Chapter 6, in which Hahn tries to reconstruct Anaximander’s sundial, is the one in which his enthusiasm and suggestive way of writing tends to let him forget his critical sense. Let me start with

⁶ Written as ‘Cyene’ by Hahn.

⁷ When the Earth is imagined as tilted (the ‘dip of the Earth’ that some doxographers ascribe to later Presocratics), then the Earth as a column drum does not fit into the celestial axis either.

his reconstruction of Anaximander’s seasonal sundial with summer and winter solstice ‘sun wheels’ [161 (Figure 6.11)]:

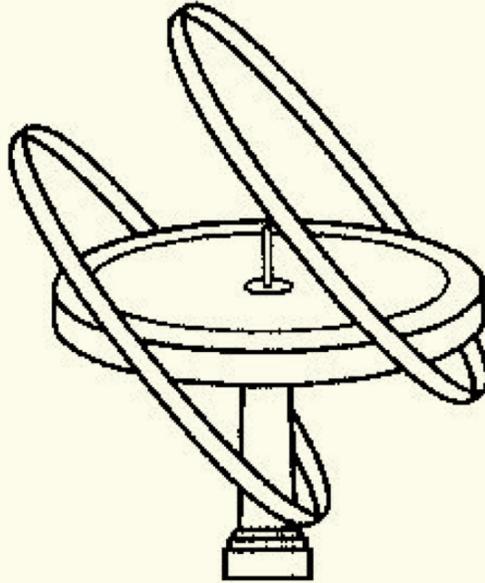


Figure 4. Hahn’s rendering of Anaximander’s seasonal sundial

The perspective in the image on the left of Hahn’s Figure 6.11 is definitely wrong, as the reader may easily notice. According to my information, this flaw too will be adjusted in the paperback edition of the book. So, I will concentrate instead on the image on the right of Figure 6.11 which is reproduced here as [Figure 4](#).⁸

As I have already said, Hahn suggests that Syene was the center of Anaximander’s flat Earth. One would expect, consequently, two features to become visible in Hahn’s drawings: the Sun at noon on the day of summer solstice at the zenith, and the tilting of the celestial axis at an angle of 66.5° to the north. But this is not the case. On page 160, Hahn puts forward the plausible suggestion that the disk

⁸ Actually, I took Figure 1.5 [20] because Figure 6.11 [161] omits the gnomon and the little ring around it.

representing the Earth in Anaximander's alleged sundial must have had the proportion of 3:1. One would also expect to see these dimensions in his drawing, but again this is not the case. When one draws the disk representing the Earth in the right proportions and adds the above-mentioned characteristics of Syene, as is done in [Figure 5](#) [p. 92], another problem in Hahn's reconstruction becomes apparent: the width of the rings representing the solar wheel, which should be equal to the Earth's diameter, is much too small. Moreover, the diameter of the solar wheel should be 56 Earth diameters instead of one. In the reconstruction, no place is left for the wheels of the stars and the Moon. In other words, in Hahn's reconstruction the Sun is not very far away, as he stresses elsewhere [84]; indeed, to the contrary, it is very near the Earth. Perhaps, one might say that the construction shown in [Figure 6.11](#) is only a *sketch*, but considering the many questions that arise one wonders what it actually intends to illustrate.

The problems indicated above arise from Hahn's attempt to combine in one and the same device both a seasonal sundial and a model of Anaximander's cosmos. Additionally, Hahn suggests that Anaximander's map of the Earth and his seasonal sundial were combined in the same scale model [160]. The map, then, was drawn on top of the horizontal disk. This means that the center of the disk must have been Syene, whereas Sparta and Miletus must have been depicted somewhere north of Syene. This leads to other inconsistencies, as the sundial was said to have been erected in Sparta. In other words, on the map that was the ground-plate of the sundial, the gnomon stood in Syene, where on the day of summer solstice a gnomon casts no shadow at noon; but in reality the gnomon was erected in Sparta, where on the day of summer solstice a gnomon casts a small shadow at noon. This inconsistency clearly appears in the little circle that is drawn around the gnomon, indicating the shadow at noon on the day of summer solstice at Sparta but not at Syene. Moreover, if one tries to sketch a map of the Earth with Syene in the center, the hardly believable and, for the ancient Greeks probably unacceptable, consequence is that Greece is situated on the fringes of the habitable part of the Earth (*οἰκουμένη*) or even beyond that. In sum, it seems rather unsettling to combine Anaximander's map of the Earth and his seasonal sundial.

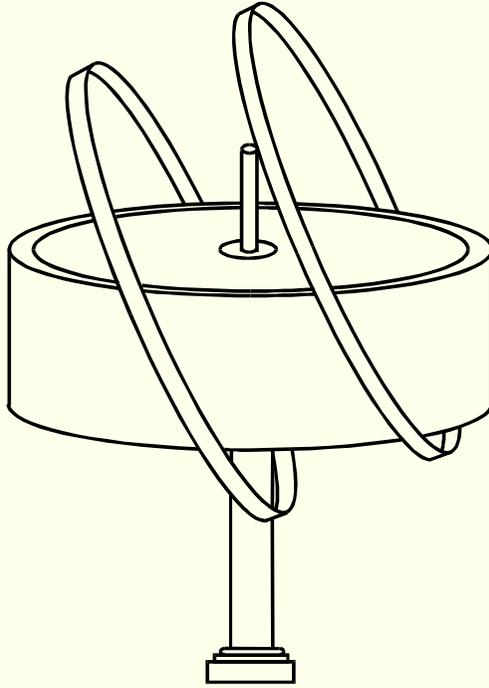


Figure 5. Revised version of Hahn's rendering of Anaximander's seasonal sundial (see text)

Finally, the concentric circles that Hahn draws on top of his reconstruction of Anaximander's seasonal sundial to indicate the solstices are meaningless. When a vertical gnomon is used, the solstices are indicated by a point due north of the gnomon marked by the tip of the shadow of the gnomon at noon. Drawing a circle through that point with the base of the gnomon as its center makes no sense. A comparison with the so-called Qumran roundel [152], an instrument which is dated to the first century BC and is not certainly a sundial, is unfounded.⁹ The 'hour markers' that Hahn draws [165 (Figure 6.14)]

⁹ I intend to argue elsewhere that the Qumran roundel can be more readily interpreted as an instrument for making rather precise appointments than as sundial.

are equally wrong, as they suggest that the Sun always rises due east and sets due west, which is only true at the equinoxes.

When we try to strike the balance, we have to thank Hahn for providing some ideas that clarify images used in Anaximander's cosmology. That Anaximander must have thought of his drum-shaped Earth as somewhat concave is elucidated by the way column drums are prepared by means of ἀναθύρωσις. Hahn shows that hollow wheels as in Anaximander's conception of the celestial bodies really existed in his time and environment. However, as argued above, Hahn's exposé of the column as an image of the celestial axis, of which the Earth should be a column drum, his drawing of a map of Anaximander's cosmos according to the $(9 + 1)$ formula, his clinging to the translation of πρηστῆρος ἀύλος as 'the nozzle of a bellows', and his ideas about Anaximander's sundial including his efforts to combine it with a model of the universe and a map of the Earth, did not convince the present reviewer. All taken together, this seems to be a rather small harvest using the method of 'inverse archaeology'.

Although he warns against the danger of the use of imagination in interpreting the images of artifacts and techniques in ancient texts, Hahn regularly has a tendency to jump to conclusions. If one agrees that Anaximander sometimes used architectural features as images for cosmological ones, Hahn readily concludes that Anaximander was reconstructing the house of the cosmos and was engaged in cosmic architecture. When the doxography calls the opening in Anaximander's celestial wheels 'exhaling places', Hahn is ready to conclude that the whole cosmos is alive and that the cosmos is a living creature. It seems to me that some caution should be appropriate here. The use of an image to illustrate a thought does not imply automatically that this image is meant to be generalized. Although he seems to suggest it throughout his book, Hahn apparently avoids speaking of Anaximander's cosmos as a 'cosmic temple', as he has in the past.¹⁰ However, several times he does speak of 'the house that *is* the cosmos' [e.g., 51, 120], of which Anaximander sought to explain the structure and stages of its construction. One may wonder what a strange building this cosmic house was, putatively constituted as it was of wheels

¹⁰ Cf. Hahn 2001, 188 'Anaximander imagined the cosmos to be a kind of temple, the cosmic house'.

that turn at different distances around the Earth and lie aslant in relation to the Earth's surface, with its lone column (the cosmic axis) not standing right up but fallen down, adorned with thousands of alleged bellows with their nozzles, and even breathing and alive.

My basic problem with Hahn's inverse archaeological method is that it conceals rather than reveals the world-historical meaning of Anaximander's cosmological insights. One would almost believe that in Hahn's view Anaximander was so intrigued by the achievements of the architects and other craftsmen that he forgot to look at the heavens when he put forward his conception of the universe. However, when Anaximander launched his new ideas on the cosmos, he was first and for all not an architect but a cosmologist looking up to the stars and thinking about the celestial bodies, their relative positions, and their movements. The main and foremost historical context of Anaximander was the archaic conception of the universe as the cupola of the firmament arching over the flat Earth, from which conception he managed to free himself, thus becoming the founding father of cosmology.

What really counts is not so much what could possibly have inspired Anaximander, but what is the significance of his cosmological ideas. Let me, therefore, end this review by mentioning very briefly what are in my view Anaximander's three fundamental cosmological insights and their relations to the images that he used.

1. Anaximander imagined the celestial bodies as not stopping at the horizon but making full circles around the Earth. Only after he had dared to think this did he ask himself how such a circular movement could possibly exist and persist. The only objects in his environment that naturally made circular movements were wheels. So he imagined the celestial bodies as wheels.
2. The conception of the celestial bodies as making full circles around the Earth necessarily gave rise to that of a free floating Earth in the center of the cosmos. Only after he had dared to think this did he address the question of the shape of the Earth. As he thought, like all his contemporaries, that the Earth was flat, the shape of a disk was rather obvious and could easily be illustrated by an object of a similar shape that everyone knew, the column drum.
3. Anaximander conceived of the celestial bodies as being at different distances from the Earth. Only after he had dared to break with

the archaic conception of a firmament onto which the celestial bodies were glued, did he consider the question of how to express their distances, which he was not able to measure. So he found in the symbolism of the Greek counting system a set of numbers that was able to express his new idea of depth in the universe rather adequately: the numbers 9 (+1), 18 (+1), and 27 (+1), meaning 'far, farther, farthest', using the diameter of the Earth as his 'module.' These notions he could have illustrated very well in a 'plan view'.

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