

INTERPRETATIO  
SOURCES AND STUDIES IN THE  
HISTORY OF SCIENCE

A 4

The Directions and Names  
of the Winds

A Translation of

[Aristotle], *Ventorum situs et nomina*

by

Alan C. Bowen



*Interpretatio: Series A 4*

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The Directions and Names of the Winds

## *Interpretatio*

### Sources and Studies in the History of Science

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# The Directions and Names of the Winds

A Translation of  
[Aristotle], *Ventorum situs et nomina*

by  
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## Editors' Foreword

01 May 2019

In late 2014, we decided that it was time to re-invent *Interpretatio*. We started from its original focus as a series of publications devoted to the history of premodern science understood as a subject that includes what was variously called science from antiquity up to the early modern period in cultures ranging from Spain to India, and from Africa to northern Europe. But this time, we resolved to emphasize the need to contextualize our subject, that is, to analyze the workings of the diverse contexts in which this premodern science figured at any given point in time and in the face of which it took its form and direction.

Our broad aim, as before, is to make fundamental texts in the history of science accessible to the modern reader in publications that satisfy the requirements of specialists but still address the needs of non-specialists and general readers. To accomplish this, however, we have chosen to focus primarily (but not exclusively) on editions, translations, and interpretations. Moreover, in order to capture scholarly endeavor of this sort in all the usual formats, we have divided *Interpretatio* into two series. Series A will publish items of fewer than 100 pages in length; Series B is for longer items and will include monographs, collections of essays, and so forth.

Series A is admittedly an experiment: not only will it exist solely online—we have no plans at this time to issue a printed version, though each item will of course be printable—the articles in Series A will not constitute a traditional journal. Indeed, to take full advantage of the freedom of online publication, the items in *Interpretatio* A will be numbered sequentially and presented independently. In effect, items in Series A will be a series of booklets while those in Series B, which will exist both online and in print, will be a series of books.

We are very excited about this venture and would be delighted to learn your thoughts on the items published in *Interpretatio* as well as on the project in general. You may use the comment box on the page for each item of *Interpretatio* and thus, perhaps, open a more general discussion, or just contact us by email.

But, more importantly, we invite your scholarly contributions to *Interpretatio* and hope that you will give us the opportunity to work with you in advancing the contemporary understanding of premodern science.

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## Abstract

The anonymous text *Ventorum situs et nomina*, once held to be by Aristotle himself, gives the local names of 10 topic winds as well as their directions. It is not an elaboration of the wind-rose that Aristotle, for example, describes in *Meteor.* 2.5, though many scholars have assumed this, but a presentation of a weather-map for the inhabited world (οἰκουμένη). What seems to be important to the author in collecting the local winds under the topic winds is not so much their direction as their time of year as well as the etymologies of the local names.



# The Directions and Names of the Winds

## Introduction

This brief, anonymous account of the winds, which has no explanatory introduction and a laconic conclusion, is perhaps best described as a Hellenistic contribution to a body of learning about the winds, weather, and signs to which many contributed in antiquity, including notably Aristotle and Theophrastus.

### 1. *The subject of the Vent. situs*

Consider the main title of this work, «Ἀνέμων θέσεις καὶ προσαγορίαι». The word «θέσεις», like the Latin ‘situs’, though usually rendered into English in this context by ‘location’,<sup>1</sup> ‘position’,<sup>2</sup> or ‘situation’,<sup>3</sup> has the general sense ‘disposition’. But, in the case of the winds, especially as presented in this account, the disposition in question is surely a direction. Hence, I translate the Greek title as ‘The Directions and Names of the Winds’. This is consistent with, and appropriate to, the substance of Aristotle’s *Meteor.* 2.6, and to the anonymous *Περὶ κόσμου* as well, given their focus on where the winds are from.<sup>4</sup> I will return to this in due course.

### 2. *On its provenance*

As for the subtitle of *De vent. situs*, the codices have «ἐκ τῶν Ἀριστοτέλους Περὶ σημείων», which I propose to render ‘From Aristotle’s Writings on Signs’.<sup>5</sup> But perhaps this should really be ‘From Aristotle’s Treatise *On Signs*’ instead. In either case, the implication is that it was not Aristotle himself who offered the

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<sup>1</sup> See D’Avella 2007, 223.

<sup>2</sup> In French, see Federspiel and Levet 2018, 28, 83.

<sup>3</sup> See Hett 1936, 453.

<sup>4</sup> Aristotle himself maintains that air in motion counts as wind when it is understood to flow from a source or origin [*Meteor.* 360a27–33: for the text transposed, see Lee 1952, 167]. *Περὶ κόσμου* 394b7–9, however, though it identifies winds in terms of their direction, defines wind itself simply as the flow of a connected mass of air.

<sup>5</sup> The capitalization of «περί» is the work of some medieval copyist in the transition from majuscules to minuscules and so has no probative value in its own right.

remarks in *Vent. situs* but some later author. Of course, in either case again, the question becomes, In what sense is the *De vent. situs* really *from* its source? Is it

- (a) an abridgment, that is, a complete section of this source?
- (b) a collection of passages taken from throughout that source? or
- (c) indebted to its source in the more limited sense that it draws on some governing motif or project that is developed in ways not found in the source?<sup>6</sup>

Now, I will not tarry with speculation about who this author was, whether he was a Peripatetic, a Stoic, or whatever. Nor will I address the related question, Did Aristotle actually write a *Περὶ σημείων*?, beyond confessing that, in my view, the evidence is not of the sort that warrants the claim that he did. Instead, I propose to compare Aristotle's *Meteor.* 2.6, the *Περὶ κόσμου*, and the *Ventorum situs*, with the aim of highlighting two features by which the latter differs significantly from the other accounts of the winds, features that should, but do not, figure in recent discussions of its provenance.

Latitude North ( $\varphi^\circ$ )	Distance ( $\eta^\circ$ ) from SSRP to VERP
0 <sup>a</sup>	23.5
23.5 <sup>b</sup>	25.77
37.1	30
45	34.33
55.67	45
60	52.89
66.5 <sup>c</sup>	90

<sup>a</sup> The latitude at the equator.

<sup>b</sup> The northern limit of the torrid zone.

<sup>c</sup> The Sun touches the horizon but does not cross it.

Table 1. The variation of the distance of the summer solstitial rising point (SSRP) to the vernal equinoctial rising point (VERP)

### 3. *The winds and their directions*

So, let us turn to the question, How is one to specify the directions of the winds? For Aristotle [*Meteor.* 2.6] and the author of the *Περὶ κόσμου*, these directions are to be specified with reference to the Sun's rising and setting points at the

<sup>6</sup> For Sider and Brunschön, who hold that Aristotle actually wrote a *Περὶ σημείων*, only the first two possibilities are in play [2007, 12].

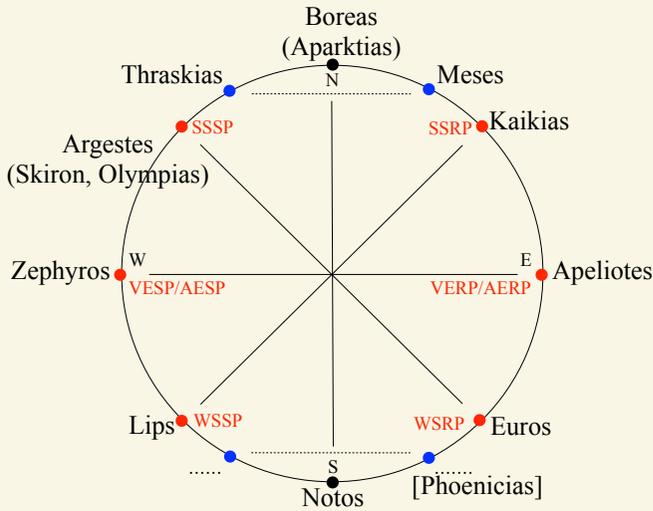


Figure 1. Aristotle's Wind-Rose [*De caelo* 2.6]

observer's horizon, when the Sun is at the cardinal points of its annual course through the heavens. These cardinal points are its positions on the days of solstice and equinox. Thus, for observers at less than lat.  $66.5^\circ$  to the north or south, there are, on the eastern horizon, the summer solstitial, the vernal/autumnal equinoctial, and the winter solstitial rising points; and, on the western horizon, there are the summer solstitial, the vernal/autumnal equinoctial, and the winter solstitial setting points. Now, the directions to these points on the observer's horizon are not to be identified by points on the compass, as Forster [1913] does. The reason, as Furley recognized [1978, 366 note *a*], is that the solstitial rising and setting points are not fixed for all observers but vary from horizon to horizon, that is, with the observer's latitude [see Table 1, p. 2, Appendix, p. 15]. In fact, for observer's at latitudes greater than  $66.5^\circ$  to the north or south, the Sun does not even cross the horizon on the day of solstice.

Thus, in *Meteor.* 2.6, when Aristotle offers a graphical representation of the winds [see Figure 1], this representation, which constitutes a wind-rose, involves marking out the horizon of some arbitrary observer in the northern inhabited lands by noting the Sun's cardinal rising and setting points during its annual course. As a refinement of the wind-rose offered in 2.6, Aristotle distinguishes the observer's real and ideal horizons, and remarks that both can be marked out in the same way.<sup>7</sup> Still, Aristotle gives no indication that this division obtains for only those horizons in which the Sun rises and sets on the day of solstice; or

<sup>7</sup> See Aristotle, *Meteor.* 2.6, 363a25–30:

that, while the divisions in the real and ideal horizons are made in the same way, that is, with reference to the same cardinal points, the positions of the solstitial rising and setting points on the horizon vary with latitude. The same holds true as well of points on the horizon at or near the ever-visible circle—these are the small, solid blue circles in [Figure 1, p. 3](#)—in that the location of this circle varies with latitude as well [*Meteor.* 2.6, 363b27–364a4].

Nevertheless, this is not a critical problem: what it means is that one must take care in interpreting Aristotle’s account. His causal theory of the Sun’s action throughout the year on the Earth’s two exhalations, the moist (vapor) and the dry, the latter being the source and nature of wind [*Meteor.* 2.4–5], suffices to guarantee that his wind-rose will hold, but only for those observers at latitudes greater than 23.5°, if Notos is to be a southerly wind [*Meteor.* 2.5, 362a31–b10], but yet no greater than 66.5°, the latitude where the wind-rose pattern ceases to hold.

There is no saying if the author of the *Vent. situs* recognized the nature and limitations of Aristotle’s wind-rose. Still, we can see that he takes a different approach. Rather than use the Sun’s cardinal rising and setting points for reference, he identifies the directions of winds by pointing to such geographical features as mountains, promontories, plains, and rivers, as well as to such political features as countries and their peoples. The typical entry in his catalog is of this sort:

Topic wind.

Alternative name for this wind, *N*, given in *X* (a town, country, town, or island), since it blows from a geographical or political feature *N*’.

It is striking that a good number of the entries in the *Vent. situs* are concerned to state the connection between the alternative name *N* for the topic wind and the geographical or political feature *N*’. In some cases, such etymologizing is unexceptional: thus, for instance, the derivation of the name ‘Pagreus’ from the fact that it blows from the Pagrica mountains, or of the name ‘Kaunias’ from the fact that it blows from the town, Kaunos [Caurus].<sup>8</sup> In others, it is bizarre:

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γέγραπται μὲν οὖν, τοῦ μάλλον εὐσήμως ἔχειν ὁ τοῦ ὀρίζοντος κύκλος· διὸ καὶ στρογγύλος, δεῖ δὲ νοεῖν αὐτοῦ τὸ ἕτερον ἔκτεμα τὸ ὑφ’ ἡμῶν οἰκούμενον· ἔσται γὰρ κάκεινο διελεῖν τὸν αὐτὸν τρόπον. [[Louis 2002](#)]

Now, the circle of the horizon has been drawn for the sake of greater clarity—which is why it is round. Although it is right to consider the [land] inhabited by us as a section different from [this horizon circle], it certainly will be possible to divide that [section] too in the same way.

Cf. [Forster 1913](#), *ad loc.*

<sup>8</sup> See [p. 9](#) below on transliteration and the presentation of place-names.

Aristotle <i>Meteor.</i> 2.6	Περὶ κόσμου	<i>Ventorum situs</i> Topic Winds
Boreas (Aparktias)	Αparktias	Borras
Meses	Boreas	..... <sup>a</sup>
Kaikias	Κaikias	Kaikias
Apeliotes	Αpeliotes	Apeliotes
Euros	Euros	Euros
[Phoenicias] <sup>b</sup>	Euronotos	Orthonotos <sup>c</sup>
Notos	Notos	Notos
..... <sup>d</sup>	Libanotos (Libophoenix)	Leukonotus
Lips	Lips	Lips
Zephyros	Zephyros	Zephyros
Argestes (Skiron, Olympias)	Αrgestes (Olympias, Iapyx)	Iapyx
Thraskias	Θraskias (Kirkias)	Thraskias

<sup>a</sup> ‘Meses’ does not actually have its own entry. It is only listed as an alternative name for Borras. Forster [1913, *ad* 972a4 and note 1] assumes that *Vent. situs* describes a wind-rose and proposes that Meses is a topic wind.

<sup>b</sup> This is a purely local wind.

<sup>c</sup> See note 24, p. 12below.

<sup>d</sup> Aristotle maintains that there really is no wind contrary to Meses.

Table 2. Greek wind-names

The names in columns 1, 2 explicitly belong to a wind-rose; whereas the names in column 3 are in the order of their occurrence, assuming the omission of a wind after Borras [see note a].

the apparent attempt to derive «Ζέφυρος» from the word for evening and the west, «ἑσπέρα», is a case in point.<sup>9</sup>

But this brings to the fore the problem of understanding the topic winds themselves. These are pretty much the same as those found in *Meteor.* 2.6 and Περὶ κόσμου 394b10–35 [see [Table 2](#), p. 5]. So, are we to understand them in the same way, that is, as winds also defined in some wind-rose?

Plainly, it would be a mistake to hold that the topic winds listed in the *Vent. situs*, though perhaps taken from those mentioned in some wind-rose, are understood to be specified in a wind-rose. After all, the *Vent. situs* neither alludes to nor needs a horizon circle. In fact, the diagram mentioned at its close is a circle of the Earth (ὁ τῆς γῆς κύκλος), that is, a circle enclosing the inhabited world. This circle cannot be a horizon. After all, there is no single horizon circle that includes parts of Asia Minor as well as northern Africa. That is, there is no observer on Earth who can see these lands without changing longitude and latitude. But what if the author presupposes a *standard* horizon, say, the one at lat. 55.67°, in which the summer solstitial rising point lies due northeast [see [Table 1](#), p. 2], or a standard pattern that has the winds spaced equally at 30° intervals between the orthogonal north-south and east-west directions?<sup>10</sup>

Well, consider [D’Avella 2007](#), 222.1–8 [973a1–8], where it is asserted that Borrás has the names:

- (a) ‘Pagreus’ in Mallos (≈ long. 35;30°, lat. 36;45°) because it blows from the Pagrika mountains (≈ long. 36;15°, lat. 36;20°), and
- (b) ‘Kaunias’ in Rhodes (≈ long. 28;00°, lat. 36;10°) because it blows from Kaunos [Caunus] (≈ long. 28;35°, lat. 36;50°).

Mallos is roughly 45′ to the west of the Pagrika and roughly 25′ to the north, which means that the Pagreus is a southeasterly to easterly wind [[Talbert 2000](#), 67 B3–C4]. Rhodes, however, lies roughly 35′ to the west of Caunus and roughly 40′ to the south, thus making the Kaunias a northeasterly wind [[Talbert 2000](#), 60 F3–G3, 65 A4, 1 I3]. So, if we take for granted at the outset that Borrás is a northerly wind, it would follow that the *Vent. situs* is in error. Indeed, there will prove to be numerous errors of this sort. But all of them, I suggest, will

<sup>9</sup> Such etymologizing may indicate a Hellenistic provenance and raises the question, Was the author of the *Vent. situs* a Stoic? There certainly were Stoics who took Aristotle’s texts as important points of departure in the late second and first centuries BC [see [Falcon 2012](#), 2015, and 2016]. Posidonius himself is reported to have written a commentary on the *Meteorologica* [[Edelstein and Kidd 1989](#), fr. 18: cf. fr. 137a–b]. Furthermore, the Stoic school was in general given to using etymology to show the nature of things.

<sup>10</sup> This pattern figures in Ptolemy’s *Geographia*: cf. [Berggren and Jones 2000](#), 15.

be no more than a scholarly artifact of choosing the wrong starting point for interpretation.

So, let us not attribute either error to the author of the *Vent. situs*. That is, instead of reading *Vent. situs* as a supplement to some wind-rose, let us understand it as a report of the terms used by diverse peoples in naming the winds characteristic of different times of year at their locations. Specifically, my working hypothesis is that:

- (a) the names of the 10 topic winds are selected in the light of some variant of the wind-rose [see Table 2, p. 5];
- (b) these topic winds are differentiated mainly by when they blow during the year and, perhaps, by the weather that they bring, something that the author does not explain but takes for granted, perhaps because it is common knowledge;<sup>11</sup>
- (c) the winds listed under a topic wind are thus to be understood as winds that blow at roughly the same time of year as the topic wind and, perhaps, bring the same kind of weather;<sup>12</sup>
- (d) the winds so listed need not have the same direction;<sup>13</sup>
- (e) one of the author's aims is to explain, whenever he can, the name of a listed wind in terms of the name of where it comes from;
- (f) the disagreements that the author indicates about the topic wind under which a given named wind is to be placed are but indications of differences in linguistic usage; and
- (g) the graphical representation mentioned at the close of *Vent. situs* amounted to a crude, composite weather-map showing the seasonal winds in different parts of the inhabited world in a typical year.

Finally, to develop this working hypothesis, I must also assume that

- (h) the author had (access to) reliable practical knowledge of the directions from the locales that he mentions to the places named as sources of wind there; and

<sup>11</sup> As Aristotle indicates, while the topic winds do not always bring the same kind of weather, there is a general tendency for this [*Meteor.* 364a4–24, b3–365a1: cf. Περὶ κόσμου 395a1–5].

<sup>12</sup> See Aristotle, *Meteor.* 2.6, 364a27–32, for the remark that winds coming from different directions that are not opposite may blow at the same time.

<sup>13</sup> Indeed, the same wind need not always have the same direction [*Meteor.* 2.6, 364b12–14, 365a7–13: cf. Περὶ κόσμου 394b36–395a1]. For our part, we in the northern hemisphere might explain this phenomenon by reference to the typical course of a seasonal, cyclonic weather-system, that is, a large weather-system rotating counterclockwise.

- (i) modern inferences about geographical directions on the basis of archaeological evidence of the places as identified in [Talbert 2000](#) are warranted.

One might imagine that it would be better to proceed in the light of ancient geographical knowledge. But it was not until the second century AD, when Ptolemy's *Geographia* presented the requisite theoretical basis for mapmaking in the modern sense and supplied a gazetteer, that it was even possible either to represent the inhabited world graphically or simply to locate a place, in a way that was both precise *and* accurate. Moreover, even if the data of Ptolemy's treatise were an accurate guide to the state of our author's own geographical knowledge, thus allowing us by comparison with modern maps to detect any errors that he makes about the directions that the winds come from—recall that his date is unknown and that Ptolemy's work may thus not be pertinent—the gazetteer does not mention many of the places that figure in the *Vent. situs*.<sup>14</sup> Consequently, the best we can do is to assume that the author is correct about the directions that he identifies and that atlases such as [Talbert 2000](#) are the best means available of determining them.

#### 4. A Hellenistic weather-map

Readers will, of course, decide for themselves whether the *Vent. situs* is a lexical report that was, or can be, cast as an early kind of weather-map, by considering the text closely in relation to what is known today of places in the ancient world. But, if my the argument is correct, then we may infer that:

- (a) since the *Vent. situs* is to be viewed as a proto-typical weather-map, it is unlike the accounts of the winds found, for example, in Aristotle, *Meteor.* 2.6, the anonymous *Περὶ κόσμου*, and even Strabo, *Geog.* 1.2.21.

Moreover, we may now raise the question whether

- (b) the attention to linguistic usage and etymology in the *Vent. situs* signals a rejection of the causal theory advanced by Aristotle in *Meteor.* 2.4–5 in favor of the thesis that to understand the nature of the winds it suffices to understand their names, that is, why the winds have the names that they have.

Clearly, there is a need to re-assess the claims that the *Ventorum situs et nomina* is a Peripatetic work that draws on Aristotle's writings—perhaps even his putative *Περὶ σημείων*—and that it is of a type found as well in the *Περὶ κόσμου*. But any such renewed inquiry into the provenance of this text I will leave to others.

#### 5. The text

<sup>14</sup> On the general state of geographical knowledge in the Greco-Roman world of Hellenistic times, see [Geus 2020](#).

For the Greek text here translated, though I have consulted [Bekker 1831](#), [Rose 1886](#)—Rose printed the same version three times (1863, 1870, 1886)—and [Apelt 1888](#), which mostly follows [Rose 1886](#), I have based my translation on the edition recently prepared by Victor D’Avella [[2007](#)], recording D’Avella’s lineation in the left margin and Bekker’s [[1831](#), 973] in the right.

I have used the following *sigla* in the footnotes to the translation as a means of simplifying the presentation of the Greek text itself:

<a href="#">Apelt 1888</a>	A
<a href="#">Bekker 1831</a>	B
<a href="#">Rose 1886</a>	R

## 6. Transliteration

The problem of how to present the numerous place-names in this text is real. One approach is simply to transliterate the Greek, a practice followed mostly in [D’Avella 2007](#), 223, 225 and [Federspiel and Levet 2018](#), for example. Another would be to latinize these place-names, as in [Forster 1913](#), [Hett 1936](#), and [Furley 1978](#). Yet another would be to follow the policy for place-names adopted in the *Barrington Atlas of the Greek and Roman World*, by transliterating Greek forms in all instances except when there is a Latin form available and this form may be regarded as more familiar [[Talbert 2000](#), xxv]. My solution is a hybrid that accommodates readers wishing to locate the places mentioned in the *Vent. situs*. Thus, while I have as a rule transliterated the terms for the winds and places from the Greek, I have inserted beside them in brackets the Latin name under which they may be found in the *Barrington Atlas* when this name differs from the transliterated Greek. The exceptions are ‘Crete’, ‘Italy’, ‘Rhodes’, and ‘Sicily’; rather than transliterate the Greek in these instances, I have translated it and enclosed the terms in the *Atlas* for these places alongside in brackets.

## TRANSLATION

The Directions and Names of the Winds  
from Aristotle's Writings on Signs\*

3 Borrás.<sup>1</sup>

973a1

In Mallos, this is Pagreus since it blows from great heights, that is, from two  
5 mountains lying alongside one another that are called the | Pagrika [Pagrica].<sup>2</sup> In  
Kaunos [Caunus], it is Meses. In Rhodes [Rhodos], it is Kaunias since it blows  
from Kaunos, disturbing their har || bor, Akantias.<sup>3</sup> In Olbia, the one by Magydos a5  
of Pamphylia, it is Idyreus since it blows from the island which is called Idyris.<sup>4</sup>  
Some, among whom are also the Lyrnatians, the ones in Phaselis,<sup>5</sup> think that  
[the Idyreus] is Borrás.<sup>6</sup>

10 | Kaikias.

In Lesbos, this is called Thebanas, since it blows from the || plain of Thebe<sup>7</sup> a10  
[Thebai], the [plain] above the Elaitic Gulf of Mysias. It disturbs the harbor of

---

\* On this subtitle, see section 1, p. 1 above.

<sup>1</sup> 3 Βορράς. Attic dialect for Βορέας.

<sup>2</sup> The Pagreus is a southeasterly to easterly wind [Talbert 2000, 67 B3–C4, 1 K3].

<sup>3</sup> 5 ἐνοχλῶν τὸν λιμένα αὐτῶν τὸν ἀκανίαν B] ἐνοχλῶν τὸν λιμένα αὐτῶν τῶν Καυνίων R, A (disturbing the harbor of the Kaunians themselves). See Goh and Schroeder 2015, s.v. Ἀκανίας. The Kaunias is a northeasterly wind [Talbert 2000, 65 A4, 1 I3].

<sup>4</sup> Talbert 2000, 65 E4 queries whether there was a town to the south of Olbia and Magydos called Idyros and a river Idyros nearby. No island named Idyris/Idyros has been identified yet.

<sup>5</sup> 9 Λυρνατιεῖς...Φασηλίδα. «Λυρνατιεῖς» is the name of some collective in Phaselis. Note that Talbert 2000, 65 E4 queries whether an island to the north of Phaselis (and the putative Idyreis) but to the south of Olbia was named Lyrnateia.

<sup>6</sup> This supports the author's inclusion of the Idyreus under the topic 'Borrás'. The direction of the Idyreus, however, cannot be determined because the location of the island Idyris is not known.

<sup>7</sup> 11 θήβης: a place in the Troad.

the Mitylenians, especially [the temple] of [Apollo] the Protector of Flocks.<sup>8</sup> But among some it is Kaunias, which others think is Borrás.<sup>9</sup>

Apeliotes.

- 15 In Tripolis, the one of Phoinike [Phoenice],<sup>10</sup> this | is called Potameus. It blows out of a level plain which is like a great threshing-floor and is sur || rounded by a15 the Libanos [Libanus] and Bapuros mountains.<sup>11</sup> For this reason, it is, in fact, called Potameus.<sup>12</sup> It disturbs [the shrine] of Poseidon.<sup>13</sup> In the Gulf of Issos [Issicus Sinus] and around Rhossos [Rhosos], it is Syriander. It blows from the Gates of Syria [Syrii Pulai], which the Tauros [Taurus] and Rhosian mountains 20 demarcate.<sup>14</sup> In the | Gulf of Tripolis, it is Marseus || after the village of Mar-a20 sos.<sup>15</sup> In Prokonnesos [Proconnesus], Teos, Crete [Creta], Euboeia [Euboea], and Kyrene [Cyrene], it is Hellespontias. It especially disturbs the harbor, Kapheres, of Euboeia and the harbor of Kyrene, which is called Apollonia. It blows from 25 the Hellespont.<sup>16</sup> In Sinope, it is Berekyntias because it blows from | regions in

<sup>8</sup> 11 τὸν Μαλόεντα. «Μαλόεις» is an epithet of Apollo in Lesbos meaning ‘Protector of Flocks’ [cf. Thucydides, *Hist.* 3.3.3] and may also designate his temple there (*scil.* τὸν Μαλόεντα ναόν). See line 17 [973a16] τὸ Ποσειδώνιον *scil.* ἱερόν.

The Thebanas is a southerly wind [Talbert 2000, 61 E2, 56 C3, and 1 I3].

<sup>9</sup> The author thus notes that the wind called Kaunias falls under both ‘Borrás’ and ‘Kaiki-as’. This sentence is not misplaced, as Forster [1913, note 3 *ad* 973a24–25] supposes.

<sup>10</sup> 14 τῆς Φοινικῆς: *scil.* Asiatic Phoenicia.

<sup>11</sup> There is no entry for the Bapuros mountains in Talbert 2000. The Potameus is a southerly to southeasterly wind [Talbert 2000, 68 A5, 69 C2, 1 K4].

<sup>12</sup> 16–17: the etymology here is not explained. Forster [1913, note 3 *ad* 973a16] speculates that the plain may have been called Potamos.

<sup>13</sup> 17 τὸ Ποσειδώνειον: *scil.* ἱερόν. See Goh and Schroeder 2015, *s.v.* Ποσειδώνιος -α -ον. This shrine or temple is, presumably, in Tripolis. See line 11 [973a11].

<sup>14</sup> The Gulf of Issicus is to the north of Rhossos, which would make the Syriander a southerly wind. The Gates of Syria, however, are to the east and slightly north of Rhossos, which would mean that the Syriander is more easterly.

<sup>15</sup> There is no entry for Marsos in Talbert 2000.

<sup>16</sup> Hellespontias is a northerly to northeasterly wind [Talbert 2000, 57 B3 and 6, E6; 38 C1; 1 I3–4, H2–3]. Prokonnesus, however, is either a town or an island in the Propon-tis and thus to the northeast of the Hellespont. Thus, the Hellespontias there would be southwesterly.

Phry || gia.<sup>17</sup> In Sicily [Sicilia], it is Kataporthmia because it blows || from the a25 b1  
strait.<sup>18</sup> Some think that it is Kaikias and call it Thebanas.<sup>19</sup>

Euros.

In Aigai [Aigai(ai)], the one in Syria, this is called Skopeleus after the cliff  
30 (*skopelos*) of Rhossos [Rhosos].<sup>20</sup> In Kyrene [Cyrene], it is Karbas after | the  
foreigners || in Phoinike [Phoenice],<sup>21</sup> which is why some call it Phoinikias as b5  
well.<sup>22</sup> There are some who also think that it is Apeliotes.<sup>23</sup>

Orthonotos.<sup>24</sup>

Some designate this Euros; and others, Amneus.

Notos.

Among all [peoples], it is called the same. Its name is on account of its being  
productive of illness and on account of its being rainy—in both senses, ‘notos’.<sup>25</sup>

<sup>17</sup> The etymology of ‘Berekyntias’ is left unexplained. The Berekyntias is a northwesterly wind [Talbert 2000, 87 A2, 1 I2–K2].

<sup>18</sup> 973b1 ἀπὸ τοῦ πορθμιοῦ: *scil.* the *Fretum Sicilium* or Strait of Messina today. The Kataporthmia is a northeasterly wind. [Talbert 2000, 1 F3–G3].

<sup>19</sup> The author thus indicates some controversy about whether the Kataporthmia should be listed under ‘Kaikias’ and identified as Thebanas or under ‘Apeliotes’.

<sup>20</sup> The Skopeleus is a southerly wind [Talbert 2000, 67 B3–4, 1 K3].

<sup>21</sup> 29–30 ἀπὸ τῶν καρβάνων: *scil.* οἱ κάρβανοι, the Phoenicians themselves viewed by the author as foreigners/barbarians [cf. Forster 1913, *ad loc.*; Goh and Schroeder 2015, *s.v.* κάρβανος -η -ον]. In the next sentence, it is said that this wind is also Phoinikias, the wind from (Asiatic) Phoenicia. Apparently, the winds could be named after political features of the inhabited world and not just geographical ones.

<sup>22</sup> The Karbas/Phoinikias is an easterly to northeasterly wind [Talbert 2000, 67 B3–C2, 1 H4–K4].

<sup>23</sup> That is, some would think that the Karbas/Phoinikias should be listed under ‘Apeliotes’.

<sup>24</sup> 32 Ὀρθόνωτος Εὐρόνωτος Forster 1913, *ad loc.* and note 5. Forster’s emendation presupposes that those who used the name «Ὀρθόνωτος» must have understood it to mean ‘Due South’, and thus fails to distinguish how a word is formed and its usage or what it actually means in practice. Federspiel and Levet [2018, 33] evince the same failure when they claim that the author does not provide an etymology for ‘Aparktias’ and ‘Apeliotes’ because it was obvious that the former comes from the Ἄρκτος (Ursa Major)—*scil.* from where it rises and sets—and the latter, from the (rising) ἥλιος. But, even granted that such was the *practical* meaning of ‘Aparktias’ and ‘Apeliotes’, neither etymology identifies a geographical or political feature on Earth and so including them would be out of character.

<sup>25</sup> 33–34: the claim appears to be that this south wind is Νότος because it is νοσώδης or productive of νόσος (illness) and because it is νότιος or rainy (*viz.* κάτομβρος).

35 Likewise || Leu | conotos.

b10

Its name is from a property since it makes [the sky] clear...<sup>26</sup>

Lips.

This [wind has], in fact, this name after Libya, from where it blows.<sup>27</sup>

Zephyros.

This [wind has], in fact, this name on account of its blowing from the west. The west (evening?)....<sup>28</sup>

Iapyx.

In Taras [Tarentum], this is Skyletinos after the place Scyllantion [Scylletium].<sup>29</sup>

In || Dorylaion, the one of Phrygia, it is, in the words of some,<sup>30</sup> Pharangites b15  
40 since | it blows from some one of the canyons [*pharanges*] in Pangaion.<sup>31</sup> Among many, it is Argestes.

Thrakias.

In Thrakia [Thracia], it is Strymonias since it blows from the river Strymon.<sup>32</sup>

But in the Megarid [Megaris], it is Skirron after the Skirronian Rocks.<sup>33</sup> In Ita

45 || ly [Italia] and Sicily [Sicilia], it is Kirkias on account of its | blowing from b20

<sup>26</sup> 35 λευκαίνεται. Here a connection is made between Λευκόνοτος (λευκός (white) + Νότος)—a wind from the south—and the verb «λευκαίνω» ('to brighten, make clear'). The Leukonotos is a wind that clears the sky.

<sup>27</sup> Lips is a southerly to southwesterly wind, assuming locations ranging from Italy in the west to Phrygia in the east [Talbert 2000, 1 H4–I4].

<sup>28</sup> 37 ἀφ' ἑσπέρας. ἡ δὲ ἑσπέρα...: Zephyros blows from the west (ἀφ' ἑσπέρας) in the evening (ἑσπέρα). Here the claim being made seems to be that «Ζέφυρος» derives from «ἑσπέρα».

<sup>29</sup> The Skyletinos is a southwesterly wind [Talbert 2000, 46 E4, 1 G2–3].

<sup>30</sup> 39 ὑπὸ δέ τινων. There is no need to supply the passive verb «καλεῖται». The use of «ὑπό» + genitive with intransitive verbs to indicate agency goes back to Homer.

<sup>31</sup> 40 τὸ Παγγαῖον: a mountain in Macedonia. The Pharangites is a westerly wind [Talbert 2000, 62 E2, 51 C3, 52 B4–H4, 1 I2–J3].

<sup>32</sup> The Strymonias is a westerly to southwesterly wind [Talbert 2000, 51 B2].

<sup>33</sup> 44 ἀπὸ τῶν Σκιρρονίδων πετρῶν. If these rocks, which are named after the mythical bandit Sciron, lie between Attica and Megara [Goh and Schroeder 2015, s.v. Σκιρωνίδος], then the Skirron would be an easterly wind. Given their association with the Megarid, however, and the route traveled along its southern coast, it seems possible that they were between Megara and Corinth, which, in some quarters of the Megarid, would make the Skirron a westerly to southwesterly wind.

Kirkaion.<sup>34</sup> In Euboeia [Euboea] and Lesbos, it is Olympias; its name is after the Olympos [Olympus] of Pieria. It irritates the people of Pyrrha.<sup>35</sup>

I have also drawn for you their locations, how they lie and blow, by drawing the circle of the Earth,<sup>36</sup> so that || they may be set before your eyes as well. b25

50 | End of the names for winds.

### Acknowledgment

I am grateful to Robert Hannah for his comments on an earlier draft of this article. The errors that remain are mine, of course. Further comments and suggestions from readers will be most welcome indeed.

<sup>34</sup> 45 τοῦ Κιρκαίου: the promontory [Talbert 2000, 44 D3]. To have roughly the same direction in Italy and Sicily, the Kirkias would have to be northwesterly [Talbert 2000, 44 D3, 1 E2–3].

<sup>35</sup> The Olympias would seem to be northwesterly to westerly [Talbert 2000, 50 B4; 1 H2–3].

<sup>36</sup> 48 τὸν τῆς γῆς κύκλον: *scil.* the circumference of the inhabited world.

## APPENDIX

### THE SUN'S ORTIVE AMPLITUDE AT SOLSTICE

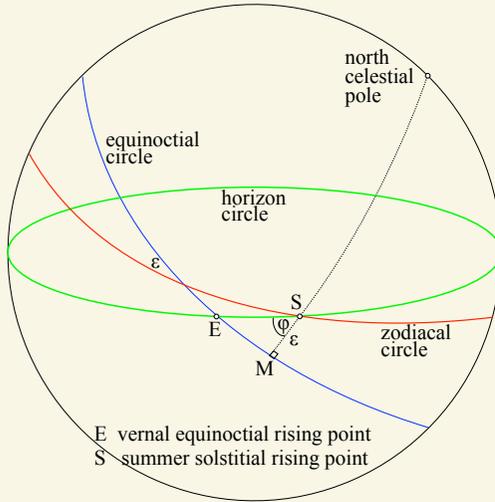


Figure 2. The orrive (rising) amplitude of the summer solstitial point

Consider  $\triangle EMS$ , a spherical triangle on the unit-sphere on which all arcs are arcs of a great circle. To find the distance or orrive amplitude of the Sun's rising point from the equinoctial rising point on the day of summer solstice ( $ES$ ), since

$$\sin ES = \frac{\sin \varepsilon}{\cos \varphi},$$

then

$$ES = \arcsin\left(\frac{\sin \varepsilon}{\cos \varphi}\right),$$

where  $\varepsilon$  is the obliquity of the zodiacal circle to the equinoctial circle ( $\approx 23.5^\circ$ ), and  $\varphi$  is the latitude of the horizon.<sup>37</sup> The distance from the equinoctial rising point to the winter solstitial rising point is the same.

<sup>37</sup> See Van Brummelen 2013, 51–55.

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