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The *Periplus of Pseudo-Skylax* and its Relationship with Earlier Nautical Knowledge

Chiara Maria Mauro

This study focuses on the *Periplus of Pseudo-Skylax*, a controversial document from the late fourth century BC. Despite diverging views on its date and authorship, scholars agree this text could have derived most of its information from earlier and non-extant, nautical sources. This article contributes to addressing gaps and limitations concerning the *Periplus*'s relevance and the forms in which such currently lost information circulated at the time of, and preceding, its publication. Its aim is to identify the contents in the *Periplus of Pseudo-Skylax* which the author could have obtained from earlier nautical sources; compare them with other, maritime-derived extant documents; and further analyse this information from a practical and sailing perspective.

The *Periplus of Pseudo-Skylax* is a controversial text preserved within the *Codex Parisinus suppl. gr.* 443 (D), a thirteenth-century manuscript that contains a compilation of geographical texts, likely collected by Markianos of Herakleia.[1] Since its first critical edition, the *Periplus* has become the subject of stimulating debates regarding its authorship, chronology and purpose.[2]

Where various scholars agree is that Pseudo-Skylax may have had access to earlier, non-extant sources, most of them nautical in nature.[3] Such sources were already in circulation at the time he compiled the *Periplus*, but scholars in this field know neither the form they were communicated in nor their content.

In 1979 philologist Aurelio Peretti relied on the *Periplus*'s nautical information to support the hypothesis that this text was initially conceived as a seafarer's guide.[4] Other scholars have repeatedly challenged Peretti's view, arguing that the nautical details are too ambiguous to be useful to sailors.[5] This article will discuss Peretti's argument regarding the existence of useful nautical information within the text; it will not, however, use it to make assumptions about the *Periplus*'s purpose. Rather, it will identify what kinds of contents were possibly derived from earlier nautical sources and analyse what their original utility may have been at sea.

A nautical analysis of the *Periplus* is significant when its place in the chronology of surviving texts is considered. With a *terminus ante quem* of 331 BC, this text is the

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1   The *Periplus of Pseudo-Skylax* appears also in the *Monacensis gr.* 566 and in the *Palatinus Vaticanus gr.* 142. In this article the Latin form *periplus* (plural *peripli*) is used for consistency, but the Greek form *periplous* is used in Shipley's edition.
2   Fabricius, *Scylacis Periplus*; Müller, *Geographi Graeci Minores,* 15–96.
3   Brillante, 'Pseudo-Scylax', 100–2; Marcotte, 'Le périple dit de Scylax'; Shipley, *Pseudo-Skylax's Periplous*; and Peretti, *Il Periplo di Scilace*.
4   Peretti, *Il Periplo di Scilace.*
5   Gernez, 'Les "Périples" des anciens Grecs', 21.

most ancient and complete document of its kind.[6] Though the original matrices of Hanno's *Periplus* and Avienus' *Ora Maritima* are thought to be dated to the sixth century BC, both these documents only survive today in later versions.[7] The *Periplus* is the first text that offers detailed nautical knowledge of its time and earlier—the author seems to have relied on previous information, some of which probably dated to the sixth century BC.[8] Discussion of the text's nautical contents will shed light on earlier non-surviving sources, the kind of practical information they included, and the forms in which they circulated. By looking beyond the *Periplus*'s controversial authorship and date and analysing of its maritime knowledge, its previously overlooked potential to illuminate how seafaring was practised in antiquity can be revealed.

This article will first identify the contents within the text probably derived from earlier nautical sources. Second, it will discuss them from a practical seafaring perspective. Third, it will use those observations to speculate on the form and content of earlier, non-surviving nautical sources possibly used by Pseudo-Skylax.[9]

To identify information significant to ancient seafarers and what could have stemmed from previous sources of nautical data, later nautical handbooks (e.g. medieval and early modern portolans) and texts strongly influenced by maritime itineraries (e.g. Hanno's *Periplus* and Avienus' *Ora Maritima*) will be used as a means of comparison.[10] The main reference will be the *Stadiasmus Maris Magni*, which, beyond being the oldest surviving document thought to have an original technical purpose, is the only ancient text on which scholars have conducted a nautical analysis.[11] Some examples gathered from medieval and early modern portolans will also be considered.[12] Despite centuries separating them from Pseudo-Skylax's nautical sources, their guiding principle would have been the same: to provide mariners with practical information to help them reach their desired destination.[13]

Comparing the *Periplus* and later nautical documents, six main categories of nautical knowledge can be identified: sailing directions; distances by sea; shoreline descriptions; descriptions of artificial features; details concerning harbours and shelters; and other seafaring information (e.g. specifications regarding which kinds of vessels can sail up a river). Each category will be analysed and explored in full in the following sections. The version of *Periplus of Pseudo-Skylax* used in this article is Shipley's recent edition, and it adopts the same subdivision of paragraphs,

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6   The *Stadiasmus Maris Magni* is the first text considered as an actual nautical handbook; its chronology fluctuates between the first and the third century AD. Medas, *Lo Stadiasmo o Periplo del Mare Grande*.

7   The preserved version of the Hanno's *Periplus* has been dated to the second century BC (Desanges, *Recherches sur l'activité des Méditerranéens aux confins de l'Afrique*, 39–85; Oikonomides, *Hanno the Carthaginian*; González Ponce, *Periplógrafos griegos* I, 75–151), while Avienus' *Ora Maritima* belongs to the fourth century AD (Antonelli, *Il Periplo nascosto*).

8   Brillante, *Il Periplo di Pseudo-Scilace*, 36; and Peretti, *Il Periplo di Scilace*.

9   A detailed examination of the maritime data Pseudo-Skylax used is currently being developed, which also accounts for the possible chronology of these sources.

10   These documents are usually referred to as *periploi* (Greek) or *peripli* (Latin).

11   Medas, *Lo Stadiasmo o Periplo del Mare Grande*.

12   The texts of the medieval and early modern portolans mentioned in this contribution can be found in Kretschmer, *Die italienischen Portolane*.

13   Medas, *Lo Stadiasmo o Periplo del Mare Grande*, 23.

Figure 1   Spatial distribution of absolute orientations within the 'Periplus of Pseudo-Skylax' (Source Open Street Map)

conventions, and translation unless otherwise stated.[14]

Sailing directions

Directions or orientations are the first category of contents that the *Periplus* may possibly be derived from earlier nautical sources. Directions are essential for sailors to orientate their sailing route and reach a desired destination; they have been a fundamental component of nautical handbooks from at least the medieval and early modern periods, when mariners collected and carefully recorded them within 'books of sailing directions'.[15]

Directions abound in the *Periplus*. Due to the composite nature of the text, it is impossible to discern which derive from previous nautical information and which from other origins. For this reason all directions in the text as a whole will be analysed. Conversely, two different types of orientations can be distinguished in the text, relative and absolute directions. Relative directions are those that do not respond to conventional values and represent subjective maritime space.[16] Indications of this kind pervade the whole document, as the sequence of places are regularly offered with expressions such as 'after this',[17] 'under it'[18] and 'on the left as one sails in'.[19] These offer a perspective based on experience. Relative orientations were likely to be understood only by those who created them (i.e, the narrator or the sailor) and those who decided to follow the same route.[20]

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14   Shipley, *Pseudo-Skylax's Periplous*.
15   Terrosu Asole, 'Il portolano di Grazia Pauli', 12–17.
16   Other ancient *peripli* also include relative orientations, see below.
17   E.g. §§14, 15, 16, 17 and 18.
18   E.g. §§58.2 and 109.4.
19   E.g. §63.
20   Further examples of directions derived from the practical experience, and pertaining to the sphere of subjectivity, should be considered 'beyond these islands' (§58.2), and 'if you go forward higher from the sea' (§100.2).

Table 1	Absolute directions (italics placed for emphasis) within the *Periplus of Pseudo-Skylax*
§47.1	And *towards the south wind* is the voyage to Libyē . . .
§47.2	And Crete is 2,500 stades long, and narrow, and extends *from the settings of the sun towards the rising of the sun*.
§47.3	<After Koryk>os promontory the first city *towards the setting sun* . . .
§47.3	. . . it extends *from the north towards the south*.
§47.3	Diktynnaion, a sanctuary of Artemis, *towards the north wind* . . .
§47.3	And *towards the south* Hyrtakina . . .
§47.3	Kydonia with an enclosed harbour *towards the north*.
§47.3	And *towards the south* Lissa . . .
§47.3	[And *towards the north wind* . . .]
§47.3	And *towards the north wind* the Apteraian territory.
§47.4	And after this Mount Ida, with Eleuthernai *towards the north*.
§47.4	And *towards the south* Sybrita with a harbour *towards the south* . . .
§47.4	*Towards the north* Oaxos and Knossos.
§47.4	And *towards the south* Gortyna.
§47.4	<And towards the *north wind* Mount Kadistos . . . >
§47.4	Itanos, the promontory of Crete *towards the up-coming sun*.
§55	And after Epidauros is the territory of the Korinthioi, <the part> *towards the dawn* . . .
§58.2	. . . there are the following other islands *towards the south* . . .
§110.9	. . . and a city beyond (the lake) *towards the sun's setting* . . .
§111.3	Past Hermaia Cape *towards the upcoming sun* . . .

Absolute directions, which rely on objective values and linked to astronomical or meteorological reference points, are scarce within the *Periplus of Pseudo-Skylax* (figure 1 and table 1). The text offers them in terms of the sun's position or winds' origins. Absolute directions are usually very simple and refer exclusively to the four main cardinal points. North and south are always articulated in relation to the winds, so 'towards Notos' means a southerly sailing direction,[21] while 'towards Boreas' directs the mariner to sail north.[22] In contrast, east and west are identified in relation to the sun, that is, the 'dawn'[23] and 'the sun's setting', respectively.[24] They are never referred to by the names of the western and eastern winds, Zephyros and Euros.[25]

There is an imbalance between relative and absolute directions within the *Periplus*: the former repeats in every section. Absolute orientations are almost exclusively restricted to the part of the text dealing with Crete (§47) and are documented 21 times (table 1).[26] The unusual resort to absolute orientations is not the only characteristic

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21 E.g. §47 *passim*. In Shipley, *Pseudo-Skylax's Periplous*, this indication is rendered as 'toward the North'.
22 E.g. §47 *passim*. In Shipley, *Pseudo-Skylax's Periplous*, this indication is rendered as 'toward the South'.
23 E.g. §§47.4 and 111.3.
24 E.g. §§47.2 and 110.9.
25 The term Zephyros is documented in the *Periplus* but only as a toponym: in §86 and §102.1 'Zephyros' identifies a harbour on the southern shore of the Black Sea (perhaps Gülburnu) and a second near the current Mersin (Turkey).
26 The *Periplus* contains only 21 recurrences over 112 paragraphs (excluding the last two paragraphs, §§113 and 114, as they are probably a later addition, Shipley, *Pseudo-Skylax's Periplous*, 210). Moreover, 17 among the 21 recurrences are found just in a single passage, i.e., that dealing with Crete, §47.
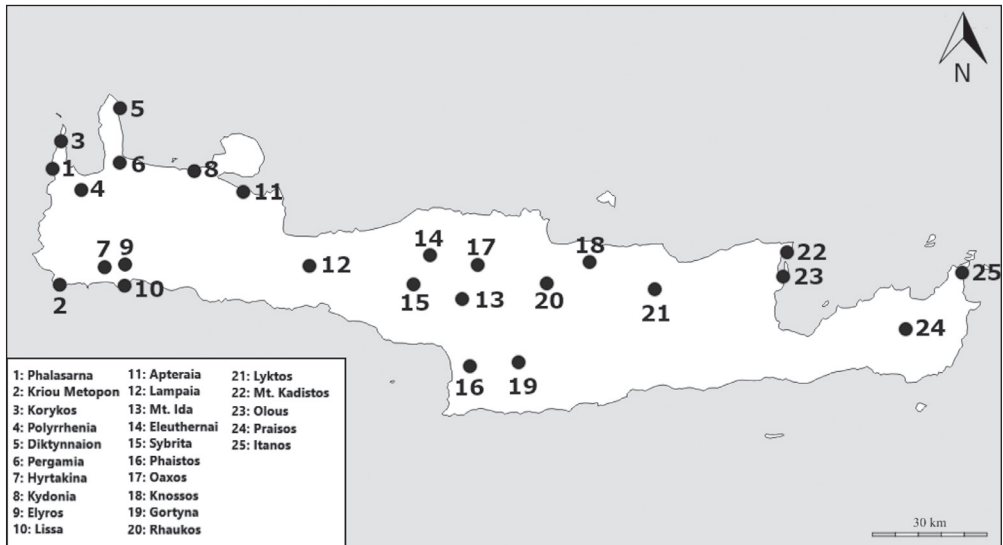
Figure 2   Map of Crete with the location of the place names mentioned in Pseudo-Skylax. The numbers follow the order employed in the text. The description proceeds from side to side, and does not follow the coast.

differentiating the Cretan passage from the rest of the *Periplus*; in this section, the description proceeds from side to side with no apparent order (figure 2), whereas normally it would have followed the coast. In other words, this passage does not use the sea as the guiding principle for navigation and could, therefore, have been derived from a different source. According to Patrick Counillon, the source employed in the Cretan passage was not a written maritime itinerary as its overall layout would not have helped sailors understand the exact sequence of shelters and settlements as encountered along the coast. Counillon proposes to date the passage to the second half of the fourth-century BC, since the information provided within this section corresponds somewhat to the situation documented in this period.[27] If Counillon's proposal is accepted, the Cretan section's preference for absolute directions should be attributed to this original and fourth-century BC non-maritime source.

The *Periplus of Pseudo-Skylax, Stadiasmus Maris Magni*,[28] *Hanno's Periplus* and *Ora Maritima* all share two phenomena: absolute directions are scarce (table 2)[29] and relative orientations prevail over absolute.[30] It is therefore suggested that ancient *peripli* mainly relied on relative orientations based on a number of observations. First, all the preserved texts mostly describe coastal routes, so they could have disregarded

27   Counillon, 'La description de la Créte'.

28   As outlined above, the *Stadiasmus Maris Magni* is the oldest surviving document and has a more practical application.

29   As seen in table 2, the absolute orientations in the *Stadiasmus Maris Magni* are more detailed, e.g. they refer to astronomical points such as the constellation of Ursa Major and contain indications that can be translated as north-east or north-west. This is probably because this document is later and was created with a technical purpose.

30   Forms of relative orientations are ubiquitous in these documents, frequently expressed through adverbs of place.

Table 2   Absolute directions (italics placed for emphasis) in the *Stadiasmus Maris Magni,* *Hanno's Periplus* and Avienus' *Ora Maritima*

Stadiasmus Maris Magni *(Author's translation)*	*Hanno's Periplus* *(Adapted from Blomqvist)*	*Ora Maritima* *(Adapted from Murphy)*
§29 It has water in the first valley *towards Notos*.	§3 Then, *sailing towards the setting sun*, we gathered at Soloeis.	v.93 All turns *towards the warm south wind*.
§57 you see a promontory stretching out *toward the setting sun*.	§4 . . . we sailed *towards the sunrise* for half a day . . .	v.161 . . . the Aryan promontory swells *toward the rough north*.
§74 From the lookout *toward Lips* . . .	§8 We sailed along the desert *to the south* for two days . . .	v.198 . . . *beneath the very snowy north wind.*
§75 From Pontia *to the south* . . .	§8 . . . and then again *towards the sunrise* during one day's travel.	v.207 . . . and the hollow land extends *to the south*.
§112 It has a beautiful island on the open sea lying off Thapsos *towards Boreas*.	§11 From Kerne we sailed *towards the solar noon* for twelve days . . .	v.253 For whatever people lies *to the west* of this river they call Hiberian.
§117 . . . from there sail *towards the Great Bear* . . .		v.288 Rather, *on the part where the sun rises*, it brings three mouths . . .
§117 It has a harbour *toward Zephyros*.		v.289 . . . and it washes *the south part* of the city with four mouths.
§137 From Balanea to Laodikea cutting straight *toward the Great Bear and the setting sun (NE)* under a south wind, 200 stades.		v.314 *To the west (setting sun part)* of the citadel, there is an island consecrated to Venus of the Sea . . .
§158 . . . from Myriandros to Aigeai by a straight journey *towards the Pole* with a south wind, 100 stades.		v.318 After that *on the west*, the Sacred rears up proud crags.
§159 From Rhosos by direct course *toward the North Pole* to Serretillis.		v.380 But *to the west* of these Pillars . . .
§164 From the [Rhosikan] Lookout (Skopelos), without entering the gulf but sailing straight towards Antioch, *toward the rising sun and the Great Bear (NW),* with a south wind, keeping the mainland far to the left hand, 350 stades.		v.401 . . . the Arabian swell *beneath the now warm south wind.*
§165 From the river Pyramos by direct route to Soloi *to the rising sun and the Great Bear (NW)* . . .		v.637 The Alps raise their snowy ridge up into the sky *in the east.*
§186 . . . keeping the stern pointed *toward the Great Bear* . . .		v.673 But again when shade of night possesses *the north*, all our race passes a splendid day.

Table 2 continued

§233 . . . *toward the sunrise* . . .	**v.687** . . . and facing towards the Atlantic waters, our sea, and *the west*, it pours forth . . .
§272 ...From Rhodes to the west part of Cyprus *toward the sunrise* . . .	
§273 From Rhodes to Skyllaion of the Argolid sailing *toward the sunset* . . .	
§280 The sailing from Kos to Delos *toward the sunrise* . . .	
§297 . . . the city is sited *toward the south*...	
§318 It is a promontory of Crete stretching far *towards Boreas.*	
§324 . . . a promontory extending *toward the south* . . .	
§336 Here is an island 60 stades distant *looking the sunrise* . . .	
§340 it is a high promontory, wooded, looking *toward the Great Bear.*	
§342 It looks toward Crete [and] *to the Great Bear.*	
§348 There is also an island 40 stades *to the setting sun* . . .	
Total 24 recurrences over 352 paragraphs	**Total** 5 recurrences over 18 paragraphs	**Total** 14 recurrences over 712 verses

absolute directions that might have been one of the means of dead reckoning in open seas crossing.[31] Second, ancient mariners lacked nautical charts and orientation devices,[32] so they likely did not perceive absolute directions as strictly necessary for daily activities.[33] Third, because of this, sailors' mental 'visualization' of the space mainly depended on what they experienced. Relative directions were thus regarded as a more suitable means of transmitting information as they were fundamentally based on sailing practices.[34] Last, the *Periplus'* abundance of details that refer to the shoreline's appearance, also documented in other ancient *peripli*,[35] supports the hypothesis that ancient maritime sources relied preferentially on an alternative form

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31   There are only a few stretches of coastline that cannot be seen when there are optimal weather conditions, at least as far as the Mediterranean is concerned, Mauro and Durastante, 'Evaluating visibility at sea'.

32   Apart from the sounding pole, documented since the second millennium BC, and the sounding weight (described by Herodotus. 2.5.2), see Oleson, 'Ancient Sounding-weights'.

33   Medas, *Lo Stadiasmo o Periplo del Mare Grande*, 68–9.

34   Janni, *La mappa e il periplo*, refers to this one-dimensional and highly subjective perception of space as 'hodological conception', an expression deriving from the Greek word *hodos* (way, itinerary, route).

35   See below.

of orientation based on the identification of natural and artificial visual references along the route.[36]

Distances by sea

Another conventional element in nautical sources is the indication of the distances between places. Their inclusion is common in both ancient and later maritime documents and the rationale behind their specification is clear: being aware of how far away a place is helps sailors to efficiently organize a sea voyage, from deciding the route to determining various stopping points along it.

In Pseudo-Skylax's work, distances are, likewise, frequently provided. Scholars have widely discussed their form, mainly in connection with the coexistence of two different measurements within the text. While some distances are expressed in terms of time – the most ancient system of measurement – others are expressed with gaps, i.e., in stades.[37] Some scholars interpret this inconsistency as proof of the existence of an original archaic matrix, to which the days of journey should have been attributed,[38] updated in the late fourth century BC when measurements in stades might have been added.[39] However, this duality of measurements is found in other sources.[40] The co-existence of stades and days of journey as systems of measurement can more accurately be ascribed to the previously discussed dual conceptualization of space in relation to directions. Distances expressed in stades corresponded to an objective view of the world, offering a generally valid measurement.[41] In comparison, lengths based on time strictly depended on the sailors' experience and incidental factors that affected their journey. Even if ancient authors occasionally adjusted sailing times, adding further details about the way the travel was conducted,[42] their measurements would remain highly approximate.

36　See the sections devoted to the 'description of the shoreline' and 'artificial features'. Hanno's *Periplus* follows a similar scheme: there are occasionally reference to directions, but orientation seems to rely mostly on the identification of natural and artificial aids.

37　Arnaud, *Les routes de la navigation antique,* 61–9.

38　Current scholarships calls this original (and most ancient) part of the text 'nucleo antico', an expression Peretti, *Il Periplo di Scilace,* coined.

39　Peretti, 'Dati storici e distanze marine', 14.

40　Distances in both stades and time are provided in Arrian's *Indica*, derived from the *Periplus of Nearchus* (Bucciantini, 'Misurazioni e distanze marittme nel *Periplo di Nearco'*) and in Avienus' *Ora Maritima* (e.g. v. 355). A definitive conversion from days to stades took place only in the third century BC (Arnaud, 'Ancient Mariners Between Experience and Common Sense Geography', 47), and the *Stadiasmus Maris Magni* employs exclusively distances expressed in this latter unit (Medas, *Lo Stadiasmo o Periplo del Mare Grande*, 186–7).

41　It must be emphasized, however, that the value of the stade (*stadion/stadium*, plural *stadia*) was not fixed; it usually fluctuates from 149–298 metres, but most of the variations fall within the 150–220-metre range (Arnaud, *Les routes de la navigation antique,* 84–6). On the length of the stade, see Engels, 'The Length of Eratosthenes'Stade', who concluded that the stade Erathostenes used was the Attic, measuring 185 metres, and that this was also 'the standard unit of measurement of the Graeco-Roman geographical tradition'. Shipley, *Pseudo-Skylax's Periplous*, 8, also adopted the Attic stade.

42　E.g. by land, walking with or without equipment, with horses, etc.; by sea, with a merchant ship or with a warship, with a favourable wind, etc.

Table 3   List of the paragraphs of the *Periplus of Pseudo-Skylax* where measurements in stades and in sailing times are mentioned

Distances in stades	*Distances in sailing times*
§§13.1, 13.3, 13.4, 17, 21.1, 23.2, 23.3, 24.1, 26.1, 26.2, 27.2, 31, 32, 33.1, 33.2, 35, 39, 40, 41, 42, 43, 44, 45, 47.2, 49, 50.1, 50.2, 51.1, 51.3, 52.1, 52.2, 54, 55, 56, 57.2, 58.3, 59, 60, 61, 64.1, 64.2, 67.5, 67.7, 67.8, 68.4, 69, 81, 95, 104.1, 104.2, 104.3, 106.3, 107.1, 108.2, 108.3, 108.4, 108.5, 109.1, 109.4, 110.4, 110.8.	§§1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13.4, 14, 15, 16, 17, 19, 20, 21.2, 22.3, 23.1, 24.2, 25, 26.3, 28, 30, 31, 34.2, 35, 36, 37, 38, 40, 46.2, 47.1, 64.2, 66.5, 67.10, 68.3, 68.4, 69, 92.1, 93, 98.4, 99.3, 100.2, 101.1, 102.1, 102.2, 106.4, 107.2, 108.1, 109.1, 109.5, 110.1, 110.2, 110.3, 110.4, 110.5, 110.6, 110.7, 110.10, 111.1, 111.2, 111.3, 111.4, 111.5, 111.6, 111.7, 111.8, 112.5.
Total 61 paragraphs	**Total** 72 paragraphs

Considering the number and location of these two forms of measurement within the *Periplus of Pseudo-Skylax*, two phenomena can observed: on the one hand, sailing times numerically prevail over distances in stades (table 3); on the other, in contrast with the findings on orientations, distances offered in stades can still be found scattered throughout the text, where they are equally applied to both land and sea measurements. The text offers measurement for the length of coastal voyages (*paraploi*) mainly in sailing times; the only areas for which coastal voyages are measured in stades are Sicily,[43] the 'Continuous Hellas',[44] Crete[45] and the Syrio-Phoenician coast as far as Kanopic branch of the Nile (figure 3).[46] This suggests that the *Periplus* marks the crystallization of a moment in which both systems were in use in nautical sources. As the aim of this article is to identify the *Periplus*' nautical sources, the chronology or how conversions from time to distance were carried out will not be debated.[47] Rather, what is worth emphasizing here is that the *Periplus* uses a relatively sophisticated scale of sailing-time measurements not found in other ancient *peripli*,[48] as compared to Hanno's *Periplus* and the *Ora Maritima* (table 4).[49] The longest unit used in the *Periplus* is the nycthemeron, which refers to a day and a night of sailing, e.g. 'the coastal voyage of the territory of the Istroi: a day and a night'.[50] Following in descending order, the next unit is the 'long day', which could be defined as a day at the summer solstice, e.g. 'there is a coastal voyage of the territory of the Boulinoi, of a long day up to the Nestor *river*'.[51] Other time distances that can

43   §13. In this case, the text does not actually refer to the coastal voyage around Sicily; rather, it says that 'Sikelia is triangular: and each limb of it is of approximately *1,500* stades'.

44   The text is titled 'Continuous Hellas' from section §33.1 to section §65.

45   §47. Here too, as seen in Sicily's case, Pseudo-Skylax offers a measure of the length of the island, and he is not measuring the coastal voyage around it.

46   See §104.1 to §107.1.

47   See Arnaud, *Les routes de la navigation antique*, 83–96. At §69 the text of the manuscript proposes an equivalence between a day of sailing and a length of 500 *stadia*.

48   Arnaud, 'De la durée à la distance', 236. The same Markianos of Herakleia (*Menippi periplus maris interni,* §2), responsible for the creation of the collection in which this document is preserved, states that Pseudo-Skylax is the only author, together with a certain Botthaios (about whom nothing is known), who employs this system of measurement.

49   As for the *Stadiasmus Maris Magni*, see note 40.

50   E.g. §20. The Istroi occupied the Istria peninsula (modern Croatia).

51   E.g. §22. The Boulinoi inhabited the area of Ploče (Croatia), while the Naron river should be

Figure 3   Distribution of the measurements of the coastal voyages offered in sailing times (grey) or in stades (black)

Table 4   **Comparison between sailing-time measurements documented in ancient *peripli***

Periplus of Pseudo-Skylax	Hanno's Periplus	Ora Maritima
Nycthemeron (a day and a night of sailing) + multiples		
Long day (a day of sailing during the summer season)		
Day of sailing and multiples + multiples	Day of sailing + multiples	Day of sailing + multiples
Half day	Half day	
Sailing with arrival before noon		
A day's third part		

be found within the text are days,[52] and portions of days, i.e. half days,[53] sailings with arrival before noon[54] and days' third parts.[55] The use of such a detailed timescale is unique and points to the strong influence of mariners' common-sense geography on this text.[56] Indeed seafarers would have commonly transmitted distances using sailing times as measurement, as this system offered a more practical and accountable reference.[57]

Description of the shoreline

The *Periplus of Pseudo-Skylax* abounds with descriptions of the coastline. These data have an arguably heterogeneous origin and cannot strictly be regarded as maritime-

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identified with the Neretva, a river flowing through Bosnia and Herzegovina and Croatia.
52   E.g. §1.
53   E.g. §11.
54   E.g. §64.2.
55   E.g. §7.
56   Arnaud, 'De la durée à la distance'.
57   Shipley, *Pseudo-Skylax's Periplous*, 8–9.

derived. As will be discussed further, the coastal descriptions in the *Periplus* frequently contain significant details for seafarers, following by a layout generally found in other maritime itineraries. The coastal descriptions provide accurate sketches of some points that, from their appearance or location, would have acted as visual references to guide sailors along a route.[58]

The information about natural features is probably from previous maritime sources because it usually includes two characteristics. First, landmarks in the text are occasionally mentioned in relation to a harbour; their inclusion was intended to indicate the route to and ease the identification of that shelter. One example is the description of the mouth of the river Kaïkos,[59] which connects to the harbour of Pitane.[60] Second, descriptions of the shoreline frequently contain accurate and valuable nautical information. To supply some illustrative examples, a section of the Greater Syrtis[61] is said to be 'hollow',[62] while past Cape Hermaia[63] the reader is warned about the presence of 'great reefs, not projecting above the water' and 'extending up to the other cape of Europe'.[64]

Another indication of nautical source material is that descriptions of natural landmarks along the shoreline are frequently accompanied by specifications that refer to their colour, dimension or shape; factors that facilitate their recognition from the sea. Sometimes this information is conveyed in entire sentences (e.g. the 'gulf is great',[65] 'this island *projects* very far *with one* of its promontories from the coastal territory',[66] or 'there is an island beside these places, a small one').[67] In other cases, it is provided in a binomial structure, consisting of a generic term (e.g. promontory, island, river) accompanied by a specifier,[68] e.g. Leuke Akte ('White Headland')[69] or

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58   See Mauro and Durastante, 'Evaluating visibility at sea', for the importance of visibility in seafaring and different ways to evaluate it.

59   Current Bakırçay.

60   §98.2, 'and below these places upon the sea the <city and> harbour of Pitane with the river Kaïkos'. The *polis* of Pitane is today located near Çandarlı (Turkey).

61   Gulf of Sidre, Libya.

62   §109.3. On the concept of 'hollows' applied to the shoreline, compare the case of the 'hollows of Euboia', an area dangerous to sail that was located on the SE coast of Euboia (Morton, *The Role of the Physical Environment*, 73).

63   About 30 kilometres south of Cape Spartel.

64   §112.2. There are two possible identifications for these reefs. Shipley (*Pseudo-Skylax's Periplous*, 204) identifies Cape Hermaia with Ras el Kouass; he, citing *The Africa Pilot* (172–3), maintains that there are dangerous shoals off Spain and rocks off Cape Spartel. Peretti (*Il Periplo di Scilace*, 187-8) identifies these reefs with the sandbanks beyond Rabat.

65   E.g. §§109.1, 110.8 and 112.1.

66   §23.3

67   §26.3

68   For the same phenomenon in medieval portolans, see Kahane and Kahane, 'From Landmark to Toponym'.

69   §67.7, a promontory in Thracia. As noted by Morton (*The Role of the Physical Environment,* 189), this allusion must recall white limestones or other calciferous rocks which were particularly visible (being reflective) in the summer sun. References to colours are found also in later nautical sources, e.g. *Stadiasmus Maris Magni* §307 ('there are two harbours, one is blue and the other one is white') or the portolan of Grazioso Benincasa (1435–1445) 614, e.g. Cavo Blanco, 'White Cape'.

Melas Potamos ('Black River').[70] Finally, the description may yield the toponym itself,such as *Erythrai* (a place probably taking its name from the red rocks around it),[71] *Kriou Metopon* ('Ram's Forehead'),[72] or *Theou Prosopon* ('God's Face').[73] Although it is impossible to determine who created these toponyms, they are common in traditional seafaring cultures.[74] Seafarers must record their movements with the greatest accuracy to remember and transmit routes,[75] and these 'speaking names' are so easy to memorize such that they facilitate such operation. Furthermore, they offer another advantage: being so intuitive, they enable seafarers to recognize landmarks they have identified and to allow others who are unfamiliar with such terrain to gain familiarity. From the oral practice, it is suggested that 'speaking' toponyms were later transferred to written tradition, when nautical instructions began to be recorded.[76] Given this, *peripli* preserved what is probably the most impressive *corpora* of toponyms related to the shapes and colours found in natural landmarks.[77]

Finally, references to the possibility of sailing up a river (*anaplous kata potamon*) are certainly imbued with sailing information.[78] The *Periplus* frequently documents this information (e.g. 'to Leontinoi along the Terias river there is a voyage upstream of 20 stades',[79] or 'there is a voyage upstream to Pella up the Loudias').[80] Even when the word *anaplous* ('sailing up') is not explicitly mentioned, the *Periplus* preserves pieces of nautically derived information, for example, at §112.3 it reports that 'the river discharges into a lake',[81] indicating that by sailing up the river (maybe with a simple barge) there was an opportunity to eventually reach the hinterland.

The abundance of particulars on the coast's appearance that emerges in Pseudo-Skylax's work parallels other ancient *peripli* (table 5). Moreover, ancient Greek iconographic and textual evidence also document the importance of noting distinctive landmarks on the coast and adjusting the ship's course accordingly. Surviving evidence proves that the crew of a ship, even when small, consisted at least of two

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70   §67.3, probably Kavak Suyu (Turkey): Shipley, *Pseudo-Skylax's Periplous*, 146.

71   §98.2, Ildırı (Turkey), Ionian *polis* opposite to Chios. Its toponym derives from *eruthros,* 'red'. On red rocks around Erythrai see Tozer, *Lectures on the Geography,* 367.

72   §47.1, Cape Krios, the southwest corner of the island of Crete. This headland is mentioned also in the *Stadiasmus Maris Magni* §329.

73   §104.2, referring to a flat-topped mountain by the sea. Current Ras Shaqqa, at the southwest of Tripoli (modern Lebanon). The perception of landmarks through visual association is also commonplace in nautical documents, as seen in the portolan of Pietro de Versi (1444, MS It. IV 170 at Biblioteca Nazionale Marciana in Venice), which refers to *Coa de Volp* (601, meaning 'Foxtail'), and to *Falcon* (606, 'Falcon').

74   Westerdahl, 'The Maritime Cultural Landscape'; Parker, 'Maritime Landscape'.

75   Kahane and Kahane, 'From landmark to toponym'.

76   Medas, *Lo Stadiasmo o Periplo del Mare Grande*, 75.

77   Kahane and Kahane, 'From Landmark to Toponym'.

78   For a reading of this expression as an indication of the presence of a river harbour, see Arnaud, 'Entre mer et rivière'.

79   §13.3. The Terias (today Fiume di S. Leonardo) is a Sicilian river on the island's east coast, flowing into the sea between Catania and Syracuse. Sailing up the river, one could reach the *polis* of Leontinoi (current Lentini).

80   §66.2. The River Loudias (or Lydias), also called Mavroneri, flows through Central Macedonia. The term *anaplous* is also documented as a toponym in Thrace (§67.8).

81   §112.4. This passage refers to an unlocated river on the north-western African coast.

Table 5   Examples of descriptions of the shoreline in ancient *peripli*

Periplus of Ps.-Skylax (Shipley, Pseudo-Skylax's Periplous)	*Hanno's Periplus (Adapted from Blomqvist)*	*Ora Maritima (Adapted from Murphy)*	*Stadiasmus Maris Magni (Author's translation)*
Landmarks mentioned in relation to a harbour/shelter			
§98.2 and below these places upon the <city and> harbour of Pitane with the river Kaïkos	§12 On the last day we anchored under some big, woody mountains	vv 317–19 When you come from that mountain which I said was thick with forests, you find a receding and sandy shore . . .	§62 There is a promontory with a small anchorage
Nautical information conveyed in entire sentences			
§56 There is an island beside these places, a small one' §112.2 And past Cape Hermaia there extend great reefs, not projecting above the water *and* from Libyē up to Europe, not projecting above the water	§8 There we found innermost in a bay a small island	vv 122–3 a lot of seaweed floats in the water and often after the manner of a thicket holds the prow back vv 362–5 Transports cannot approach these places because of the shallowness of the sea and the thick mud of the shore	§73 There is a rock, 15 stades from shore; it is tall and similar to an elephant
Nautical information provided in a binomial structure			
§67.3 black river §67.7 white headland	§6 big river	v. 227 great elevation vv 243–4 extensive swamp	§46 big river §57 dark island
Speaking-names			
§47.1 *Kriou Metopon* ('Ram's Forehead') §104.2 *Theou Prosopon* ('God's Face')	§14 *Hesperou Keras* ('Horn of the West') §18 *Notou Keras* ('Horn of the South').	v. 291–5 *Mons Argentarius* ('Silver Mountain').	§57 *Brachea* ('Shallow', referring to a promontory) §57 *Megiste* ('The Biggest', referring to an island)
Possibility of sailing up a river			
§13.3 to Leoninoi along the Terias river there is a voyage upstream of 20 stades	—	—	§236 From Gagai to the River Lamyros, 60 stades. A further distance of 60 stades to the city called Lamyra

Figure 4   Attic black-figure hydria, Cleimachos painter, about 560–550 BC. It depicts an oared ship, with a helmsman at the stern and a lookout at the prow looking sternwards; in the middle of the boat there is a boatswain who seems to be either relaying information from the lookout to the helmsman or looking to the helmsman for orders. (Paris, Louvre Museum, inv. no. E735, photograph © RMN-Grand Palais (musée du Louvre)/Hervé Lewandowski)

Figure 5 A sixth-century BC clay model of a Cypriot merchant ship equipped with a sort of crow's nest from which the lookout scans the horizon (Archaeological Museum of Nicosia, Cyprus, ref. 1953. XII.30.6(5), use of this image has been granted by the Department of Antiquities, Cyprus)

members: a helmsman (*kybernetes*), and a lookout, or bow officer (*prorates*). The role of the latter was crucial, in charge of spotting and recognizing visible landmarks and detecting possible dangers on the vessel's path; the bow officer was stationed on a raised platform in the prow of the ships (figure 4) or, less frequently, on a sort of crow's nest (figure 5).[82] It is therefore suggested that nautical information in earlier maritime sources, whether written or oral, relied preferentially on an orientation

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82   See Philostratus, *Imagines* 2.15, 'and Lynkeus son of Aphareus is stationed at the prow, a man gifted in seeing far ahead and in peering deep down into the depths, always the first to discern submerged reefs and the first to salute land as it dimly appears on the horizon'; and Sophocles, *Achaion Syllogos*, fr. 142, saying that the lookout was ordered to 'keep an eye for the path to Troy of the sons of Atreus'.

method based on a practical understanding of the environment rather than relative or absolute directions. Sea routes were transmitted as chains within a linked landscape of images, so that those who decided to follow them would know how to proceed along the path based on 'the specific order in which the surface of the environment came into or passed out of sight'.[83]

Artificial features

Artificial, or human-made, features also formed part of the complex system of visual references sailors used to navigate at sea; their mentions and descriptions were, therefore, an essential part of maritime itineraries. Within the *Periplus* references to artificial features appear with regularity and, based on the way they are presented, it is hypothesized that some of this data was obtained from earlier compilations of nautical information as well.

The first category of artificial feature from a maritime perspective is that of settlements, generally referred to as *poleis*. Flensted-Jensen and Hansen have analysed the use of the term *polis* (usually translated into English as 'city-state') within the *Periplus of Pseudo-Skylax.* Their findings are directly relevant to this contribution as they align with other nautical sources. In particular, the researchers observed that the term *polis* is used in Pseudo-Skylax around 265 times and always employed in its urban, rather than political, sense.[84] In other words, within the *Periplus, polis* does not necessarily imply the existence of a 'state' entity; it simply refers to a settlement's existence. This information is critically significant if it is considered that maritime itineraries normally contained a comprehensive list of the urban centres that could be encountered along the route. In some cases, these lists were in written form (e.g. in the *Stadiasmus Maris Magni*)[85]; in others, they were inserted within depicted sequences of coastscapes (e.g. on the glass flasks found at Baia, Populonia, Ampurias and Astorga[86] or the parchment fragments on the Dura Europos shield).[87] The inclusion of settlements within nautical sources usually had little to do with a possible interest in their political status, but rather with the two-fold relevance they held for mariners. A settlement on the coast visible from the sea (i.e. another visual reference) implied the presence of a range of facilities there, affording the opportunity to restock the vessel. In this sense, the use of the term *polis* documented in the *Periplus of Pseudo-Skylax* follows the same pattern as in other maritime documents (table 6), thus reinforcing the idea that the lists of settlements Pseudo-Skylax had access to could have nautical origins.

The trading town or *emporion* is another type of human settlement occasionally mentioned within the text. The *Periplus* not only records the presence of these market places but also frequently refers to the people they belonged to, a detail valuable for those planning a sea itinerary.[88] Thus, past the Pillars of Herakles, Pseudo-Skylax

83   Ingold, *The Perception of the Environment,* 238.
84   Flensted-Jensen and Herman-Hansen, *An Inventory of Archaic and Classical Poleis.*
85   Medas, *Lo Stadiasmo o Periplo del Mare Grande*, 124–8.
86   These objects, dated to fourth century AD, have been interpreted as illustrated maritime itineraries, Gianfrotta, 'La topografia sulle bottiglie di Baia'.
87   Dated to the third century AD and serving as a covering for an infantryman's shield, Dilke, *Greek and Roman Maps*, 120–1. The fragment is now in Paris (BnF Supplément grec 1354² v).
88   In §2 *Emporion* ('market') is documented as a toponym at §67, where a place is mentioned

Table 6 Example of descriptions of artificial features in ancient *peripli*

| *Periplus of Ps.-Skylax (Shipley, Pseudo-Skylax's Periplous)*	*Hanno's Periplus (Adapted from Blomqvist)*	*Ora Maritima (Adapted from Murphy)*	*Stadiasmus Maris Magni (Author's translation)*
Mentions of settlements			
§34.1 And the first city on this spot is Argos §34.1 The city of Leukas stands forth upon the Leukatas, which is a promontory <visible> from afar in the sea §102.1 Sarpedon, a deserted city with a river'; §111.5 A great city [with] a harbour	§2 We founded our first city, which we gave the name *Thymiaterion* (Altar of Incense)	vv 84–5 there is the Atlantic gulf. Here is the city Gadir, formerly called Tartessus vv 430–1 On the island is a lagoon and a safe port. The town of Menace is above it	§19 Rounding this promontory, you will see the city of Paraitonion §55 From Nausis to Ptolemais 250 stades; this is a very large city §93 The city is all white
Mentions of market-places (*emporia*)			
§2 Then a trading town <and> a city, which has the name Emporion, a Hellenic city' § 67.3 the trading-towns of Drys, Zone and Douriskos §102.1 the trading-town of Anane with a harbour	—	—	§147 From Nymphaion to the city Antiocheia, having an emporion, ... 400 stades §215 From Attaleia to the Korykian emporion 300 stades
Artificial landmarks (monuments, fortresses and cult places)			
§8 and the monument of Elpenor belongs to the Latinoi §35 and the mouth of this gulf is 10 stades, and upon it is a sanctuary §57.2: Sounion, a promontory with a fort	§4 Having dedicated a shrine to Poseidon there §5 *Karikon Teichos* ('Carian Wall')	vv 86–7 Here are the columns of persistent Hercules, Abila and Calpe vv 315–17 there is an island consecrated to Venus of the Sea and on it there is a temple of Venus, and an oracle	§70 From Serapeion to Kainon 150 stades, the fort is deserted §100 It is town, with a high tower above it'; §307 Lying above the promontory, is a sanctuary of Aphrodite
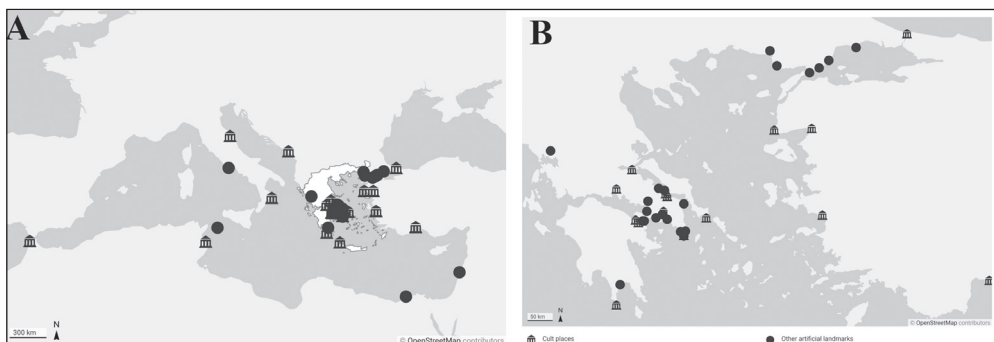
Figure 6   Left, distribution of the prominent artificial landmarks (temples or others) mentioned in the 'Periplus of Pseudo-Skylax'. The area with the major concentration is highlighted in white. Right, detail of the area with a major concentration of artificial landmarks. (Source Open Street Map)

refers to the presence of 'many trading-towns of the Karchedonioi'.[89] Likewise, Pseudo-Skylax informs the reader that the Thasioi controlled 'many *emporia*' in Thrace.[90]

The *Periplus* has a significant number of allusions to other conspicuous artificial coastal features such as temples, fortresses, tombs or altars, the majority of which are devoted to recording cult places (see table 6 and figure 6).[91] The careful siting of sanctuaries has relevant implications for sailing practices. Temples, for example, were often located on the top of promontories or near relatively safe spots along the coast.[92] Sailors could use temples to determine their vessel's position within maritime space or to find a nearby shelter. Additionally, they were easily discernible from the sea and fires lit on their altars further increased their visibility.[93] Last, in addition to their religious significance, temples were also places where commercial, geographic and nautical information was shared.[94] Temples were recurrently recorded in ancient maritime itineraries and were tightly connected to seafarers' religious practices.[95] They were furthermore fundamental to seafarers up until monotheistic religions spread across the Mediterranean coasts (mid-first millennium AD), only to be later replaced by churches or mosques.[96]

Equally relevant from a mariner's perspective, and therefore just as likely to have been drawn from earlier nautical information, are the few mentions of coastal

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named *Agora* (town square).

89   §1.

90   §67.1.

91   E.g. §13.5, the Heraion at Cape Lakinion; or §46.1, the sanctuary of Poseidon placed on Cape Tainaron.

92   Semple, 'The Templed Promontories of the Ancient Mediterranean', 353–86.

93   In this sense, temples could have fulfilled purposes which will be performed by lighthouses from the Hellenistic period onwards, Mauro, *Archaic and Classical Harbours of the Greek World*, 61.

94   Medas, *Lo Stadiasmo o Periplo del Mare Grande*, 155–6.

95   On ancient Greek seamen's religiosity, Romero Recio, *Cultos marítimos y religiosidad*.

96   Medas, *Lo Stadiasmo o Periplo del Mare Grande*, 155.

monuments (e.g. 'the monument of Elpenor'),[97] tombs (e.g. 'the tomb of the ship captain of Menelaos from Troy'),[98] and altars ('and upon the promontories there is a magnificent altar of Poseidon; and on the altar are carved human statues, lions and dolphins; and they say Daidalos made them').[99] As with urban centres, these structures were technically also visible from the sea and could thus have been used for orientation purposes. For all of these examples, the *Periplus of Pseudo-Skylax's* information was strictly related to seafaring. Elpenor was a character involved in Odysseus' maritime adventures; the altar visible from afar was devoted to Poseidon, a maritime god; the tomb on the island of Kanopos was that of a namesake ship captain. In the last case, an original oral transmission of the information can by inferred since the text, just after having reported on the ship captain's tomb, specifies that the Egyptians and their neighbours '*said* that Kanopos came to the island'.[100]

Last, the *Periplus* mentions coastal towers. The text refers to the presence of 'two or three towers' in the island of Lampas (modern Lampedusa). This vagueness might suggest this was learned from listening to general conversations or it could simply indicate conflicting sources in an attempt to report as accurately as possible.[101]

Details concerning harbours and shelters

Harbours and shelters comprise a fifth group of nautical information. Nautical sources and sailors would have paid great attention to possible havens.[102] While both later *peripli* and literary testimonies reveal that the Greeks employed different terms to identify various kinds of shelter,[103] the *Periplus* mostly uses the word *limen* (165 occurrences), meaning either natural, semi-artificial or possibly artificial harbours.[104] Alternative expressions occasionally appear (e.g. *uphormoi*), but are limited to the section referring to the northern African coast;[105] they can thus be interpreted as a sign of the consultation of a different, probably regionally circumscribed, nautical source (table 7).

Lists of harbours and shelters in the *Periplus* are almost always noted down in a formulaic format suggestive of an original transmission arranged as a set of bare lists. However, the author frequently inserts supplementary specifications on harbours, such as references to the number of basins extant in a certain place, i.e. one,[106] two[107] or three.[108] Moreover, some of the toponyms employed offer clues about the location of

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97 §8.
98 §106.5.
99 §112.4.
100 §106.5. Italics is used here for emphasis.
101 §111.3, Shipley, *Pseudo-Skylax's Periplous*, 204.
102 At least from the Hellenistic era onwards, it is known that data on harbours were collected in a specific category of documents, i.e., the *peri limenon* ('On harbours') or *limenes* ('Harbours').
103 Medas, *Lo Stadiasmo o Periplo del Mare Grande*, 129–54.
104 The Lechaion (the western harbour of Corinth, on the namesake gulf) and the harbour of Phalasarna (one kilometre north of the modern city of Phalasarna, on the north-west of the island of Crete) were probably already built at the time the *Periplus* was compiled (Mauro, *Archaic and Classical Harbours of the Greek World*, nos 92, and 141).
105 §§108 and 109.
106 E.g. §§4, 13, 14, 22, 47, 74.
107 E.g. §§53 and 57.
108 §57.

Table 7   Spatial distribution of the data on harbours and shelters within the *Periplus of Pseudo-Skylax*

Simple mentions of 'harbours'

§§4 (current French coast); 13(Sicily); 14 (southern Italian Adriatic coast); 22 (Croatian coast); 30, 34 (north-western part of Greece); 38 (Gulf of Corinth, Grece); 43, 45 (western Peloponnese) 46 (southern Peloponnese); 47 (Crete); 48 (Cyclades, Aegean Sea); 49, 50, 51, 52, 54, 56 (eastern Peloponnese); 57 (eastern Greece); 58 (Cyclades, Aegean Sea); 65, 66, 67 (northern Greece); 72, 73, 74 (northern Black Sea); 84, 85, 86, 89, 90 (southern Back Sea); 93 95 97 (Western Anatolia); 98 (Southern Anatolia); 99 (Southern Anatolia); 100, 101, 102 (southern Anatolia); 104 (Levant); 106, 107 (Egypt); 108, 110, 111 (northern Africa); 112 (Atlantic African coast)

Area provided with 'good harbours' (*eulimenos*) or generically described as having 'many harbours'

§§4 (current French coast); 27 (Adriatic coast); 28, 30, 34 (north-western part of Greece); 57 (eastern Greece); 94 (referred to the island of Elaphonnesos, Ekinlik Adasi, in the Sea of Marmara); 107 (referred to Pharos, Egypt); 108 (northern Africa)

References to the number of basins extant in a certain place

§§13 (Sicily); 29 (Corfu, Greece); 53 (eastern Peloponnese); 57 (eastern Grece); 58 (Cyclades, Aegean Sea); 67 (northern Greece); 97 (western Anatolia)

Additional specifications on harbours

§13: harbour within the city wall (Syracuse) (Sicily)

§29: 'closed harbour' (north-western part of Greece)

§30: harbour at the mouth of the river Acheron (north-western part of Greece)

§33: 'closed harbour' (north-western part of Greece)

§34: harbour near a promontory visible from afar (north-western part of Greece)

§46: back-to-back harbours, shipyard, concentration of harbours (southern Peloponnese)

§47: 'closed harbours', one of which is 'closed toward the north' (Crete), harbour located beside Kriou Metopon, harbour toward the south (Crete)

§58: 'closed harbour' (Cyclades, Aegean Sea)

§67: 'closed harbour' (northern Greece)

§88: 'closed harbour' (southern Black Sea)

§98: concentration of harbours, 'closed harbours' (southern Anatolia)

§99: concentration of harbours, 'closed harbours' and 'harbour around the island' (southern Anatolia)

§100: concentration of harbours (southern Anatolia)

§102: concentration of harbours (southern Anatolia)

§103: concentration of harbours, winter harbours, 'closed harbour', deserter harbours (Cyprus)

§104: concentration of harbours, harbour '8 stades from the land', closed harbour, harbour within the city wall (Levant)

§108: concentration of harbours, anchorages, place called *Naustathmos* (naval harbour), harbours *panormoi* (literally 'all harbours'), refuges under islets (northern Africa)

§109: *epineion* ('dependent harbour')

§111: concentration of harbours at §111.5

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these harbours along the route, e.g. *Zephyrios Limen* ('harbour toward the west')[109] and *Hebdomos* ('seventh').[110]

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109 §86, Zefre or Gülburnu, on the Turkish Black Sea coast.

110 §111.5, unidentified location near Gouraya, Algeria. Probably named because it was the seventh harbour found after Carthage sailing westwards, as suggested by Brillante, *Il Periplo di*

Fourteen harbours located from Korkyra eastwards are referred to as 'closed',[111] most likely for having a narrow mouth and protecting the vessels stationed inside.[112] Other basins are accompanied by further details: there are harbours 'towards the south',[113] *panormoi* (literally 'all harbours'),[114] 'winter harbours',[115] and 'desert harbours'.[116] Additional information is available regarding a harbour's location. Some are said to be located within the city walls,[117] beside a cape,[118] near an island,[119] or having a symmetrical position in relation to a cape.[120] Other harbour-related terms in the *Periplus* are *neorion*, referring to Gytheion,[121] a term that alludes to ship sheds designed to protect warships; and *epineion*, used to identify the harbour Philainou Bomoi,[122] a word usually referring to a military outpost on a city's shore, but located some distance from it. On other occasions, and as further proof of the consultation of different sources, each having a different level of nautical detail, the author simply states that the area has many harbours,[123] or argues that it is *eulimenos*, i.e., provided with good shelters.[124]

Other seafaring information

To conclude the survey of the *Periplus*'s contents most likely to have been derived from earlier, non-surviving nautical information, other references that were not placed in the above groups due to their heterogeneous nature are considered.

The first such item appears in §24 during a voyage upstream. Here, the text contains interesting information that refers to the kind of ships that could sail up the river. This passage is generally imbued with nautical knowledge, stating that the Naron River[125] was not narrow and that 'even a trireme could sail into it'.[126] Such specifications, referring to the typology of boats that could sail up a river or enter a particular harbour, are often found in nautical sources, as the reading of the *Stadiasmus Maris Magni* or medieval portolans reveals.[127]

Pseudo-Scilace, 144.

111 §29, modern Corfù, Greece.

112 Mauro and Gambash, 'The Earliest "*Limenes Kleistoi*" '.

113 §47.4

114 §108.2. This expression probably identified the best harbours; those protected under any sea-condition. Medas, *Lo Stadiasmo o Periplo del Mare Grande*, 147.

115 §103

116 §103. On this expression: Counillon, 'Λιμὴν ἔρημος'.

117 §§13, and 104.

118 §47

119 §99

120 §46. The harbours of Achilleios (Marmari, Grece) and Psamathus (Porto Kagio, Grece), situated back-to-back on either side of Cape Tainaron.

121 §46, current Gytheio or Gythio, Greece.

122 §109.3, Ras al-A'ali, Libya.

123 E.g. §57.

124 §§4, 34 and 94.

125 Modern River Neretva, Croatia.

126 §24

127 E.g. *Stadiasmus Maris Magni* §§2, and 86. For later portolans, see *Portolano Parma-Magliabecchi* (first half of the fifteenth century AD) 88, and 108; and *Portolano Rizo* (1490) 166.

The description of Small Syrtis[128] is also explicitly linked to seafaring. While part of the Greater Syrtis is labelled as 'hollow',[129] Small Syrtis is described as even 'more dangerous and hard to sail than the other Syrtis'.[130] Furthermore, the text reports that the places beyond the island of Kerne[131] are 'sailable no further because of the shallowness of the sea and because of mud and seaweed',[132] probably quoting nautical information to which the author had access.

Some of the maritime knowledge references relate to sailing conditions. This is the case in §111.6, where the coastal voyage from Karchedon[133] to the Pillars of Herakles[134] is allegedly seven days and seven nights long 'with the best sailing'. This specification could derive from an original source willing to offer more accurate information on the distance between these places. As stressed in the section devoted to distances, sailing times, being a subjective and highly fluctuating measurement, were sometimes supplied with further details to add precision.[135] The existence of various ways or conditions of sailing can be inferred from §111.8, where, referring to a voyage along the coast of North Africa, 'sailing in a circle along the gulfs' implies following the coastline's sinuosities; this contrasts with the 'direct sail' across the Black Sea from the mouth of the Danube to the southernmost tip of the Crimea, found at §68.

Last, the *Periplus* refers once to drinkable water, a specification with clear nautical implications with parallels in the *Stadiasmus Maris Magnis* as well as in later *peripli*.[136] The allusion to drinkable water occurs in §107, referring to a short voyage along the northwest edge of the Nile delta, where it can be read that Pharos is 'a desert island and has good harbours and no water'. However, the text also refers to the possibility of finding drinkable water on the island which locals could transport from nearby Lake Mariout.[137] This information was particularly valuable to seafarers, who were advised that they would have found favourable conditions (e.g. good shelter and the presence of water) on the island were they planning to use it as a stopping point along the route.[138] This passage is inserted within a section (consisting of §§107 and 108) where nautically derived references are significant and maritime terminology is much more heterogeneous.[139]

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128 Gulf of Gabes, Tunisia.

129 Gulf of Sidre, Libya.

130 §110.8.

131 Probably Mogador Island, west of Essaouira, Morocco.

132 §112.6.

133 Carthage.

134 Straits of Gibraltar.

135 Arnaud, 'Ancient Mariners', 44–5; and Arnaud, *De la durée à la distance*, 227.

136 E.g. *Stadiasmus Maris Magni* §§18, and 66. As noted by Medas (*Lo Stadiasmo o Periplo del Mare Grande*, 96). For later mentions of drinkable water in nautical documents, see *Compasso da navigare* (1296) §104.

137 §107

138 For a reading of this passage as a response to a debate produced after Homer's *Odyssey* 4. 358-9, see Brillante, *Il Periplo di Pseudo-Scilace,* 149-50. Another possible mention of the lack of water might be found in §105.

139 It is precisely here that words other than *limen* are found to refer to shelters along the coast. In §108, there are mentioned *uphormoi* ('anchorages') under the islands of Aëdonia and Plateiai, an *uphormos* ('anchorage') at Aphrodisia, a harbour called Naustathmos, harbours *panormoi*,

Conclusion

This study's main purpose was to identify and discuss the *Periplus*'s contents possibly derived from the author's direct or indirect access to earlier, non-surviving nautical sources. The survey outlined the rich and complex maritime knowledge that underlies this text; furthermore, it offered some lenses through which to speculate on earlier nautical sources to which the author had access, with regard to the form in which they circulated and the contents they could have included.

Two observations were advanced concerning the nature of earlier nautical sources. The first refers to the inconsistency in the quality of maritime data used to describe various regions. This could account for the existence of diverse, small-scale coastal itineraries dealing with various coastline traits. Although maritime knowledge permeates the entire *Periplus*, nautical information emerges unevenly throughout the text. Some sections are so detailed when mentioning capes, islands, and harbours that they indicate considerable familiarity with these parts of the coastline.[140] Alternatively, some passages are less detailed, suggesting either a smaller pool of available nautical sources dealing with these areas or a lack of information.[141]

Pseudo-Skylax actively wrote the *Periplus* and, as recently noted in the field, adapted his collected sources to a consistent scheme and unified linguistic character.[142] However, neither Pseudo-Skylax's interventions succeeded in levelling off disparities in available nautical materials. Variations in the quantity and quality of maritime data noticeable within the text should, therefore, not be attributed to the author's biased research, but to the original sources he had at his disposal.

The second observation concerns the way in which maritime information is conveyed. Numerous elements in the text might indicate an original oral transmission. The repetitive and formulaic scheme listing harbours and intuitive toponyms referring to the shape, dimension and colour of specific landmarks have been specifically noted. These features would have aided the mnemonic process, roots seemingly plunged into the oral tradition. Two passages further sustain Pseudo-Skylax's indirect or direct access to oral reports. The first passage mentions the tomb of Kanopos (the ship captain of Menelaos from Troy)[143] on the eponymous island. Here, the text reports that 'the Aigyptioi and the neighbours to the places *say* that Kanopos came to the island where the memorial of the ship-captain is', suggesting that this information had an oral origin. The second hint can be found in the passage where the author says that there are 'two or three towers' on the island of Lampas, so he is in doubt. This example implies the existence of conflicting data, perhaps originating from information that was initially heard and not read.[144] Given that the information is provided schematically, it is not possible to determine whether the

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kataphugai ('refuges') under islets, and other *uphormoi*.

140 E.g. the sections referred to the eastern Adriatic corresponding to the present-days Croatian, Montenegrin, and Albanian coast (§§22–27), and the northern African trait (between §§107–108, with some digressions).

141 E.g. the eastern coasts of the Black Sea for which distances are not provided (Counillon, *Pseudo-Skylax*, 43).

142 Shipley, *Pseudo-Skylax's Periplous*, 16.

143 §106.5

144 §111.3

author had consulted oral informants when compiling this work or if he had access to such data in written form.

With respect to content from non-extant written sources, at least six main categories of data in the *Periplus* may be drawn from earlier nautical sources: sailing directions, distances by sea, descriptions of the shoreline, descriptions of artificial features, details concerning harbours and shelters, and a miscellany of other seafaring information. The ways in which these data are inserted and presented within the *Periplus* aligns with what is documented in later *peripli*, thus showing that the author has not interfered substantially with the original material in the maritime knowledge and that 'at *some* level, sailors' first-hand experience must have underlined the coastal descriptions'.[145]

The analysis of the nautical contents emerging from the *Periplus*'s text has also highlighted the predominance of experiential indications: sailing times prevail over distances in stades and relative directions are documented more often than absolute. Even so, a difference between the treatment of orientations and distances is clear: while the use of stades is scattered throughout the text, references to absolute directions are mostly limited to a single passage,[146] probably taken from a source with a non-nautical purpose. This suggests that absolute orientations were likely not as common in archaic and classical regional maritime itineraries. Regarding distances, however, even if sailing times predominated, indications in stades were already quite widespread in the mid-fourth century BC; the *Periplu*'s contemporaries and older nautical sources could have used both kinds of measurement.

With the role of relative and absolute directions greatly reduced, the locus of orientation in *Pseudo-Skylax*'s maritime sources seems to be mostly entrusted to the coastline. With its succession of prominent and artificial and natural points, the coast offered a reliable guide to seafarers in lieu of directions. Directing a ship toward the next prominent point along the route using landmarks was so fundamental an operation that it is reflected in archaeological evidence (figures 4 and 5).

Acknowledgements

Chiara M. Mauro earned her PhD in 2016 from the Complutense University of Madrid, Spain. It focused on the Archaic and Classical harbours of the Greek world in the Aegean and Ionian contexts and was awarded the Pastor Prize for Classical Studies. After postdoctoral fellowships at University College Dublin and the Haifa Center for Mediterranean History, she was appointed as junior researcher and lecturer at the Complutense University of Madrid.

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145 Shipley, *Pseudo-Skylax's Periplous*, 11.
146 §47, referred to the island of Crete.

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