

CLOSED, ENCLOSED OR CLOSABLE HARBOURS?

An evidence-based redefinition of a controversial Greek expression

Abstract: Contemporary scholarship has frequently translated ‘λιμὴν κλειστός’—an expression occasionally appearing in ancient Greek written sources—in different ways, while putting forward several suggestions for its interpretation. Although this topic has aroused the interest of several scholars over the past decades, a thorough analysis aimed at understanding not only the term’s origin and use, but also its possible diachronic evolution has yet to be performed. Accordingly, this paper performs the first comprehensive analysis on the term, providing a new definition that also explores the possible repercussions that the developments in naval sieges could have had on its meaning.

Keywords: closed ports, closure devices, harbour development, ancient geography, naval sieges, *limèn kleistós*

Introduction

Written sources have always been helpful for understanding societies and their perceptions of geographical space. When considering the Greek world, the complexity of terms and phrases in use at the time to refer to different coastal features—and which can be attributed to a strict relationship with the sea—is self-evident. Regrettably, such a complexity goes beyond our current understanding; indeed, it is not always possible to define clearly what different words (e.g., ὄρμος, ναύσταθμος) associated with such features exactly meant (for some attempts in interpreting some nautical terms, see Baladié, 1980, pp. 227–248; Medas, 2008, pp. 129–154).

This contribution focuses on one such expression, namely, ‘λιμὴν κλειστός’ (*limḗn kleistós*), which often crops up in the ancient Greek sources. Although it has been translated into English as ‘closed’, ‘enclosed’ or ‘closable’ harbour—and even interpreted as a synonym of naval harbours—there is still no unequivocal interpretation of its meaning. As a result, the term is employed in current scholarship for identifying harbours of different types: i.e., harbours located within city walls, military basins or harbours physically closed by means of chains, booms or similar devices. Despite the different hypotheses that have been put forward to date, previous studies—barring a few exceptions—have always considered this expression to be static in time, as if it had had the same meaning over a considerably long period (Lehmann-Hartleben, 1923, p. 65), and to have been used consistently by all the authors and genres. Conversely, this paper also discusses the instances of the term in the Greek written sources, examining their nature and chronology, while also contrasting—whenever possible—the situations described in the sources with the available archaeological and geological evidence.

In an attempt to reveal what the expression ‘λιμὴν κλειστός’ might have originally meant and to trace its possible development over time, a brief overview is first offered of the state of the art and the instances of the expression in the Greek written sources. Following this, the main theories on its meaning are briefly recalled and analysed with the aim of assessing whether they can be considered as valid for every period or, alternatively, should be qualified. To this end, those previous hypotheses are contrasted with the geological and archaeological evidence currently available. Lastly, whether any of the previous translations or interpretations fits this controversial Greek expression or whether it should be redefined is established.

State of the art

The quest for a definition capable of summarising the meaning of the expression ‘λιμὴν κλειστός’ has long been on the academic agenda. In the nineteenth century, the French scholar Ardaillon (1898, p. 33) claimed that ancient Greeks used to close some of their harbours with moles, implicitly suggesting that this was the origin of the phrase; fifty years earlier, Jal (1848, *ss. vv.* ‘κλειστός λιμὴν’ and ‘λιμὴν’) had already defined in a similar way the expression. Thenceforth, different theories have been put forward, among which four main tendencies can be identified.

In chronological order, the first two tendencies were both introduced by Lehmann-Hartleben, who published a seminal monograph on ancient Mediterranean harbours in 1923. The German archaeologist

claimed that, on the one hand, a ‘λιμὴν κλειστός’ should be interpreted as a harbour located within the city walls, a theory that has since been endorsed, to a great extent, by other scholars (Casson, 1971, pp. 362–363; Vélissaropoulos, 1980, p. 33; Murray, 2012, p. 78). On the other, he went a step further, stating that this kind of harbour was also capable of providing a triple defence: against the action of the elements (i.e., winds, waves and currents), against physical attacks (e.g., pirates) and against any claim or demand (Lehmann-Hartleben, 1923, pp. 65–74; cf. Vélissaropoulos, 1980, p.33). Basically, with this definition Lehmann-Hartleben ushered in a second reading of the term, suggesting that a ‘λιμὴν κλειστός’ was a harbour controlled by local authorities and in which seafarers knew that they could moor their ships safely.

A year after the publication of Lehmann-Hartleben’s monograph, a third hypothesis about the nature of a ‘λιμὴν κλειστός’ was advanced by Von Gerkan. In particular, this German scholar asserted that the expression might have corresponded to a harbour in which the city’s fortifications were extended seaward along its moles (Von Gerkan, 1924, pp. 113–114). By his reckoning, such seawalls must have been long enough so as to keep the width of the entrance narrow, thus allowing for a chain or boom to be strung across it (Figure 1).

Finally, in the 1960s, the French historian Jean Rougé suggested a further reading of the term, claiming that—whatever ‘λιμὴν κλειστός’ meant—the nature of this kind of harbour was essentially military. He elaborated on this view in a monograph on the organisation of maritime trade under the Roman Empire, signifying that his interpretation was chiefly based on the evidence available as of the 1st century BCE (Rougé, 1966, pp. 6–117). Recently, Kalliopi Baika (2009, pp. 429–442) has espoused Rougé’s stance, albeit highlighting that there was plausibly a shift in the meaning of the term during the Hellenistic period, when, to her mind, it began to acquire clearer military connotations.

In current scholarship, the above-mentioned theories are typically acknowledged, and it is not unusual to find some of them used in conjunction to form a unique comprehensive definition (Moreschini, 1997, pp. 235–244; Bonnier, 2008, pp. 47–61). However, there are occasionally differences of opinion. In his PhD dissertation on the *Periplus of Ps.-Skylax*, Allain (1977, p. 150) considered the possibility that ‘κλειστός’ was an emendation of ‘κάλλιστος’, thus meaning something like ‘the most beautiful’; in addition, Hadjidaki (1986, pp. 82–84), when discussing the harbour of Phalasarna in western Crete, stated that in this case the expression might have corresponded either to a harbour within the city walls (in accordance with Lehmann-Hartleben, 1923, pp. 65–74) or an ‘artificially dug *kothon* connected to the sea’. Lastly, Mauro and Gambash have recently proposed a reinterpretation of this expression based respectively on its appearances in the *Periplus of Ps.-Skylax* (Mauro & Gambash, 2020, pp. 55–84) and Strabo’s *Geography* (Mauro, 2022). Through a systematic analysis of all the harbours referred to as ‘λιμένες κλειστοί’ by Ps.-Skylax and Strabo, they have observed that—at its origin—the expression probably identified harbours connected to the open sea through an either natural or artificially narrow harbour entrance (Mauro & Gambash, 2020, p. 81). Over time, the expression begun to experience a slight evolution in its meaning; nevertheless, in the 3rd and 2nd centuries BCE, a ‘λιμὴν κλειστός’ was not still necessarily identified as a harbour permanently and physically blocked by closure devices

(Mauro, 2022). By introducing and discussing the possible changes in the meaning of the expression, the above-cited works have laid the groundwork for the interpretations proposed in this paper.

Use of the expression in the Greek written sources

The first and most frequent instances of the expression ‘λιμὴν κλειστός’ can reasonably be related to geographical works. As it is known, this kind of works frequently arise either from first-hand (‘autoptic’) observation of the environment, or from the summary and correction of other travellers’ accounts or from a combination of both. Specifically, the references to ‘λιμένες κλειστοί’ appearing in the *Periplus of Ps.-Skylax* can be considered to be the earliest. Indeed, it is commonly accepted that this work, despite being probably compiled between 340 and 330 BCE, relied on earlier sources that have not survived and that can be reasonably attributed to the period between the 6th and the 4th centuries BCE (Gernez, 1949, pp. 15–33; Peretti, 1989, pp. 8 and 42; González Ponce, 1994, pp. 153–164; Maffre, 2006, pp. 127–199; Counillon, 2004, pp. 33–42, and, 2007, p. 39; Shipley, 2008, and 2010, pp. 100–114, and 2011, pp. 11–15; Brillante, 2020, pp. 40–45). Apart from being the earliest text in which this exact term appears, the *Periplus* also contains the greatest number of references to it (14 times): i.e., Corcyra (Ps.-Skylax, *Periplus*, §29), Ambrakia (§33.1), Phalasarna and Kydonia (§47.3), Paros (§58.1), Thasos (§67.1), Genesintis (§88), Samos and Priene (§98), Halikarnassos, Kos and Kaunos (§99), Salamis (§103), and Sidon (§104).

As to the number of times that the expression ‘λιμὴν κλειστός’ is mentioned, the second most prolific source is Strabo’s *Geography*, another geographical work in which the term appears nine times in relation to perhaps 10 harbours: i.e., Cyzicus (Strabo, *Geography*, 12.8.11), Mytilene (13.2.2), Smyrna (14.1.37), Kaunos (14.2.3), Knidos (14.2.15), Kition (14.6.3), Tyre (16.2.23) and Alexandria in Egypt (17.1.6-9). Similarly to the *Periplus of Ps.-Skylax*, the *Geography* also drew in part on earlier sources (Aujac, 1966). Accordingly, even if the text itself can be dated to the Augustan Age, the majority of the references to ‘λιμένες κλειστοί’ should probably be attributed to the 3rd century BCE (González Ponce, 2016, pp. 139–165).

Furthermore, the expression ‘λιμὴν κλειστός’ appears twice in the periegetical poem entitled ‘Ἀναγραφή τῆς Ἑλλάδος’ (*Description of Greece*) composed by Dionysus, son of Kalliphon. This poem can also be considered as a geographic piece; nevertheless, it contributes very little to our knowledge of the term, since it is uncertainly dated (Dionysus would be Cicero’s contemporary, 1891, pp. 191–242, or Hadrian’s contemporary, according to Lehnus, 2012, p. 455; in any case, he should be considered to be later than the 1st century BCE, as proposed by Marcotte, 1990, pp. 29–31) and the references to ‘λιμένες κλειστοί’ that it contains were conceivably borrowed directly from Ps.-Skylax or from a source to which the latter was related (this could be Phileas of Athens, according to Marcotte, 1990, pp. 29–33, and González Ponce, 1997, pp. 37–51).

Besides geographical writings, other Greek sources occasionally mention this same expression. For example, single instances of this term can be found in a fragment from a work on Athens by Kallikrates

(or Menekles),¹ Hesychius (*Lexicon*, s.v. Ζέα) and Cassius Dio (*Roman History*, 74.10.5). Another instance of this same expression has been discovered in a 1st-century-BC inscription found at Miletus, referring to a ‘λιμὴν κλειστός’, feasibly identifiable with the so-called ‘Lion Harbour’ (*Milet II* 3.400), in the northwest of the peninsula (Brückner *et al.*, 1994, p. 64). Lastly, in Late Antiquity, a scholium to Aelius Aristides explicitly claims that the expression ‘λιμὴν κλειστός’ should be interpreted as a fortified harbour located close to a city *and* ‘closed’ near the entrance (emphasis added) (Table 1) (Figure 2).²

In addition to the aforementioned evidence, it is also important to mention a series of texts containing either this same expression or similar phrases, to wit, passages in which ‘λιμὴν κλειστός’ does not appear as such, but in which constructions with the verb ‘κλείω’ are to be found. It is worth remembering that, since its first occurrences, the verb ‘κλείω’ usually referred to the possibility of closing up something (e.g., Homer, *Odyssey*, 21.387, and 24.166; Aeschylus, *Persians*, 723, and *Suppliants*, 956; Herodotus, *The Histories*, 2.121.2; Thucydides, *History of the Peloponnesian War*, 4.8), not to its actual closure. Specifically, Thucydides employs a similar expression (with the verb ‘κλείω’ associated to harbours; the two mentions appearing in Thucydides cannot be considered as having a nautical origin because, even if Thucydides acted as a commander of triremes, he cannot be properly considered as a nautical-technical member of the crew) twice to refer firstly to the harbours of Piraeus (which he says that the Peloponnesians could easily have accessed in the autumn of 429-428 BCE), and secondly to an episode occurring during the Sicilian expedition (Thucydides, *History of the Peloponnesian War*, 2.93; and 7.38). In the latter case, Thucydides states that the general Nicias—expecting the Syracusans to attack his fleet—requested the merchant ships to anchor close to one another to protect the harbour and, consequently, the Athenian fleet. Hence, in this specific passage, Thucydides implies that the merchant ships would have taken the place of a closure device; in other words, he seems to understand the term to suggest a harbour protected from the enemy’s attack because its entrance was essentially ‘closable’ by lining-up a certain number of ships. Thucydides employs similar expressions also elsewhere: for instance, even without using the verb ‘κλείω’, he sometime refers to merchant ships placed near the entrance of the harbour to allow friendly ships to pass through, whilst preventing the entrance to hostile vessels; on other occasions, he mentions actual pontoon barriers of linked vessels to block the entrance of the harbours (cf. Thucydides, *History of the Peloponnesian War*, 7.34-40, 56.1, 59.3 and 69.4). A further example of constructions with the verb ‘κλείω’ appears in Polybius. When describing a settlement in Sicily (Polybius, *The Histories*, 1.53.10), the Greek historian contends that it lacked harbours (i.e., it was ‘ἀλίμενος’), but did have open roadsteads (to which he refers with the plural noun ‘σάλοι’) *enclosed* by well-shaped headlands extending from the mainland (‘προβολὰς περικλειούσας ἐκ τῆς γῆς εὐφρεῖς’) (emphasis added; he therefore employs the verb ‘περικλείω’ to describe how these anchorages were protected on both sides by headlands). Likewise, Plutarch employs similar expressions

¹ Philochoros of Athens, *FGrHist* 328 fr 203 (Kallikrates-Menekles *BNJ* 370 fr 1). Here, the expression refers to the three basins of Piraeus (i.e., Kantharos, Zea and Mounychia), which are all described as ‘κλειστοί’. On Kallikrates-Menekles, see Sickinger, 2018.

² [ὡσπερ λιμέσι κλειστοῖς] οὗς χειροποιήτους διὰ τειχῶν περὶ τὰς πόλεις ποιοῦνται. AC. εἰσὶ γὰρ λιμένες κλειόμενοι περὶ τὰ στόματα. D. Scholia to Aelius Aristides (*scholia vetera*); ‘Aristides, vol. 3’, W. Dindorf (eds.), (Leipzig, 1829), Repr. 1964. *Pan*, - Epigram 113.7.

on two occasions: in the *Life of Demetrius*, he holds that Demetrius found the entrances to Piraeus open (‘τοῖς γὰρ στόμασι τῶν λιμένων ἀκλειστοίς’), thus employing ‘ἄκλειστος’ (‘unclosed’ or ‘open’) in reference to ‘στόμα’ and not to ‘λιμὴν’ (Plutarch, *Life of Demetrius*, 8.6); while in the *Moralia*, he uses the expression ‘ἄκλειστος like a harbour’ in a metaphoric sense (Plutarch, *Moralia*, 823a-b.).

To conclude this brief overview, it warrants noting that, as of the 4th century BCE, references to the physical closure of harbours, namely, ‘κλειῖθρα’ (‘closing devices’ or ‘barriers’), about which the Greek sources provide a series of details, began to proliferate (e.g., *SEG* 43.549, fr. b, line 4, dated to the early 2nd century BCE; *SEG* 26.121, fr. ac. 00, lines 43-44, dated to the late 1st century BCE). In particular, the first texts in which the term is explicitly associated with harbour areas include a passage from Aeneas Tacticus—mentioning the possibility of removing the ‘κλειῖθρα’ of the harbour of Chios and bringing them ashore (Aeneas Tacticus, *How to Survive under Siege*, 11.3)³—and an Attic inscription dated to 330-329 BCE, alluding to some iron rings pertaining to the ‘κλειῖθρον’ (*IG* II² 1627, line 319, 330-329 BCE; cf. also ll. 320-321). However, it is probably Philo of Byzantium (second half of the 3rd century BCE) who offers the most enlightening information on the nature of the ‘κλειῖθρα’. In some extant passages from his treaty, Philo actually mentions the ‘κλειῖθρα’ as *one* of the available options for closing a harbour (Philo of Byzantium, *Siegecraft*, C52; see Whitehead, 2016, pp. 105 and 312–313), while also providing a detailed description of how the ‘κλειῖθρα’ should be designed in order to be effective against an attack from the sea (Philo of Byzantium, *Siegecraft*, C52–54; i.e., he mentions the possibility to anchor opposite the harbour mouth light vessels, attached to each other ‘and prepared for them conjunctions of joists thick [and] square [and] placed in front of the prow[s], and with these dowelled together and bound together into one, and a beak fastened on them at the end’; Whitehead, 2016, p. 107).

Lehmann-Hartleben’s and Von Gerkan’s theories: ‘λιμένες κλειστοί’ as enclosed harbours

The identification of a ‘λιμὴν κλειστός’ as a harbour enclosed within the city walls was first proposed by Lehmann-Hartleben and later espoused by various scholars (Lehmann-Hartleben, 1923, pp. 65–74; Casson, 1971, pp. 362–363; Murray, 2012, p. 78). In his pioneering book on ancient Mediterranean harbours, of the 303 harbours included in his catalogue the German archaeologist considered that 42 were ‘κλειστοί’ (Lehmann-Hartleben, 1923, tabs. 70–72). So, to the ‘λιμένες κλειστοί’ identified as such in the ancient sources he added others to which no other author had referred as such, but to which his definition might have applied. Part of Von Gerkan’s hypothesis—that ‘λιμὴν κλειστός’ was a harbour protected by extending the city walls seaward along its moles (Von Gerkan, 1924, pp. 113–114)—can also be discussed together with Lehmann-Hartleben’s theory, as both of them interpreted the topographical relationship between city walls and harbours as the key to decoding this expression.

Although the reading of the phrase ‘λιμὴν κλειστός’ as an ‘enclosed harbour’ has long been sustained, there are at least two main issues undermining its validity. The first is structural: whenever Lehmann-Hartleben and Von Gerkan refer to fortifications enclosing harbours, they both employ the German term

³ According to this reference, the barrier was hauled out for drying and for ‘pitching’: the latter action was probably meant to protect the wooden parts from rot (a common use for pitch).

Stadtmauer, that is, literally ‘city walls’. The use of *Stadtmauer* indirectly implies that ‘λιμένες κλειστοί’ were located within the fortifications of cities. However, this seems not to have always been the case, as there are a few examples of harbours that are referred to as ‘κλειστοί’ and which were not directly connected to any *polis* (especially in the cases with an earlier chronology, i.e., those recorded by Ps.-Skylax). The ‘λιμὴν κλειστός’ near Ambrakia, for example, is associated with a sea fort in the *Periplus of Ps.-Skylax*, rather than to the *polis* per se. This fort has been traditionally identified with Ambrakos (Karatzeni, 2011, pp. 145–159; Chapinal-Heras, 2021, pp. 154–157), and its remains located near Phidokastro (current Logarou Lagoon), at the mouth of the ancient course of the river Arachtus (Figure 3). Moreover, as the text itself confirms, the harbour was 80 *stadia* from the sea. Despite being possibly located inside the fort and having mainly military purposes (Karatzeni 2011, p. 146), the ‘λιμὴν κλειστός’ near Ambrakia was not therefore actually within the city walls. Something similar can be said of the ‘λιμὴν κλειστός’ recorded by Ps.-Skylax at Genesintis (in the Pontus Euxinus) and which was associated with the Chalybes *ethnos* (Mauro & Gambash, 2020, p. 68, with relative bibliography). Also in this case, the harbour was not linked to any city and—subsequently—could not have been enclosed within any city walls. If maintained, Lehmann-Hartleben’s and Von Gerkan’s definitions should at least be slightly modified to include harbours located within fortifications in general, even when the latter were not actually city walls.

In the identification of a ‘λιμὴν κλειστός’ as an ‘enclosed harbour’ (i.e., a harbour within the fortifications), a second issue arises when contrasting the available archaeological evidence with the references to the expression, inasmuch as there are many cases in which its location within fortifications should be rejected. The recently excavated harbour at Kition, as an example, even if it is difficult to interpret, seems to suggest that the harbour area of Bamboula was located outside the city walls (Nicolaou, 1976; Yon, 2000, pp. 95–116; McKenzie, 2003, pp. 36–63; Tréziny, 2016, pp. 133–134; Callot, Fourrier & Yon, 2022, chapter 5) (Figure 4). In addition, there are further elements that can cast doubt on such an interpretation. In the case of Corcyra, for instance, Ps.-Skylax records the presence of three harbours, identifying only one as ‘κλειστός’, signifying, in all likelihood, that one of the three basins had a feature distinguishing it from the other two (with respect to the harbours of Corcyra, see Baika, 2013, pp. 319–334, with relative bibliography). In light of the available archaeological evidence, however, it seems that at least two of the harbours of Corcyra (and possibly all three) were located inside the city walls, thus questioning the interpretation of a ‘λιμὴν κλειστός’ as an ‘enclosed basin’ (Mauro & Gambash, 2020) (Figure 5). The basin of Alkinoos, located on the north-east of the Kanoni peninsula, and today completely silted-up, was, in fact, embraced in Antiquity by a massive tower on the east, and was incorporated into the city walls (Baika, 2013, pp. 322–323). The second basin, named Hyllaikos—today partly silted-up and situated in the Chalkiopolou Marine Lake—was also located inside the city walls, which ended on its shore at both sides (Baika, 2013, p. 323). Lastly, more doubts exist on the third harbour and its topographic relationship with the city walls: however, if its conjectural location in the site called Arion, on the north-east of the Kanoni peninsula, will be confirmed, this basin too was possibly included within the urban fortifications.

To the example of Corcyra should be added that the *Periplus of Ps.-Skylax* contains a more explicit expression for identifying harbours located within fortifications, viz. ‘λιμένες ἐντός τείχους’. Hence, a distinction can conceivably be drawn between the two kinds: on the one hand, ‘λιμένες κλειστοί’ and, on the other, ‘harbours located within fortifications’. In *Ps.-Skylax*, the expression ‘λιμένες ἐντός τείχους’ is employed twice to identify one of the harbours of Syracuse (i.e., the Great Harbour), on the one hand, and one of those of Tyre (the northern basin, also called the Sidonian harbour), on the other. Additionally, the fact that a ‘λιμὴν κλειστός’ was not necessarily located within fortifications is also further substantiated in different later sources. The inscription found in front of the so-called ‘Lion Gate’ at Miletus, and dated to about 85 BCE, reads as follows:

Βιάρης Βιάρου ἐπιστατήσας | τοῦ ναοῦ τοῦ Ἀπόλλωνος | τοῦ Διδυμέως καὶ τειχῶν κ[αὶ] | πύργων καὶ
τῆς περὶ τὸν κλειστὸν λιμένα ἀσφαλήας Ἀπόλλ[ωνι] | Διδυμεῖ καὶ Ἀρτέμιδι Πυθ[εΐηι καὶ] τῶι Δήμωι
ιδρύσατο τὸν | βωμόν (*Milet II* 3.400).

In other words, this passage claims that a certain *Biaresepistates*—was responsible for ‘the temple of Apollo of Didyma *and* the walls *and* the towers *and* the security around the closed harbour’ (emphasis added), suggesting that the walls, the towers and the ‘closed harbour’ were three different elements and that that a ‘λιμὴν κλειστός’ could exist independently of the other two (Mauro, 2022). A similar account is offered by Cassius Dio, who, when describing the harbours of Byzantium, states that ‘the harbours inside the city walls were both closed with chains’ (ὁί τε λιμένες ἐντὸς τείχους ἀμφοτέροι κλειστοὶ ἀλύσεσιν ἤσαν), thus confirming once again that ‘κλειστός’ should not necessarily be understood as a synonym of ‘inside the city walls’ (Cassius Dio, *Roman History*, 74.10.5).

More on Lehmann-Hartleben’s theory: ‘λιμένες κλειστοί’ as controlled maritime spaces

The second option that should be explored has to do with the second part of Lehmann-Hartleben’s hypothesis, suggesting that a ‘λιμὴν κλειστός’ should be understood as a space controlled by local authorities, who would have been keen to keep tabs on the movement of people and goods in and out of that harbour. To address this possibility, it is necessary, on the one hand, to approach it from a broader perspective, taking into account elements other than physical ones, and, on the other, to take a step back to discuss the political status of the sea in the Greek world.

Although it has been frequently claimed that the sea was a common resource in Antiquity (equivalent to the notion of *mare commune*, subsequently elaborated on in Roman law; see Lytle, 2012, p. 2), the literary sources indicate that harbour areas were carefully controlled and regulated (e.g., Plato, *Laws*, 7.824 b-c). In particular, Greek harbours were typically ‘not open’ to foreigners and only special treaties between *poleis* guaranteed ships the safe use of foreign ports (e.g., the 5th-century-BCE treaty between Oiantheia and Chaleion, IG IX² 717; cf. Demosthenes, *Against Theocrines*, 55). As far as we know, this means that harbours would have normally fallen under the jurisdiction of the cities in which they were located and, therefore, did not need to be designated as ‘κλειστοί’, as the local authorities’ control over them was something that was taken for granted.

To further sustain this view, the opposite should be considered. Some written sources provide examples of harbours that did not guarantee any kind of legal protection and thus received specific designations. This was the case of the Thieves' Harbour in Keratsini Bay (Attica), an alternative for those who wanted to avoid the controls at Piraeus (Demosthenes, *Against Lacritus*, 28, and 53; Strabo, *Geography*, 9.1.14) and it may be also the case of the harbours referred to as 'desert harbours', 'λιμένες ἔρημοι' (Ps.-Skylax, *Periplus*, § 103; Thucydides, *History of the Peloponnesian War*, 1.50 and 8.10.3). With regard to the latter, in the ancient Greek world there were areas that, because they were located between the 'χώρα' of the *polis* and unclaimed lands, were granted the legally ambiguous status of 'ἐρημία' (Daverio Rocchi, 1988, pp. 31–37; *contra* Counillon, 1998, pp. 64–67, who interprets this expression as opposite to 'λιμὴν κλειστός', meaning a harbour poorly protected).

Rougé's theory: 'λιμένες κλειστοί' as military basins

In 1966, Rougé (pp. 116–117) stressed the military nature of 'λιμένες κλειστοί', stating that whatever the expression meant, the only certain thing was that it referred to harbours with military uses. As underlined above, the French scholar's interpretation was mainly based on evidence from the Roman period. So, this begs the question of whether or not this view might also hold for the cases mentioned in the Greek written sources. As will be seen, the correspondence between a 'λιμὴν κλειστός' and a 'military basin' seems to be more questionable the further back in time one goes (Rougé, 1966, pp. 11–117).

The major issue arising when applying Rougé's interpretation to those cases mentioned as 'λιμένες κλειστοί' in the Greek written sources is that the latter frequently referred to the presence of only one harbour defined as 'κλειστός' in some settlements. Such a case is documented in both Ps.-Skylax's *Periplus* and Strabo's *Geography*, in which cities like Samos, Kydonia and Kaunos were said to be equipped with only one 'λιμὴν' which was 'κλειστός'. Admitting that 'κλειστός' might refer to a military basin would imply that these authors either forgot to mention the presence of additional basins (which might have been put to different uses) or are referring to one that was actually used for different activities (i.e., for trade or as a naval base) as 'military' (if this is the meaning that should be attributed to 'κλειστός'). The first option is harder to demonstrate, for in Ps.-Skylax and Strabo there are often references to urban centres that are said to have been equipped with only one basin (in Ps.-Skylax, as many as nine out of the 14 cases of closed harbours are said to have had only one basin). In contrast, the second option is more likely, for it is supported by archaeological and literary evidence: we know that, when only one harbour was available, it was not only used for military purposes, but also for other activities, like, for example, the transport of goods and/or people (conceivably, these were carried out in different areas of a basin). However, if this were accepted, it would be necessary to admit that calling a basin of this kind 'military' (if this is the meaning that should be attributed to 'κλειστός') would be reductive and not totally consistent with reality.

If in the *Periplus of Ps.-Skylax* 'λιμένες κλειστοί' cannot be defined—based on the available evidence—as military basins, the situation seems to have changed over time. In Strabo's *Geography*, for example,

the two concepts (‘κλειστός’ and ‘military’) began to be associated more frequently: in this respect, four out of the 10 harbours identified as ‘λιμένες κλειστοί’ are also reported as having shipsheds or berths for triremes, a kind of structure and ship, respectively, usually connected with the naval sphere. However, it is necessary to underline that the 200 shipsheds recorded by Strabo at Cyzicus (*Geography*, 12.8.11) have yet to be archaeologically identified (Lehmann-Hartleben, 1923, p. 101; Blackman, 2013, p. 21); and that the presence of shipsheds in the ‘closed harbours’ of Mytilene (southern harbour, Strabo, *Geography*, 13.2.2; Acheilara, 2004, p. 767), Kaunos (Strabo, *Geography*, 14.2.3) and Knidos (Strabo, *Geography*, 14.2.15; the existence of the latter is certain, according D. Blackman, pers. com.) should be confirmed. Furthermore, one of the ‘λιμένες κλειστοί’ of Alexandria in Egypt was located at the foot of the royal palace and, as such, was in all likelihood primarily set aside for part of the royal fleet (Belov, 2015, pp. 45–72) (Figure 6). Yet, the fact that in many cases the term ‘λιμένες κλειστοί’ is followed by an explanation that these same basins had the wherewithal to accommodate triremes suggests that—even at this stage (i.e., in the 1st century BCE, when the *Geography* was compiled)⁴—the correlation between a ‘λιμὴν κλειστός’ and its ‘military nature’ was not automatically inferable. Therefore, it can be claimed that, as of Hellenistic period, the correlation between the expression ‘λιμὴν κλειστός’ and the military nature of these harbours appears to be borne out (in accordance with the hypothesis put forward by Baika, 2009, p. 435), to the point that, for the Roman period, Rougé’s definition actually rests on firmer foundations.

Discussion

In light of the foregoing, it seems that the expression ‘λιμὴν κλειστός’ should not be related either to the location of a harbour within the fortifications or to its function, while there is not enough evidence to sustain the equivalence between a ‘λιμὴν κλειστός’ and a controlled maritime space. The remaining option is that the original meaning of the expression possibly had something to do with the entrance to such a harbour.

The entrance of the harbour as the key to interpret the ‘λιμένες κλειστοί’

In the past, theories like those advanced by Von Gerkan (1924, pp. 113–114) and Blackman (1982, p. 194; and 2008) already referred to the possibility that the distinguishing trait of a ‘λιμὴν κλειστός’ lay in its entrance. As seen above, however, these theories frequently associated its meaning with the idea that the harbour entrance was protected on either side by extending the city walls seaward along its moles, but—as demonstrated above—this was not always the case.

The available written sources suggest that this expression in somehow connected with the harbour entrance, inasmuch as the entrance was often mentioned as a specific feature of the ‘λιμὴν κλειστός’ (e.g., Plutarch, *Life of Demetrius*, 8.6; Appian, *Punic Wars*, 20.96). From this perspective, after having presented the main objections to the expression’s previous definitions, it would be perhaps useful to

⁴ However, it should be recalled that Strabo’s work reflects mainly the situation in the 3rd and 2nd centuries BCE.

recall what the written sources have to say about the matter and to perform a more in-depth analysis on the information that they provide, reconsidering how the entrance of a ‘λιμὴν κλειστός’ might have differed from that of a simple ‘λιμὴν’.

As noted in the section dealing with the use of the expression, it is possible to distinguish two main categories of sources. The first includes geographical works and would comprise the *Periplus of Ps.-Skylax*, Strabo’s *Geography* and Dionysius’s *Description of Greece*. Sources pertaining to this first group are extremely schematic and rarely analytical, that is, they simply mention the presence of a ‘λιμὴν κλειστός’, without elaboration or clarification of its meaning.

To gain further insights into the expression ‘λιμὴν κλειστός’, it is therefore necessary to resort to the second group of sources. Contrary to those falling into the first category, these often provide a wealth of additional information replete with details. Notwithstanding this, there are two major problems when attempting to decode the expression ‘λιμὴν κλειστός’ based on such sources. The first is that these texts seldom employ the exact expression ‘λιμὴν κλειστός’, apart from a few exceptions (there are only six exceptions: Thucydides [*The History of the Peloponnesian War*, 7.38.2], Kallikrates-Menekles, Cassius Dio, the Milesian inscription, a scholium to Aelius Aristides’ *Panathenaic Oration* and Hesychius; for a discussion of the same, see below). Most of the time, they rather refer to the possibility of ‘closing the harbours’. Secondly, it is not clear to what extent they employ this similar expression with the same meaning that geographical sources (which seem to refer with this expression to a static feature) might have attributed to ‘λιμὴν κλειστός’ (as a matter of fact, nautical jargon—on which geographical sources frequently relied—needed to be learned and, therefore, was not immediately accessible to all and sundry, cf. Pseudo-Xenophon, *Constitution of the Athenians*, 1.19–20).

Taking these biases into account, some information can still be gleaned from this second group of sources. In particular, their analysis reveals that the ‘closure’ of a harbour might have been either a natural (e.g., headlands extending seawards might have ‘enclosed’ the basin, Plutarch, *Life of Demetrius*, 8.6) or artificial (e.g., jetties, κλειῖθρα, chains) feature (all these possibilities can be found in Philo of Byzantium, *Siegecraft*, C52–55). Additionally, it can be inferred that such a ‘closure’ was not necessarily intended to be permanent, since some of these sources assert that a harbour could be ‘closed’ in the event of an attack by lining up ships and rafts (e.g., Thucydides, *The History of the Peloponnesian War*, 7.38.2; Philo of Byzantium [*Siegecraft*, D101] mentioning the possibility of linking rafts [‘σχεδίαν’] to the ships; Arrian, *Anabasis of Alexander*, 2.20.9; and Diodorus Siculus, *Historical Library*, 17.43.3.); in other words, these sources suggest that a ‘λιμὴν κλειστός’ could be intended as a ‘closable harbour’. Amongst the non-geographical texts, there are only six that contain the exact expression ‘λιμὴν κλειστός’, since other texts employ different constructions. Neither a fragment attributed to Kallikrates or Menekles nor an entry of Hesychius’s *Lexicon* provide any significant information for broadening our understanding of the expression, as they simply state that three basins of Piraeus were ‘κλειστοί’ (Kallikrates-Menekles *BNJ* 370 fr 1; Hesychius, *Lexicon*, s.v. Ζέα). When comparing these passages with the studies conducted by Løven (2011; Løven *et al.*, 2007), it seems possible that the expression

referred to three basins protected by fortified moles ending in towers (the remains of the towers at Zea and Mounychia can still be traced, while, in the case of Kantharos, the presence of towers can only be assumed): these moles were not apparently joint with any specific closing device (see the artistic reconstructions published in Løven and realized by Nakas; there are not archaeological evidence for the existence of closing devices) but they offered a protection both against the enemies' attacks and the action of the elements (i.e., wave action and high swells) (Løven, 2011, p. 155).⁵ On the other hand, Cassius Dio interestingly specifies that the 'λιμένες κλειστοί' of Byzantium were located 'inside the walls' and that they 'were both closed with chains', thus providing a twofold suggestion: (1) 'λιμὴν κλειστός' per se did not mean a harbour located within the city walls, (2) nor did it necessarily imply the existence of chains blocking its entrance (Cassius Dio, *Roman History*, 74.10.5). A 1st-century-BCE inscription discovered in Miletus could be interpreted in a similar way (*Milet II* 3.400); it refers to a certain Biades, tasked with supervising the Temple of Apollo in Didyma, the walls, the towers and the 'λιμὴν κλειστός'. On the one hand, this epigraphic text draws a distinction between the walls and the 'λιμὴν κλειστός', as if they were two different elements; on the other, it entrusts the supervision of all these places (i.e., the temple, the walls, the tower and the harbour) to one individual, as if these structures were all located nearby or—at least—could have been easily controlled. Different is the case of a scholium to Aelius Aristides that offers an explicit definition of the expression 'λιμὴν κλειστός': nevertheless, this source has a late chronology (see Table 1), signifying that the information that it contains was almost certainly influenced by the author's contemporary interpretation of the term.

Compared to this second heterogeneous group of sources, texts belonging to the geographical domain (i.e., the *Periplus of Ps.-Skylax*, Strabo's *Geography* and Dionysus's *Description of Greece*) use 'λιμὴν κλειστός' more consistently and they seem to identify a static and observable feature of the harbours. There are 23 'λιμένες κλειστοί' probably identified as such in geographical texts (this number is the result of adding the 14 cases mentioned by Ps.-Skylax to the 10 mentioned by Strabo; both authors include Kaunos as a 'λιμὴν κλειστός', so the total number is 23). These 23 basins are located between the Eastern Mediterranean and the Black Sea (see figure 2). The expression could have therefore referred to a particular harbour feature that had its root in this geographical context between the 6th and the 3rd centuries BCE. Judging from the extant testimonies, this feature varied over time, since the harbours referred to as 'κλειστοί' by Ps.-Skylax do not coincide with those recorded by Strabo, with the only exception of Kaunos (Karia).

Contrasting the 23 'λιμένες κλειστοί' with the information previously obtained from the analysis of the non-geographical sources, that the expression employed in Ps.-Skylax's *Periplus*, Strabo's *Geography* and Dionysus' *Description of Greece* referred to the episodic case of blocking harbour entrances by lining up ships should be dismissed. So, the other possibilities should be assessed in order to determine

⁵ Thucydides (*History of the Peloponnesian War*, 2.93) states that the three harbours of the Piraeus could have been easily accessed in 429-428 BCE and he then says (*History of the Peloponnesian War*, 2.94) that, after this episode, the defence of the ports of the Piraeus was improved. Whether is not clear how this improvement was realized, Ps.-Skylax (writing in the second half of the 4th century BCE) does not include the three harbours of the Piraeus amongst the 'λιμένες κλειστοί'.

whether these harbours were naturally or artificially closed and, as to the latter, to identify—if possible—*how* this was achieved.

The archaeological and geomorphological evidence available for these harbours reveals that—at the time of their identification as ‘κλειστοί’—they were all naturally or artificially closed, in that they had narrow entrances due to natural features (e.g., headlands, islets; these may have been the cases of Corcyra, Ambrakia, Phalasarina, Kydonia, Genesintis, Kos, Kaunos, Salamis of Cyprus, Kition and Knidos) or to breakwaters (as in the cases of Thasos, Samos, Halikarnassos, Sidon, Cyzicus, Mytilene and Tyre). In the case of Kos, the entrance to the ‘λιμὴν κλειστός’ was only possible by rounding the headland on which a fort was built during the Middle Age: the harbour was, therefore, located in a natural embayment accessible through a narrow natural entrance (the fortifications of the city probably were extended along this headland, see: Maiuri 1921-1922; Brouskari, 2004, pp. 63–75; Livadiotti, 2018, pp. 39–75). A similar situation can be detected as for the harbour of Kydonia. Here, the harbour is defined as ‘κλειστός’ but with the addendum ‘towards the north’ (see again table 1). The harbour of Kydonia had, in fact, a narrow entrance on its northern edge, created by the presence of a natural reef: for this reason, it was possibly considered ‘κλειστός’ (‘protected’) toward the north (‘πρὸς βορέαν’). On the other hand, in other harbours this protection (or ‘closure’) was artificially recreated, e.g., at Mytilene, where the entrance to the southern ‘λιμὴν κλειστός’ was marked by a breakwater on the west side and a tower on the east (Theodoulou, 2014).

The accent on protection, more than on actual closure, is also reinforced by the distinction that Strabo draws between the northern harbour of Tyre, which is identified as ‘κλειστός’, and the southern basin, which is designated as ‘ἀνειμένος’ (literally ‘open’). Based on the data on the harbour system of Tyre, it seems that, while the northern basin was protected by a continuous line of natural reefs and a mole, the southern harbour was probably an offshore anchorage (rather than a physical manmade harbour, as suggested by Poidebard, 1939, pp. 5–75), unprotected by any natural or artificial defences, thus resulting in it being ‘open’ (Figure 7). The ‘closure’ of harbours with chains or similar devices would have offered them little protection from adverse weather conditions, unlike the presence of moles or natural features. In the same direction the numerous references to ‘open harbours’ contained in the *Epitome of Menippus’ Periplus* (4th or 5th century AD) must be interpreted: they, despite not mentioning the expression ‘λιμὴν κλειστός’, employ the opposite phrase (i.e., ‘λ. ἀνειμένος’), always relating it with the lack of protection of those harbours against the winds (e.g., Marcianus, *Epitome of Menippus’ Periplus*, §10: ‘harbour open to the western winds’, ‘harbour open to all the winds’).

Having said that, if the cases mentioned by Ps.-Skylax are examined separately from those recorded by Strabo (those cases mentioned by Dionysus are not covered here, since, as noted above, he might have obtained the information directly from Ps.-Skylax or from a source from which both borrowed), it can be observed how the nature of this ‘protection’ varies greatly. If the vast majority of the harbours mentioned by Ps.-Skylax were naturally protected with the possible addition of artificial reinforcements (Mauro & Gambash, 2020), Strabo’s ‘λιμένες κλειστοί’ were mainly protected by artificial breakwaters

(e.g., the aforementioned case of the mole built on a natural reef) (Mauro, 2022), which became increasingly more common as of the Hellenistic period.

On the existence of artificial closures and their possible chronology

Whether the enclosure was natural, natural with artificial reinforcements or completely artificial, it always left a narrow entrance to the basin, which could be eventually blocked with the installation of portable devices, such as chains, ropes, doors, gates or booms made of wood. The existence of such devices is widely documented in the sources mentioning the possibility of ‘closing the harbour’ in question; however, the archaeological evidence for these closures is scattered, if not directly non-existent. There are only epigraphical testimonies referring to the ‘κλειῖθρα’ (e.g., IG II2 1627 from Athens or SEG 50.762, fr. b 3-5 from Kos), but no archaeological example is known so far; furthermore, the only proposal advanced for the existence of closing devices—hypothesized for Halieis (Argolis) (Jameson, 1969, pp. 335–336)—has been firmly rejected (Frost, 1985, pp. 63–66). Be that as it may, were these closing devices also employed in the ‘λιμένες κλειστοί’ reported by Ps.-Skylax and Strabo? The harbours referred by these authors as ‘λιμένες κλειστοί’ all had narrow entrances that could have facilitated the installation of such devices. Nevertheless, traces of their existence have not been recorded for many of them and—whenever hypothesised—they have been dated to the Hellenistic period. In the case of Kos (mentioned as ‘κλειστός’ by Ps.-Skylax, *Periplus*, §99.1), for instance, an inscription actually mentions some sorts of ‘κλειῖθρα’ (closures), but dates to the early 2nd century BCE (196–195 BCE) and is referred to the shipsheds, so it probably identifies closable doors or gates giving access to the *neoria* (SEG 43.59, fr B, ll 3-5), not to the harbour itself.

In this connection, two hypotheses can be advanced. On the one hand, it is conceivable that originally the ‘λιμένες κλειστοί’ mentioned in geographical sources were simply spaces strongly protected either naturally or artificially and that ‘κλειστός’ was used in the sense of ‘enclosed’, ‘protected’ or ‘closable’, without necessarily implying the existence of a physical closure. Over time—and especially thanks to the spreading of artillery and to the new developments in naval sieges—the expression gradually began to take on new connotations and be more commonly used in non-geographical literature, where it referred in a first moment to ships blocking the entrances (ships blocking the harbour’s entrance, as it is the case mentioned by Thucydides [*History of the Peloponnesian War*, 7.38.2] or pontoon barriers, usually referred to as ‘ζευγμα’; Murray [2012, p. 74] notices that pontoon bridges are already mentioned by Herodotus but with another term, ‘γάφυρα’ [cf. Herodotus, *The Histories*, 1.205.2, and 3.134.4]) and, later, to devices such as chains and booms installed at the mouth of a harbour (e.g., Cassius Dio, *Roman History*, 74.10.5). This evolution in its meaning probably started to occur during the last quarter of the 4th century BCE, when the first ‘rings pertaining to the κλειῖθρα’ are documented, but it was widely accepted only at a later stage, probably in the last centuries BCE. Strabo—who resorted mainly to 3rd- and 2nd-century-BCE sources—employed this term without this necessarily implying the presence of actual closure devices. Further proof of this is that, in his *Geography*, he mentions various ‘λιμένες κλειστοί’, but, when describing the sluice gates regulating the flow of the water in Lake Mareotis (which

he had personally seen), he chooses to employ the term ‘κλειῖθρα’, which he never uses to refer to harbours (Strabo, *Geography*, 17.1.37).

The second possibility is that the harbours designated as ‘κλειστοί’ in geographical sources were actually equipped with closure devices from the very start, but that these have not been identified, maybe because they were lighter or made of perishable materials. However, this hypothesis clashes with the lack of mentions of such devices in Herodotus and Thucydides. It is more probable, as implicitly suggested by these same authors, that those early closure devices may have been no more than a line of warships or merchant ships anchored with their bows outward (cf. *supra*, ‘Use of the expression in the Greek written sources’).

Lacking additional information on the existence or not of these devices, it can be posited that the expression ‘λιμὴν κλειστός’ originally referred to harbours that were naturally or artificially enclosed (in the sense of ‘protected’ or potentially ‘closable’) and which were not necessarily blocked. However, as early as during the years of the Sicilian expedition (415-413 BCE), ships blocking the entrances of the harbours started to be successfully used in naval warfare (Thucydides, *History of the Peloponnesian War*, 7.34-40; Murray, 2012, pp. 22–23). From that moment onwards, fighting just inside or at the mouth of a harbour became a standard feature of naval warfare, up to the point that it required to dedicate particular attention to the protection of the harbour entrances (Murray, 2012, p. 79). When, during the Hellenistic period, Alexander’s campaigns definitively demonstrated that fighting within confined spaces greatly reduced the effectivity of maneuver-and-ram warfare, these narrow entrances facilitated the installation of actual closure devices, eventually leading to a new concept of ‘λιμὴν κλειστός’ whose definition is ultimately confirmed in the scholium to Aelius Aristides (*Scholium vetera*: scholium in *Orationes*, 13.113, definition). Furthermore, at approximately the same period, the term began to be associated more often with military basins. In all likelihood, the possibility of physically closing harbours was particularly valuable for those that were used as such. Therefore, starting from the Hellenistic period, the term suffered a development and started to be interpreted as a synonym for a ‘closable’ harbour: the physical closure was feasible, but not necessarily fixed. In this sense, the same verbal adjective ‘κλειστός’ could reinforce the idea, as the ending in ‘-τός’ indicate feasibility and is opposite to adjectives ending in ‘-τέος’, which are imperative. This correspondence is also noted in later sources, which frequently associate accounts of the closure of harbours with attacks from the sea.

Conclusions

As the expression ‘λιμὴν κλειστός’ has been variously interpreted by scholarship, there are several possible meanings, namely, a harbour located within the city walls, a military basin, a legally protected space or a harbour whose entrance could be blocked by specific devices. These different interpretations are always based on assigning a sole, monolithic meaning to the expression. However, after taking a closer look at the primary sources and contrasting them with the archaeological evidence available, it does not seem unreasonable to suggest that the expression evolved over time. In particular, the earliest

instances, probably deriving from an originally autoptic observation, do not employ this expression to refer to a harbour located within the city walls or to a legally protected space. Furthermore, they do not establish a direct correspondence between a ‘λίμην κλειστός’ and its military nature. Lastly, the existence of permanent devices completely blocking harbour entrances—at least during the Archaic and most of the Classical periods—has still to be confirmed.

During the Hellenistic period and thanks to the new techniques employed in naval warfare and to the spreading of artillery, there was an increase in the construction of barriers, namely ‘κλειῖθρα’, in harbour areas, the existence of which is first confirmed in epigraphic sources, which sustains the idea that they physically closed them, since they also mention the rings (pertaining to chains?) of the ‘κλειῖθρα’. Even if the growing use of closure devices per se is documented as of the Hellenistic period, not all the ‘λιμένες κλειστοί’ mentioned by Strabo were equipped with them. It warrants noting that the Greek geographer and historian relied mainly on 3rd- and 2nd-century-BCE sources, which means that, even if these closure devices started to be used during the Hellenistic period, their presence was not automatically associated with the concept of ‘λίμην κλειστός’.

This situation changed over time, when references to ‘λιμένες κλειστοί’ decrease in favour of similar expressions which are more explicit, for they describe various ways of closing harbours, thus painting a heterogeneous picture (see Philo of Byzantium, *Siegecraft*, C52–55).

In light of the foregoing, it can be asserted that the term might have originally identified a kind of harbour, common in the Eastern Mediterranean, that was particularly well protected because of its narrow entrance. Over time, these narrow entrances were achieved by artificial means, more or less becoming a synonym of harbours with entrances that could be ‘closed’ with booms, doors, gates or chains. As to the expression’s English translations, ‘closable’ thus seems to be preferable to ‘closed’ or ‘enclosed’ harbour.

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Table with caption

SOURCE	REFERENCES	LOCATION	CHRONOLOGY
Thucydides, <i>History of the Peloponnesian War</i>	2.93	Piraeus	5th century BCE
	7.38	Reference to an episode occurring during the Sicilian expedition	
<i>Periplus of Ps.-Skylax</i> (geographical work)	§ 29	Corcyra	Second half of the 4th century BCE
	§ 33.1	Harbour near Ambrakia	
	§ 47.3	Phalasarna	
	§ 47.3	Kydonia	
	§ 58.1	Paros	
	§ 67.1	Thasos	
	§ 88	Genesintis	
	§ 98.3	Samos	
	§ 98.4	Priene	
	§ 99.1	Halikarnassos	
	§ 99.1	Kos	
	§ 99.2	Kaunos	
	§ 103	Salamis of Cyprus	
§ 104.2	Sidon		
Kallikrates or Menekles = Scholia V on Aristophanes, <i>Pax</i> , 145	BNJ 370 fr 1	The three basins of Piraeus	Uncertain chronology. Probably around the 2nd century BCE
Polybius, <i>The Histories</i>	1.53.10	Applied to the description of a settlement in Sicily	2nd century BCE
Strabo, <i>Geography</i> (geographical work)	12.8.11	Cyzicus	1st century BCE-1st century CE
	13.2.2	Mytilene	
	14.1.37	Smyrna	
	14.2.3	Kaunos	
	14.2.15	Knidos	
	14.6.3	Kition	
	16.2.23	Tyre	

	17.1.6	Alexandria in Egypt	
	17.1.9	Alexandria in Egypt	
Dionysus, son of Kalliphon, <i>Description of Greece</i> , (geographical work)	vv. 27-28	Harbour near Ambrakia	Uncertain chronology. Later than the 1st century BCE
	vv. 118-122	Phalasarna	
Inscription from Miletus	<i>Milet II</i> 3.400	Miletus	1st century BCE
Plutarch	<i>Life of Demetrius</i> , 8.6	Piraeus	Late 1st century/early 2nd century CE
	<i>Moralia</i> , 823a-b.	Expression used in a metaphoric sense	
Cassius Dio, <i>Roman History</i>	74.10.5	Byzantium	Late 2nd century/early 3rd CE
Scholium to Aelius Aristides	<i>Scholια vetera</i> : scholium in <i>Oratationes</i> 13.113 (definition)		Uncertain chronology. Late Antiquity
Hesychius, <i>Lexicon</i>	s.v. Ζέα (Zea)	Piraeus	5th-6th century CE

Table 1: References to the expression ‘λιμὴν κλειστός’ in the Greek written sources with their approximate chronology.

Figure captions

Figure 1: Artistic reconstruction of the entrance of the northern harbour at Knidos. According to Von Gerkan's (1924) interpretation, F. Krischen (1938, fig. 2) depicts the 'λιμὴν κλειστός' as a basin closed by extending the city walls seaward along the existing moles, and whose entrance was blocked by chains.

Figure 2: Map showing the location of the 'λιμένες κλειστοί' mentioned in the Greek written sources, distinguishing between references found in nautical sources, other literary works and inscriptions.

Figure 3: Map showing the distance between the *polis* of Ambrakia and the harbour referred to as 'λιμὴν κλειστός'.

Figure 4: Plan of Kition, with the alleged original course of the city walls and the closed harbour. The circuit of the city walls was suggested by Nicolaou (1976, pp. 52–65), following mainly 18th- and 19th-century descriptions. During Yon's excavation, traces of a fortified wall were found on the western edge of Bamboula harbour, to the north-west of the shipsheds (Yon, 2000, p. 96). After McKenzie, 2013, fig. B9:1a.

Figure 5: Plan of Corcyra with the two identified harbour, the suggested location of the third basin (Arion) and the conjectural circuit of the city-wall. After Baika, 2013, fig. B6.1.

Figure 6: The Great Harbour of Alexandria: the secondary basins. The Royal Palace was located at the northwest of the basin n. 3. Adapted from Goddio *et al.*, 1998. The numbering of the basins inside the Great Harbour follows Belov, 2015, fig. 9.

Figure 7: Plan of Tyre, with the two harbours and the submerged reef. Adapted from Marriner *et al.*, 2008, fig. 2.