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Understanding Carthage as a Roman Port

Introduction

By setting the renewed study of Portus into the wider frame of the Ports of the Roman Mediterranean, Simon Keay's admirable initiative stimulates two main areas of study. The first is trade and networks of communication, and the second is the physical character and development of the ports themselves. This piece on Carthage lies within the second area. The phrase 'annony ports' has been used in this context and is understandable in any Portus-centred view of the Roman Mediterranean, but it presents a theoretical challenge. Carthage's role in servicing the Roman 'command economy' of grain and other supplies for the city of Rome is not in doubt, but an orthodox view of its trading function, as of nearly all ports of the Roman Mediterranean other than Portus, would be that it grew as a centre for regional seaborne commerce and the Roman *annona* was added onto this. The theoretical case for Roman interregional movement of staple goods aside from the *annona* - and consequently for a high level of trade of all sorts of items - was made in Keith Hopkins's 'Models ships and staples' of 1983 and this has influenced more recent writings of economic historians. Such trade is amply demonstrated in the mass of archaeological evidence we now have, both for amphora-borne commodities and low-value items, as ceramic table- and cooking wares and lamps, distributed to locations throughout the Mediterranean world.

We can nevertheless ask whether, and how, a combination of 'annony' and non-annony elements can be seen in how Carthage functioned as a port. This is not easy to answer, because converting the archaeology of physical remains into an account of the working of a port is one of those history/archaeology interfaces that prove particularly challenging. If we think of Roman ports functionally and institutionally, we have relatively abundant information about the ports of Rome – Ostia and Portus in particular - but much less about most other Mediterranean ports of Roman date. Even if we drop our ambition to ports in their physical meaning, despite extensive knowledge of components within them, of how many Roman ports could we be said to have a comprehensive understanding?¹

Because there was ancient literary evidence about the port of Carthage, scholars took the topic head on from the start of modern scholarly interest in the 19th century, with mixed results. There were notable studies, especially the *Recherches sur l'emplacement de Carthage*, with the first detailed plan of Carthage published by the Danish consul to the Regency, C.T. Falbe, in 1833 (fig. 1), the excavations of M. Beulé in the

¹ RICKMAN 1985 gives a useful discussion of problems in the study of ports, making the vital distinction between between 'harbour' and 'port'.

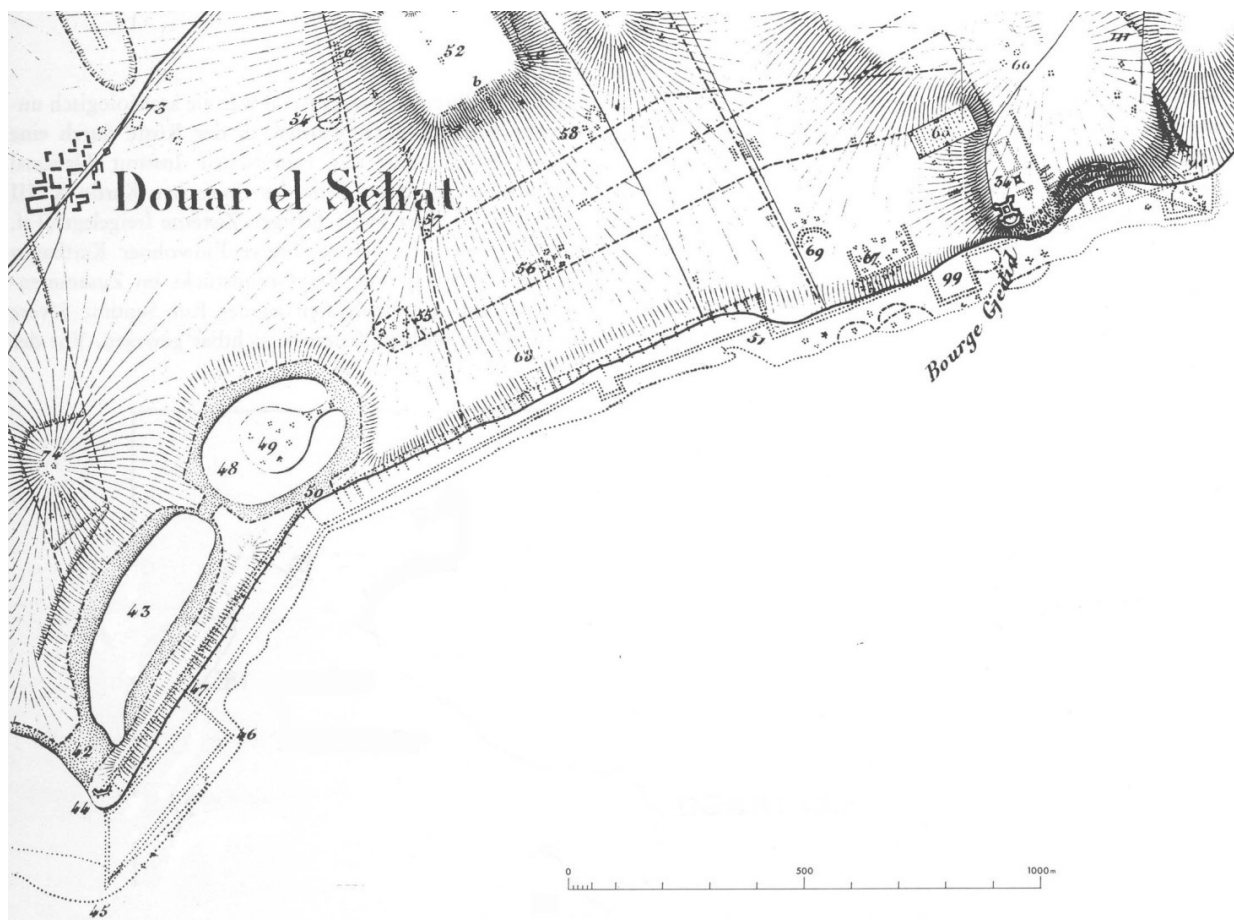


Fig. 1 – Detail from Falbe’s map of Carthage of 1833 showing coastal remains from Bordj Djedid (Bourge Gjedid) in the NE to the two inland harbours and ‘Quadrilateral of Falbe’ in the SW.

harbour area in 1859² and the shallow-water soundings along the Carthage coast in the 1890s (fig. 2).³ While yielding much information, these studies predictably also raised questions, and they did not resolve the questions arising from the literary accounts of Carthage at the time of the Third Punic War. This led to unresolved scholarly debates in the later 19th and through much of the 20th centuries with an inclination towards polemical language: the latest example might be Pierre Cintas’s *Le Port de Carthage*, first published in 1973,⁴ whose unwisely chosen subtitle, ‘fin d’une fiction’, captures the flavour. Some obvious questions could be resolved by the application of stratigraphic excavations in the 1970s, but they could not resolve all the old problems, and they created new ones. So this (my first) attempt to explain the working of Carthage as a Roman port starts by considering various components which might make up the port, before attempting to make progress in some long-disputed areas.

The Lake of Tunis

The Lake of Tunis, a natural lagoon covering some 40 sq km lying about 1 km to the S of the urban area of Carthage (fig. 3), provides a natural haven on a low-lying stretch of coastline otherwise prone to winds

² BEULÉ 1861.

³ DE ROQUEFEUIL 1898a, b; 1899.

⁴ In advance of Volume II of his *Manuel d’archéologie punique* (1976), of which it forms a part.

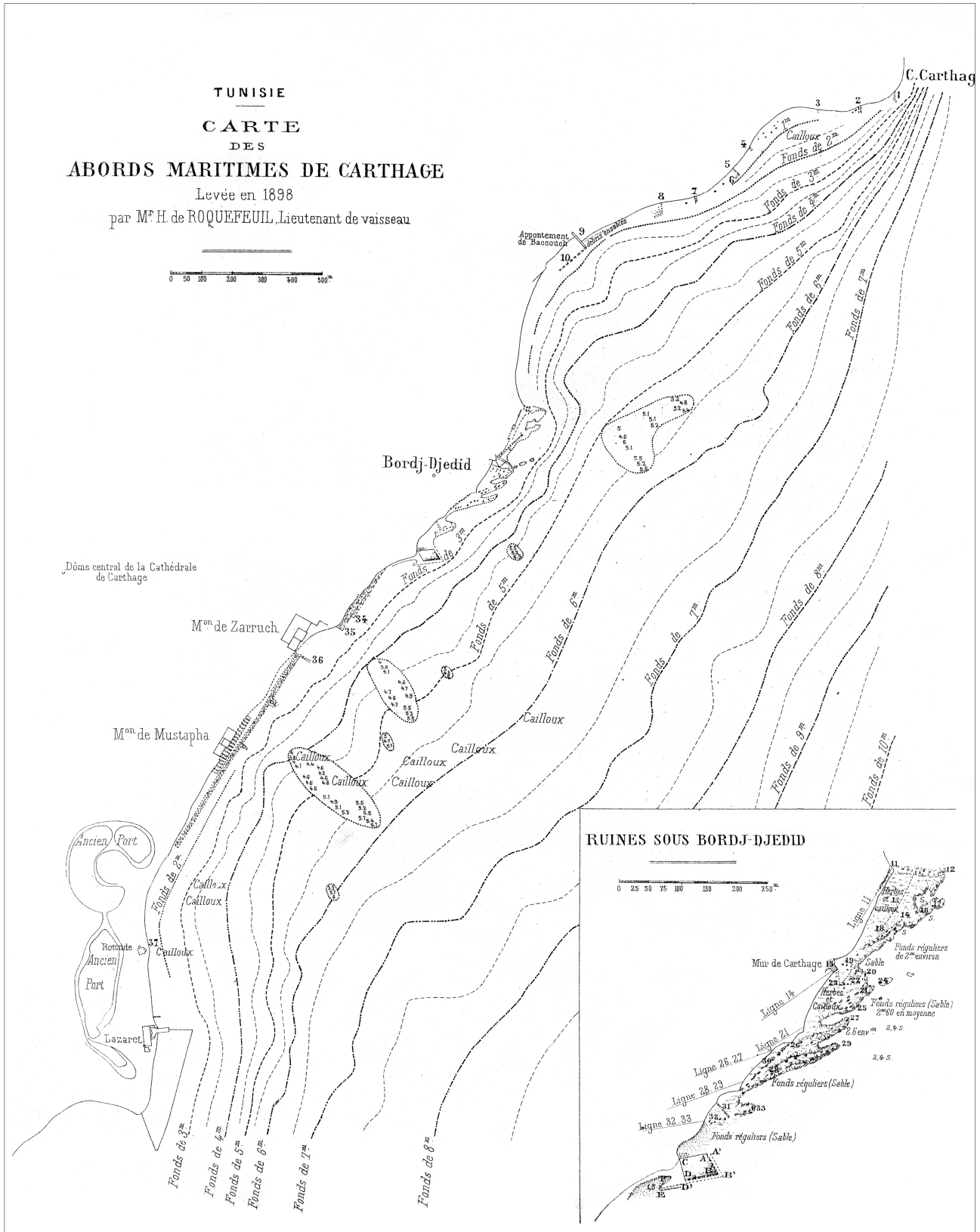


Fig. 2 – Carte des abords maritimes de Carthage' of 1898 by de Roquefeuil
 (DE ROQUEFEUIL 1899, facing p. 19).



Fig. 3 – 1922 aerial view of southern part of Carthage, looking S: manmade harbours and coastal remains in foreground, Lake of Tunis and sandbar in background.

and longshore currents. The discovery of a Mycenaean stirrup jar in the garden of a house at Kram-ouest, on the northern shore of the Lake, suggesting a 13th-century BC burial site, might seem to confirm the significance of the Lake for human settlement.⁵ However, in historic times this natural haven does not seem to have been important to the city's function as a port.⁶ This is revealed obliquely in two textual accounts. Appian's account of Carthage at the time of the 3rd Punic war, based on Polybius, refers to the lake and the sandbar (*tainia*). In the early stages of the siege one of the Roman consuls, Censorinus, had a camp on the Lake under the enemy walls and, when illness struck his men as a result of the unhealthy environment, he moved his camp to the sea front (*Libyca* 97, 99). At a later stage, Scipio built a mole from the sandbar out to the sea in order to blockade the entrance to the harbours. The Carthaginians in response made an opening from the 'other side of the harbour facing the open sea' and, when they could not get all their ships back into harbour through this entrance, they tied them up at the *choma* or wide quay which had been built for unloading merchants' ships (*Libyca* 121-23). From these passages it is clear that the main part of the port was in direct contact with the open sea and the implication is that the Lake played no active role. Nearly seven centuries later Procopius records that the harbour inside the city wall (called Mandrakion) was seen as too small to berth Belisarius' fleet of 592 ships in AD 533, so it made for another harbour called Stagnum 40 stades (slightly over 7 km) from the city, where there was ample space.⁷ *Stagnum* was the word also used by

⁵ RAKOB 1996. No settlement of this period has yet been found.

⁶ The reasoning given here overturns my earlier view that the Lake might have been the original harbour of the 9th/8th-century BC and later city (HURST 1994, 44).

⁷ The position of this harbour could correspond to the Roman town of Maxula (modern Radès), located at the SE corner of the Lake of Tunis.

Latin authors to refer to the Lake and the harbour with this name is likely to have been where the natural opening in the sandbar was situated. It is no surprise that this should have been some way from Carthage, given that the sandbar was built up from material carried by longshore currents which run predominantly in a southwesterly direction; already at the time of the 3rd Punic war the sandbar near Carthage was described as half a stade wide (300 ancient feet or about 90 m: *Lybica* 95). Consequently, if ships wanted to reach Carthage via the Lake of Tunis, they would have had to have sailed to the far end of the sandbar on its outside and back again on its inside. Only if a canal was cut through the sandbar could there have been useful maritime communication via the Lake, and there is no evidence for such a cutting in ancient times.⁸ Neglect of the Lake frontage nearest to Carthage is also evident in the archaeology, since we know only of some scattered Roman and late antique burials in the area, with no trace of substantial structures as might be expected had there been active harbour use.

The city itself: coastal change and manmade harbours

The well-documented evidence from the area of the German excavations on the seafront of the city of Carthage suggests an extension of land over the sea of some tens of metres between about the 7th century BC and 2nd century AD.⁹ These excavations were located close to the central part of the Roman city, one insula north of the *Decumanus Maximus*, and, given the uniformity of levels and alignment for the city seafront from the Antonine baths southwards to the harbours, it seems likely that this pattern of growth may apply generally. If we project the coastal development revealed in the German excavations, the site of the man-made harbours would partly have been open sea in the 7th century BC. An indication at least of the manipulation of the low-lying and perhaps incompletely-reclaimed land prior to the creation of the manmade harbours, if not of earlier harbour arrangements, is given by the existence of a shallow 15-20-m wide canal or channel which ran parallel to the natural line of the coast across the area of the later harbours and was linked to the sea; pottery dating no later than the mid 4th-century BC was found in its final silting.¹⁰

The two man-made harbours result from the excavation of coastal sediments probably at a date close to the end of Carthage's independent existence in the middle of the 2nd century BC. They are known from literary evidence, principally Appian's *Libyca* 96, and from the archaeology of their Punic - Byzantine development. At the time of the third Punic war the inner Circular Harbour was a naval arsenal,¹¹ while the outer 'Rectangular' Harbour was said by Appian to be for merchant shipping. The archaeology suggests that this was a substantial basin with quaysides confined between the city wall on the seaward (E) side and the Sanctuary of Tanit on the W; it joined the Circular Harbour on the N, and on the S side was the entrance. This would probably have been N of the Roman entrance, which is defined by two stone-faced *opus caementicium* moles shown in fig. 4; one could guess that it might have been situated in the lee of the N mole of the Quadrilateral of Falbe if, as seems likely, this was of Punic date.¹²

⁸ The present configuration of the Lake with a major opening roughly in the centre of the sandbar at La Goulette relates to the needs of Tunis at its western end. CARTON (1911, 246-248, fig. 3) argued from physical evidence for an ancient opening from the corner of the Lake nearest to Carthage to the sea. Such a channel, labelled 'fossa turcica', is shown (in addition to the main La Goulette channel) on the engraving of Tunis at the time of the Turkish siege of 1574, published in Braun and Hogenberg's *Civitates Orbis Terrarum* and thus may be assigned to that time. As AUDOLLENT (1901, 214) points out, the lack of reference to such a feature in Appian's detailed account of the Roman siege can be regarded as significant.

⁹ RAKOB 1991. Beilagen 37-40 give a summary of the coastal development from the 5th century BC.

¹⁰ HURST and STAGER 1978, 338-339, fig. 2. (The mistaken attempt to revise the earliest Tophet dating in this article should be discounted).

¹¹ Appian's account suggested it contained shipsheds for 220 ships; not less than 170 can be projected from the archaeological remains (HURST 1994, 39).

¹² The Quadrilateral of Falbe is the name given to structures making a trapezoidal plan at the SE point of the coast of Carthage, first recorded on FALBE's plan (fig. 1). These are, however, of varying date, as is set out below, with the N mole being the earliest element.

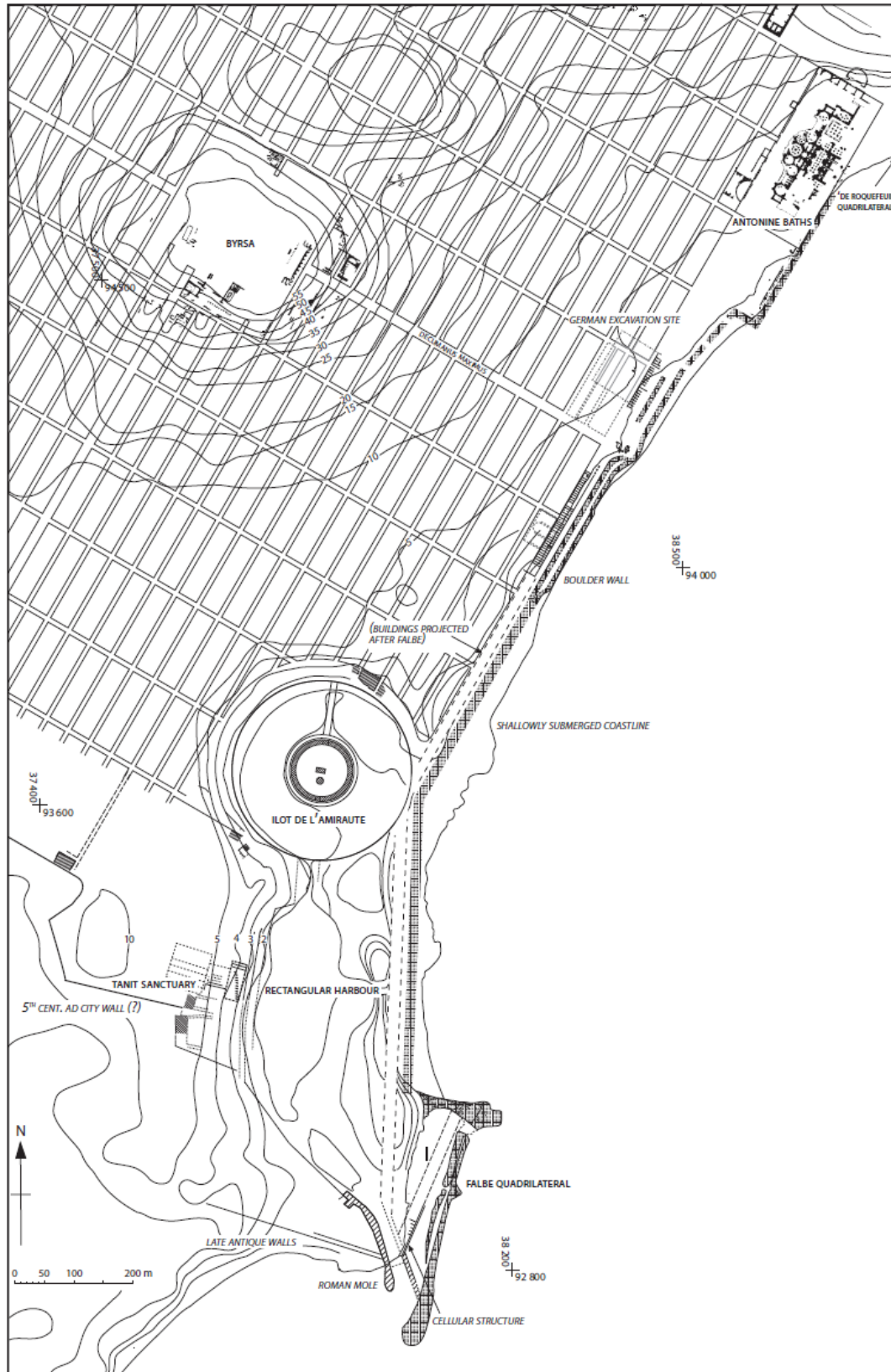


Fig. 4 – Plan of coastal part of Roman Carthage from the Antonine Baths southwards. Bordj Djedid lies immediately outside the plan to the NE. Drawn by Lacey Wallace after YORKE and LITTLE 1975, figs. 4 and 8, RAKOB 1991, beilage 36, and HURST 1999, fig. 2.

In Roman times, the Ilot de l'Amirauté at the centre of the Circular Harbour became a monumental colonnaded piazza in the later 2nd century AD or later, with a temple and octagonal building at its centre (fig. 5). Small additions, perhaps office-like rooms were added later to these colonnades, giving the whole complex an aspect not unlike the *Piazzale delle Corporazioni* at Ostia. In a pit within the central area about thirty ostraka were found, recording shippings of olive oil documented by the *ensor olei*, who gives his name Felix and the consular date, AD 372-3 (fig. 6).¹³ On the harbour's N perimeter an excavation between two streets and the quayside revealed a sequence of craft buildings from the 1st to 7th centuries (fig. 7). These seem at least partly to have been connected with cloth-working and it was argued from the remains that there was an integrated set of different crafts showing an increasingly strong central control in the later imperial period.¹⁴ So an 'annonary' role could be suggested for the harbour, in which the documentation and perhaps the trans shipment of olive oil destined for Rome was taking place. It could further be argued that the monumentalisation of the Ilot might have coincided with Commodus's creation of the African grainfleet, the *Classis Commodiana*, and the retitling of Carthage as *Colonia Commodiana Togata* in AD 186.¹⁵

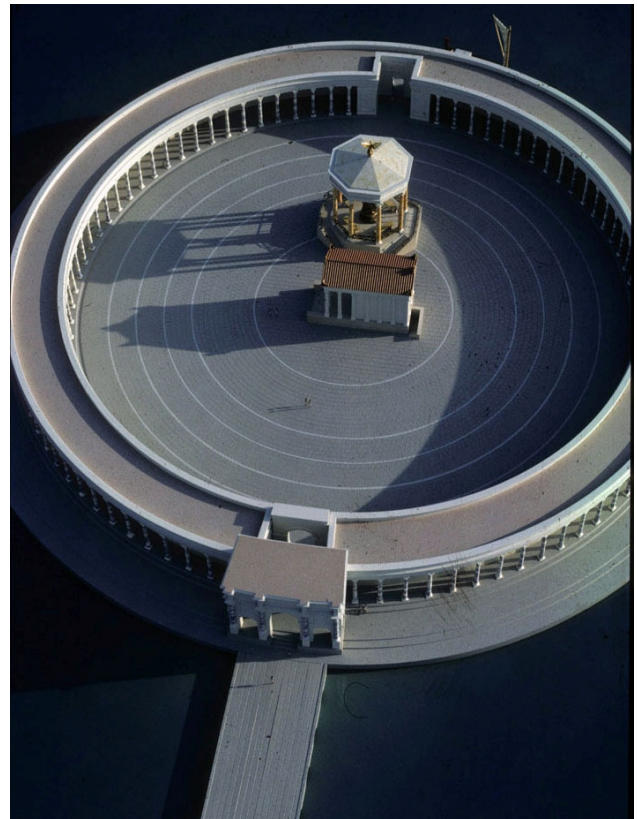


Fig. 5 – Ilot de l'Amirauté in late 2nd/3rd century AD: photograph by W.A. Graham of model in site museum, based on excavation evidence.

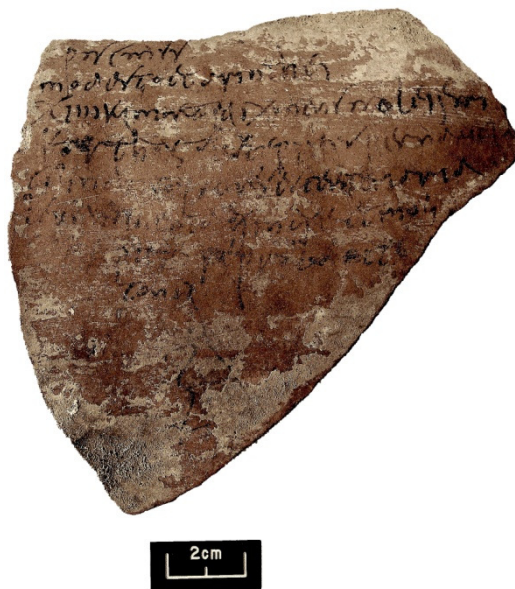


Fig. 6 – Ostrakon from the Ilot de l'Amirauté (PENA 1998, 123, no. 2). The top four lines read: *pos(t) cons(ulatu)s / modesto et arinthei / XIII K(a)l(endas) mart(ias) felix mensor olei fori / karthag(iniensis) suscepimus per nav(i)c(u)la(m)* (After the consulships of Modestus and Arintheus [AD 373], 14 days before the Kalends of March [16 February], Felix measurer of the olive oil at the Forum of Carthage. We received by the boat of

¹³ PENA 1998.

¹⁴ HURST 1994, 64-70.

¹⁵ An issue also touched upon by Keay in this session.

¹⁶ For the suggestion that the Ilot might be identifiable with the 'maritime agora' under Justinian (Procopius, *De Aedificiis* VI, v, 10), see HURST 1994, 114-115.

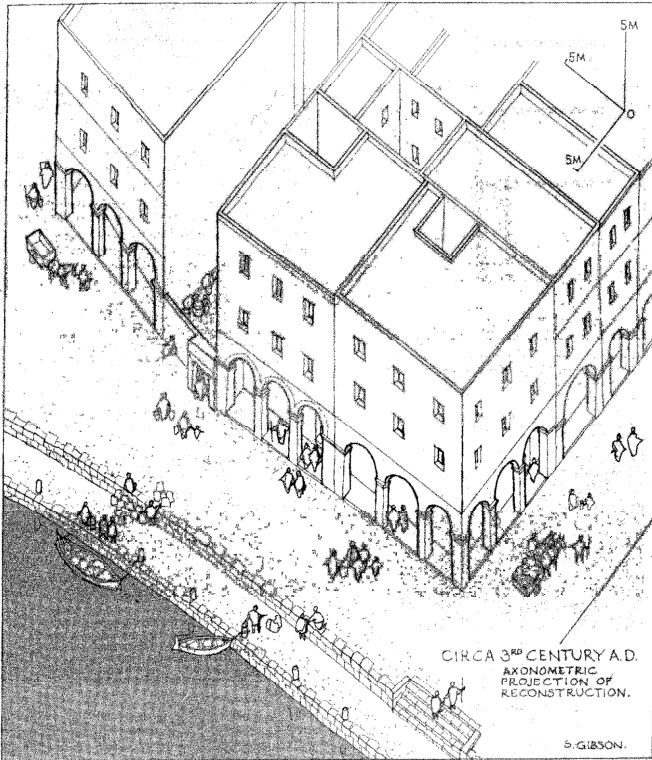


Fig. 7– Reconstruction by Sheila Gibson of Roman buildings on North Side of Circular Harbour (from HURST 1994, fig. 5.5).

capacity and the more southerly of these seems to have been set in the sea, so that it would also offer berthing to ships on its southern side (figs. 8, 9).¹⁷ On the W side of the harbour, as noted for its Punic phase, there was a quayside area about 15 m deep backing onto a street running parallel to the harbour side (fig. 10). To the W of this there was a major temple complex with cults probably to Saturn, Venus and Caelestis, monumentalising the Punic sanctuary of Tanit.¹⁸ On the coastal frontage to the E, Falbe's map shows the presence of the regular cell-like buildings, which ran in a narrow strip the full length of the Carthage coast from the Antonine Baths to the S of the harbours (fig. 1; see also fig. 4). Their main stretch extended on a more or less exact N-S orientation along the E side of the harbour and, as along much of the coast, they appear to have been located immediately to the E of the Carthaginian city wall, backing onto a scarp



Fig. 8 – South mole near Roman harbour entrance, looking SSE. The figure in the foreground stands on the facing of (submerged) cut stone blocks inwards towards the harbour and the background figure stands on the facing southwards to the open sea. (Photograph by author).

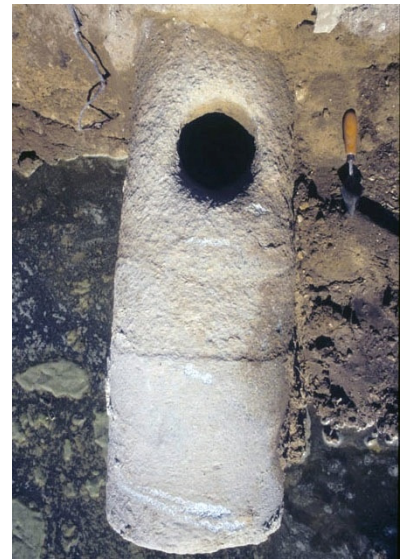


Fig. 9 – Mooring stone in grey granite from the S mole near Roman harbour entrance. The hole marks the probable setting of a timber crossbar and the unweathered lower part would have been embedded in the quayside. (Photograph by author).

¹⁷ A strong southwards expansion of land over sea was revealed by rescue excavations in 1992-3. By the 6th century there was a substantial stretch of land to the S of this mole, in which the two 'Late antique walls' shown in fig.4 were constructed at a distance of up to 80-90 m from the Roman mole (see Appendix on these). The explanation seems to likely to be the deposition of sediments by long-shore currents in the lee of the mole (HURST 1993, esp. 17-18, fig. 2).

¹⁸ HURST 1999.

formed by the higher ground contained inside the city wall (which itself had been removed). It appears that there may have been a further stretch of them running NE-SW to the S of the N mole of the Quadrilateral of Falbe (designated 'cellular structure' in fig. 4).¹⁹ These buildings are interpreted below as warehousing/merchants' premises.



Fig. 10 – View southwards of W side of Rectangular harbour, showing Roman street on right, with drain on its left and rectangular pits marking the positions of a robbed late antique colonnade. The ancient waterfront would have run approximately where the bushes are, slightly back from the modern water's edge
(Photograph by author).

Waterfront storage space

A glance at the best-preserved Roman harbour of N Africa, at Lepcis Magna, shows it to have been dominated by ranges of buildings with uniformly-sized vaulted cells and fronted with colonnades, which occupied the north and east quaysides of the Severan port at Lepcis (fig. 11). These were evidently designed principally for storage of goods to be loaded onto or taken from ships tied up at the quaysides. Brief reference to the plans of Portus or the river port in the S part of Rome, not to mention any more general view of Ostia will confirm the impression that extensive storage facilities were a characteristic part of any Roman port.

The cell-like structures extending along the sea front at Carthage from the southern limit of the harbours for about 1.6 km northwards, to the point where the coast projects S of the Antonine Baths, look to be a convincing parallel as the port of Carthage's storage facilities. That, however, brings us into old

¹⁹ See the discussion under *Quadrilateral of Falbe*, below.

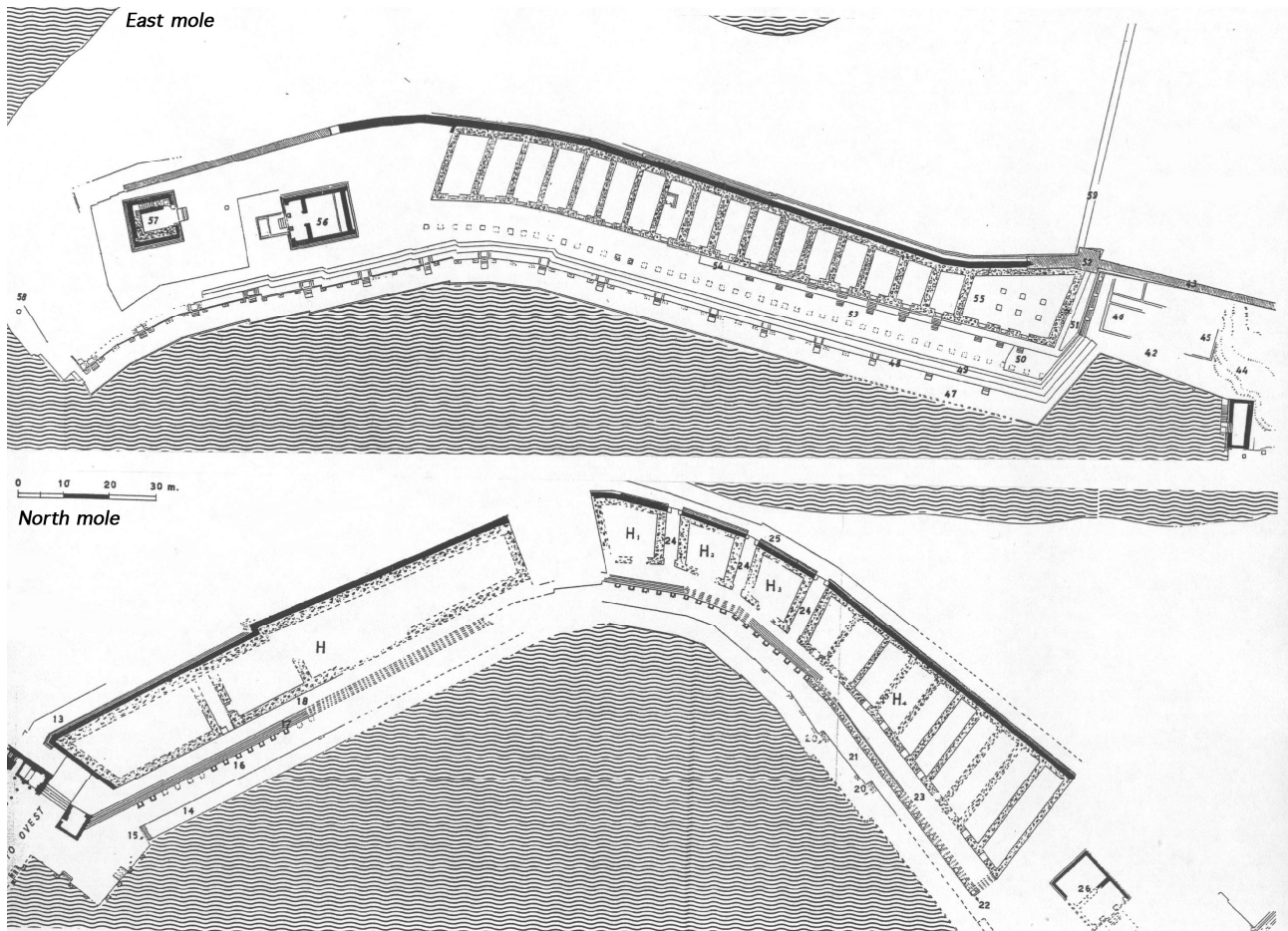


Fig. 11 – East and North moles at Lepcis Magna (BARTOCCINI 1958, pls. XVIII and LVIII).

controversies. In Bordy’s map of Carthage of 1897, these buildings and the space in front of them were confidently labelled ‘quais romains’, but the difficulty of this interpretation was seen as early as 1899 by de Roquefeuil, who noted the presence of the boulder sea wall running along this stretch of coast (which was also recorded on Bordy’s map). He expressed his belief that therefore ‘... ce n’était pas un quai de débarquement’.²⁰

Charles Saumagne in ‘*Le lungomare de Carthage romaine*’²¹ went further. Influenced by a descriptive comment of de Roquefeuil’s about the same sea wall, ‘The cut stones formed a simple barrier filled with rubble (*blocages*) which was still visible and the different ornaments which I saw around (sculpted stones, marble column drums etc.) prove that this quay was constructed more for pleasure than utilitarian purposes’,²² and with a mental image of the Carthage street grid which he had discovered, he argued for a colonnaded seafront promenade at the outer edge of hypothesized insulae. A glance at fig. 12 will, however, show that the cell-like coastal structures as recorded by Yorke and Little in 1973 do not respect the position of *decumanus* I south or, it seems, *cardo* XVIII east; and *decumanus* I north becomes a passage 3 m wide between the coastal cell-like structures instead of a street with a theoretical width of just over 7 m. The projection of a *cardo* XIX east which Saumagne saw as corresponding to the line of the sea wall²³ carries

²⁰ DE ROQUEFEUIL 1899, 36.

²¹ SAUMAGNE 1960.

²² DE ROQUEFEUIL 1899, 36.

²³ SAUMAGNE 1960, fig. 11.

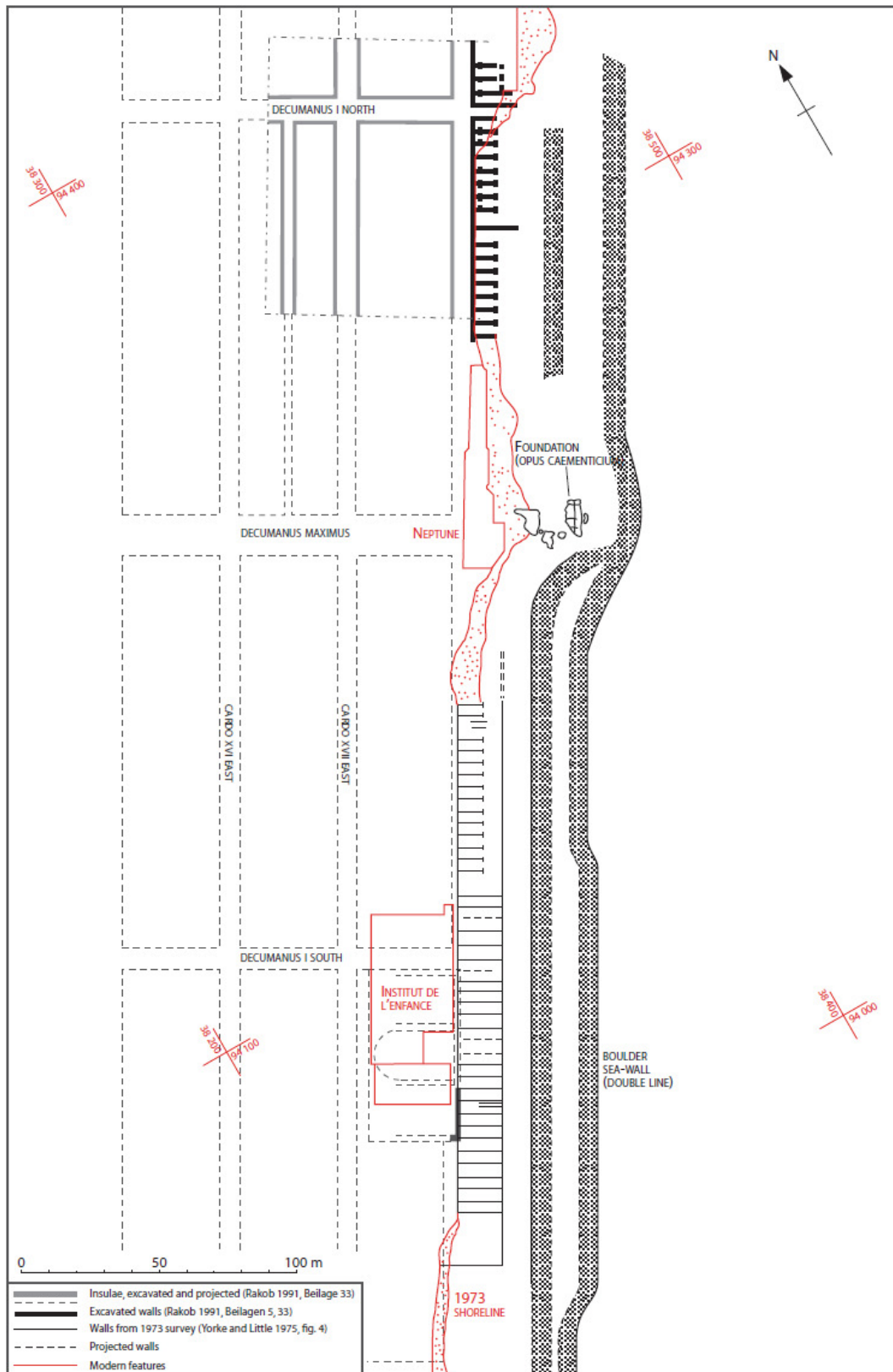


Fig. 12 – The coastal area of Carthage in the vicinity of the *Decumanus Maximus*, with the German excavation area surrounding *Decumanus I North*. Drawn by Lacey Wallace after YORKE and LITTLE 1975, fig. 4 and RAKOB 1991, beilagen 5, 33.

equally little conviction, since the double sea wall from Yorke and Little's survey has a total width of up to 25-30 m.²⁴ Falbe's uniform structures not respecting the divisions between *insulae* can thus be seen as a truer representation of the seafront than Saumagne's '*Lungomare*'.²⁵

Access to the seafront; the chronology of the sea wall

The problem nevertheless remains of access from the sea being obstructed by the sea wall. As noted, the plan following Yorke and Little's resurvey of 1973 (adapted as fig. 12) marks it as a 'boulder sea-wall (double line)', with two lines of large blocks of stone separated by a gap generally c. 6-15 m wide, though towards the S the two lines of blocks more or less converge. It has broadly been regarded as Roman imperial in date and Roman dating was confirmed in detail in the German excavations of the later 1970s and 1980s, since they established a sequence showing the 5th- and 2nd-century BC city walls in relation to the Roman cell-like structures. A 'marine notch' on the outside of the 5th-century wall, some 50 m inside the outer line of blocks of the 'boulder sea-wall', gave a limit for the sea at that date.²⁶

A significant further chronological marker is a **massive monumental foundation** (measuring 18 x 9 m)²⁷ projecting forward opposite the end of the *Decumanus Maximus*: as Yorke and Little suggest, it was probably the relics of a triumphal arch.²⁸ The manner of its concrete construction suggests that it was high imperial Roman in date. The boulder sea-wall lies either side of it, but, as shown clearly in Yorke and Little's plan, the boulders go round the edge of the monument, so they are later than it. 'Later' could mean structurally later while lying within the same general period, but this seems unlikely since **the monumental foundation contains remains of timber formwork, suggesting that it might have been built in the sea.**²⁹ Besides which, if a sea-wall had been envisaged from the time of construction of this monument, the wall would surely have been built first to retain the land. It seems safe to infer, then, that the boulder sea-wall was of a later structural period than the *Decumanus Maximus* monument and thus that when that and the cell-like seafront structures, with which it seems to have been associated, were first constructed, they looked out on open sea.

The question would thus arise of when the sea-wall might have been built. A possible answer is when the city was walled in AD 425 or possibly when the wall was repaired by Belisarius after the Byzantine reconquest of 533.³⁰ Despite the difficulties of the evidence both on land and in the sea, this is made more plausible when the extent of the boulder sea wall is considered against the likely line of the Late Antique defences on land (Appendix below).

The open sea front; the Carthaginian 'choma'

With an open sea front in High Imperial times (fig. 13), we can return to the Lepcis parallel (fig. 11). The Lepcis quayside buildings had colonnaded facades, so the column drums noted by de Roquefeuil could be seen as a possible relic of colonnaded fronts on the Carthage buildings. The East mole magazines at Lepcis had a colonnade walkway about 5 m wide in front of the individual cells. Although there are no secure

²⁴ YORKE and LITTLE 1975, fig. 4.

²⁵ An adjustment should therefore be made to recent views influenced by Saumagne, as RAKOB 1991, beilagen 33, 36 and 40; HURST 1994, 111-113, fig. 10.1; and VERITÉ 1998, especially fig. 5.

²⁶ RAKOB 1991, 166, taf. 44 e and f for the notch; PASKOFF, HURST and RAKOB 1985, for the coastline and sea level.

²⁷ YORKE and DAVIDSON 1985, 163.

²⁸ YORKE and LITTLE 1975, 93, though the analogy with the arch shown on the 'great marine mosaic' of Carthage should not be pushed too hard since that appears to show buildings in a partly rural landscape.

²⁹ YORKE and DAVIDSON 1985, 163, for the timberwork; for parallels, see OLESON 1985.

³⁰ Adomnan of Iona in the 7th century refers to a sea wall at Carthage (PRINGLE 1981, 172) and EL BEKRI in the 11th century (1913, 90) mentions the sea water lapping against the walls of the city.

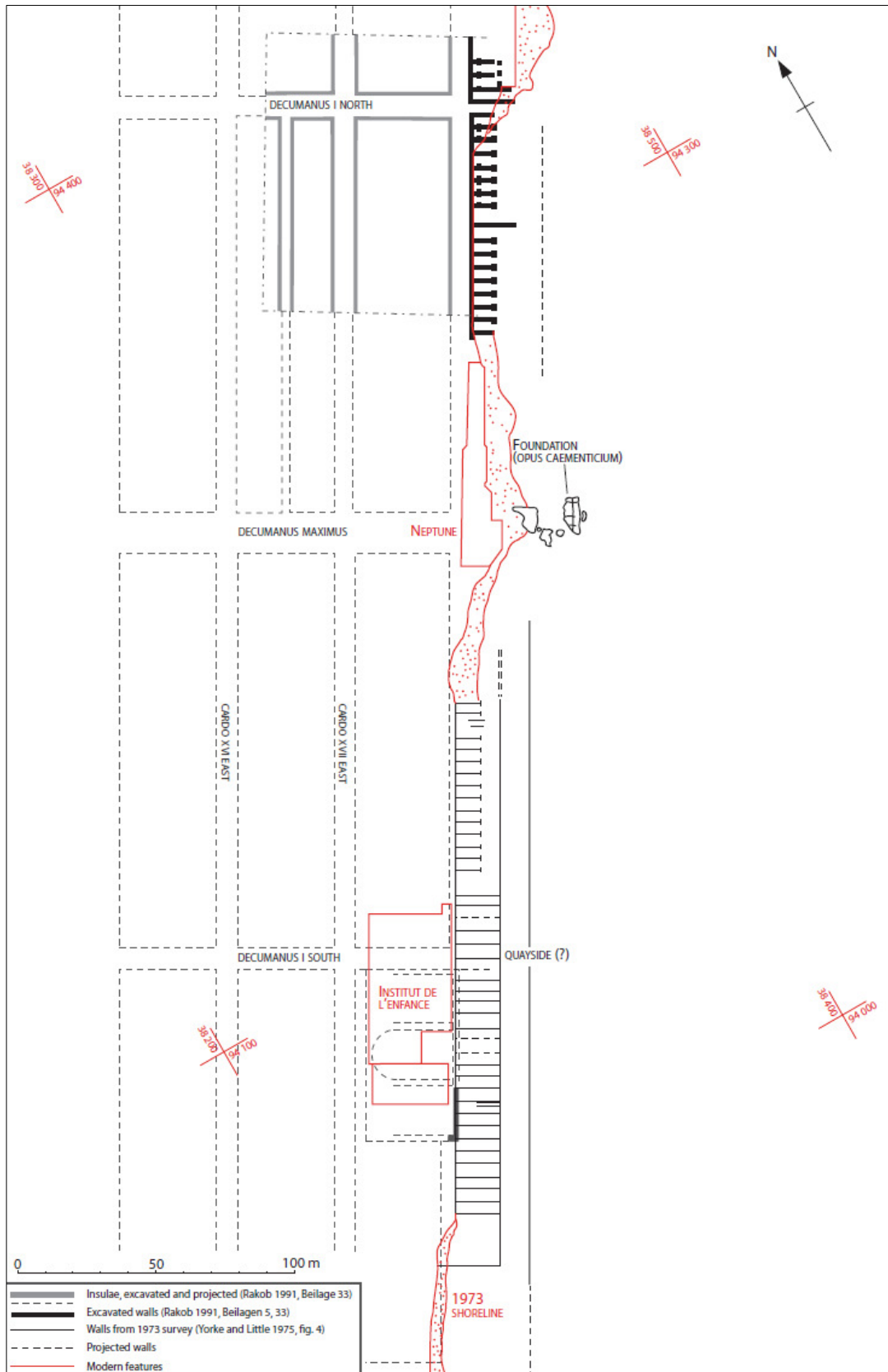


Fig. 13 – The coastal area of Carthage in the vicinity of the *Decumanus Maximus* as it might have been in the High Imperial period.

indications at Carthage, a series of 'short' cells just N of the Institut supérieur des cadres de l'enfance³¹ has a continuous foundation about 6-7 m in front of the cell entrances, lining up with the front of longer cells extending to their S (fig. 12). One possibility, then, might be a colonnade on this line, giving way to room fronts where there were longer cells. The quaysides at Lepcis were also stepped in three different levels, but robbing at Carthage will almost certainly have removed evidence for the quayside surfaces.³² A difference from Lepcis is that the rooms preserved there above floor level were typically 5-6 m wide and 10 m or slightly more deep (internally), whereas many of the cells at Carthage were only c. 3.6 m wide and the short cells were about 7 m deep. The form of the Carthage 'short cells' however seems exactly to match that of the Lepcis rooms, although on a smaller scale.³³

Moving from the buildings to the potential seafront quaysides, there is a further difficulty that the prevailing wind at Carthage comes from the northeast, so that a stretch of coast aligned NE-SW, as this is, does not offer a sheltered haven for shipping.

There appears to be both textual and archaeological information bearing on this. The textual information is Appian's account of the Roman siege in the 3rd Punic war, where the wide quay or *choma* where merchants unloaded their goods is described, in *Libyca* 123-25, as being situated in front of the city wall. The Carthaginians built an outwork to protect it. It was fought over and taken by Scipio's soldiers. He then stationed 4,000 men along it and built his own fortification on it. This *choma*, then, was not a jetty or mole, but evidently something very substantial. Given its scale – 4,000 men stationed there and two sets of fortifications – it is difficult to see it as anything other than the long seafront where the Roman cell-like

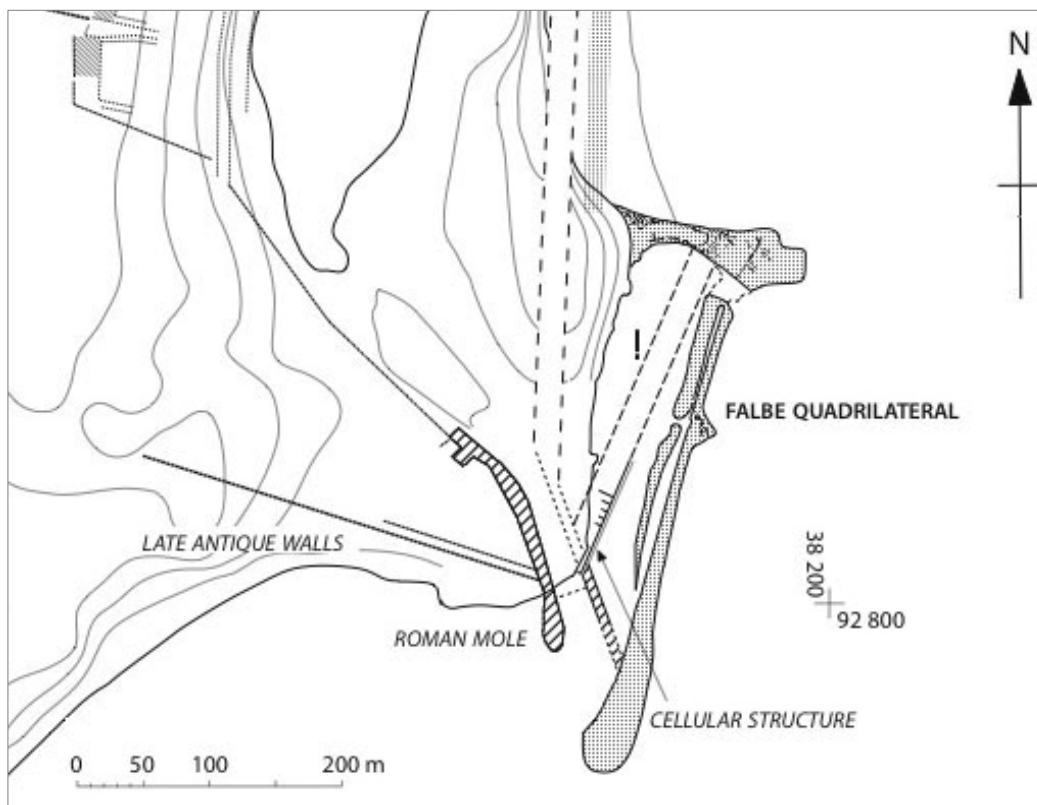


Fig. 14 – The Roman harbour entrance and Quadrilateral of Falbe. Detail from fig. 4.

³¹ Which equates with 'Bey Ismail palace' in LITTLE and YORKE 1975, fig. 4.

³² YORKE and LITTLE (1975, 88, 91, fig. 4) note a 'paved road' 25-40 cms below sea level which may be the robbed remains of a quay (but see also the Appendix, below).

³³ The small size of the Carthage rooms could possibly be explained if these were 'private-sector' merchant premises, with seafront space at the city commanding a premium price. The Lepcis magazines by contrast were built as part of an imperial prestige project (however they subsequently came to be used).

buildings were later built.³⁴ Moreover the rapid expansion of this seafront documented in the German excavations makes the existence of an unloading space in front of the city wall plausible.³⁵ The probability of Carthaginian un-loading on the main seafront then supports the interpretation of Roman quaysides and store buildings over the same stretch.

The Quadrilateral of Falbe (fig. 14)

The exposure of the main seafront prompts the question of whether there was protection for ships unloading there. This has sometimes been seen to have been the function of two 'quadrilaterals' on the sea front of Carthage. The better-known of the two at the southernmost tip of the city's seafront was first defined by the distinguished Danish consul (fig. 1) and it has been studied from soundings by de Roquefeuil (1898), from aerial photographs by Baradez (1958) and Saumagne (1960) and in wetsuits by Yorke and others in the 1970s. Discussion in the past tended to proceed as if all of the parts making up its overall shape were in place together and as such it has proved resistant to interpretation. Yet it is obviously composed of elements of differing date which need to be considered singly.

Its earliest surviving element, and the only one of possible Punic date, is its North Mole of boulders, extending at right angles to the coastline for about 75 m into the sea. This seems to have predated the Roman coastal expansion and, if it extended inland as Falbe's plan suggests, it may have been earlier than both the cell-like buildings shown in Falbe's plan and the further, possibly contemporary, 'cellular structure' to its S in fig. 4. It was clearly earlier than the 'East Mole'.

The 'cellular structure' S of the mole was traced for 90 m by Yorke and Little, running NE-SW, obliquely with respect to all other structures in the Quadrilateral, but on almost exactly the same alignment as the general Carthage sea front N of the harbours. Yorke and Little describe it as being of concrete 'faced with finely coursed masonry blocks and [...] fronted by a broad platform 2.50 m wide ...' of a similar build to the cellular structures near the *Decumanus Maximus*.³⁶ In further study in 1977 Yorke and Davidson noted the use of shuttering in its foundations.³⁷ Yorke and Little's plan of the Quadrilateral (1975, fig. 8) suggests that at its S end this structure interrupted the mole defining the E side of the Roman harbour entrance: it could have been built onto the mole or (less plausibly) perhaps the mole was built around its end.

The latest structure in the Quadrilateral seems likely to have been the 'East mole', a (mostly) double wall of boulders, which ran N-S for about 400 m from a point slightly S of the E end of the N mole. Towards its S end the 'E mole' abutted obliquely the *opus caementicium* mole defining the NE side of the entrance to the Roman harbours and it extended slightly S of it. While the only clear inference from its position would be that it was later than the N mole, as a double boulder wall it was of similar construction to the sea-wall in the *Decumanus Maximus* area, and thus it may also be considered as having a defensive function and Late Antique date, so that it would be later than the 'cellular structure' and Roman harbour entrance.

We can, then, consider the function of the N mole on its own. It could have served as a breakwater, as a number of other similarly-aligned structures along the coast do up to the present time. In the event of rough weather, ships unloading on the open coast to the N could make a run to its lee side. If, as seems

³⁴ In earlier literature, such as BARADEZ 1958; GSELL 1928, II, 70; and some of their predecessors, the choma was identified with the Quadrilateral of Falbe, whether this was seen as quays and an outer harbour (Baradez) or as solid land (Gsell). This is rendered impossible by its chronology, but in any case its notional size (425 x less than 100m) would make it difficult for 4,000 men to be stationed there.

³⁵ See note 9.

³⁶ YORKE and LITTLE 1975, 96.

³⁷ 'Wall C': YORKE and DAVIDSON 1985, 161-162. They also searched for a northwards continuation without success, but their description suggests that it had been broken up by the sea.

possible, it was Punic in origin, its location might also be a marker for the entrance to the man-made harbours.³⁸

The N end of the city seafront

St Augustine's account of his departure from Carthage, with a ship made ready close to the Church of St Cyprian,³⁹ leaves little doubt that there was at least an anchorage at the northern end of the city. However, because of its proximity to the Presidential Palace, study at the northern end of the city's seafront has not been possible over the last half century and, indeed, remains have been obliterated over a significant area by a helicopter pad and yachting berth. Nevertheless, several structures were revealed in the course of De Roquefeuil's soundings and his observations were elaborated interpretatively, especially by Carton (1911). The situation at the foot of Bordj Djedid is, unfortunately, complicated further because exposures of natural rock occur in combination with manmade elements. However, a mole of large blocks of stone,⁴⁰ which extended for 75 m into the sea on an alignment parallel to the Falbe N mole, is not in doubt as a manmade structure, which could have served a similar purpose. This mole lay about 180 m N of the point where the Late Antique city wall reached the coast.

Carton suggested that between the two there was a small port and he describes a series of other structures to its S, terminating in the 'Quadrilateral of de Roquefeuil', about 375 m S of the corner of the defensive wall and opposite the N part of the Antonine Baths (where the presidential helipad is currently located).⁴¹ As regards the Quadrilateral itself, composed principally of two walls of blocks aligned at an acute angle to each other and pointing towards the open sea (fig. 2, structure labelled A-D' at bottom of inset plan), its form seems reminiscent of 16th-century military works, although I am not aware that such a suggestion has previously been made or of any further evidence to bear on it.⁴²

A partly natural coastal haven could have been provided in Punic and perhaps early Roman times to the S of Bordj Djedid in the piece of land occupied by the Antonine baths and the insulae to its S, which still projects rather abruptly E of the general sea frontage. Carton argued that these insulae lie on made ground and, given what we understand of the sedimentation around the manmade harbour entrance, one wonders if this is partly the result of human intervention speeding the sedimentation process: if it were possible, the area deserves further exploration.⁴³

Thus, even if we have only a limited understanding of the N end, there seems to have been protection for ships at both ends of the open seafront of Carthage, potentially both in the Punic and Roman periods. Lancel brought Cicero's description of Carthage, *succincta portibus* ('surrounded by harbours'), into his discussion of the city's Punic harbours⁴⁴ and it is possible to see that, with the seafront as well as the manmade harbours, this is an apt comment for the Roman as well as the Punic city.

³⁸ Appian (*Lybica* 121) tells us that the entrance to the harbours was from the W and close to the shore; this is also the orientation he gives for the sandbar enclosing the Lake of Tunis (*Lybica* 95). That has the same alignment as the main Carthage seafront. The 'correct' alignment is NE-SW and Appian has simplified it, as modern archaeologists do, but what he refers to as E-W, we call N-S. An entrance from the W in Appian's usage could thus mean simply a gap between the shore and the outer side of the harbour, to which the 'N mole' (E mole in Appian's orientation) may have been attached at its landward end. Ships could have stood in the shelter of the mole while waiting to enter the harbours.

³⁹ *Confessions* V, 8, 15, discussed by LANCEL 1995, 190-91.

⁴⁰ DE ROQUEFEUIL's 'mur 12' (1899, 26, map facing p. 18), equating with Carton's 'mur a' (1911, 231-232, fig. 1).

⁴¹ CARTON 1911, 232. He alludes to a tower, harbour etc. just N of the 'Quadrilateral', but it is not easy, and no attempt is here made, to relate these references to de Roquefeuil's more low-key descriptions, other than to use the boulder sea-wall evidence (see Appendix).

⁴² The dimensions of the 'Quadrilateral' were 67 x 35 x 50 x 35 m, with its two principal walls made of large blocks on its SE and NE sides; its state of preservation was noted as good by de Roquefeuil; a photograph by Cintas is reproduced by LANCEL (1995, fig. 103).

⁴³ CARTON 1911, 235-38, fig. 1. He also argued that this was the original Punic merchant harbour, with its inner shoreline marked by finds of shell-encrusted Punic stelae. Even if we would no longer accept either his assumptions about the documented Punic harbours or the reasoning about the stelae, which have been widely found reused as Roman building material, the idea of an early haven is not excluded.

⁴⁴ *De lege agraria* II, 32, 87. LANCEL 1995, 190.

'Annonary' and commercial port facilities

Having thus restored to Roman Carthage a 1.6-km long 'ribbon' of warehousing space on the sea front, we can reconsider how far the different types of port function, as between state-controlled and commercial shipment of goods might have been expressed in physically distinct structures. My previous suggestion that the Circular Harbour, once the arsenal of the Punic navy, might have remained government or imperial property⁴⁵ seems to be countered by the seafront evidence, since the long stretches of cellular buildings, which from their size and number might most easily be understood as merchants' premises, are undifferentiated typologically. Perhaps there were big horrea elsewhere, but if so they did not enjoy a prime waterfront location, nor do such buildings seem to have existed in proximity to the manmade harbours. The absence of major storebuildings seems instead to indicate that bulk storage of *annona* products for any length of time at Carthage was not envisaged and that storage needs in this direction could be met by the cellular buildings, and so absorbed within the port's commercial facilities.

A question remains of how far access to the two manmade harbours might have been restricted. Given the likely scale of shipping and the modest protection which would have been provided by the seafront moles in stormy conditions, it is difficult to imagine that the inland harbours were not available to all classes of shipping. The presence of the large sanctuary complex on the W side of the Rectangular Harbour in Roman as in Punic times suggests a facility serving a port population. The functioning of the Ilot de l'Amirauté in the Circular Harbour likewise seems to make best sense if, as has been suggested, it was a 'maritime agora' – a marketplace within the port, rather than purely a monumental centrepiece for the *annona*: again the 'annonary function' would be subsumed within, and not physically distinct from, the routine running of the port.

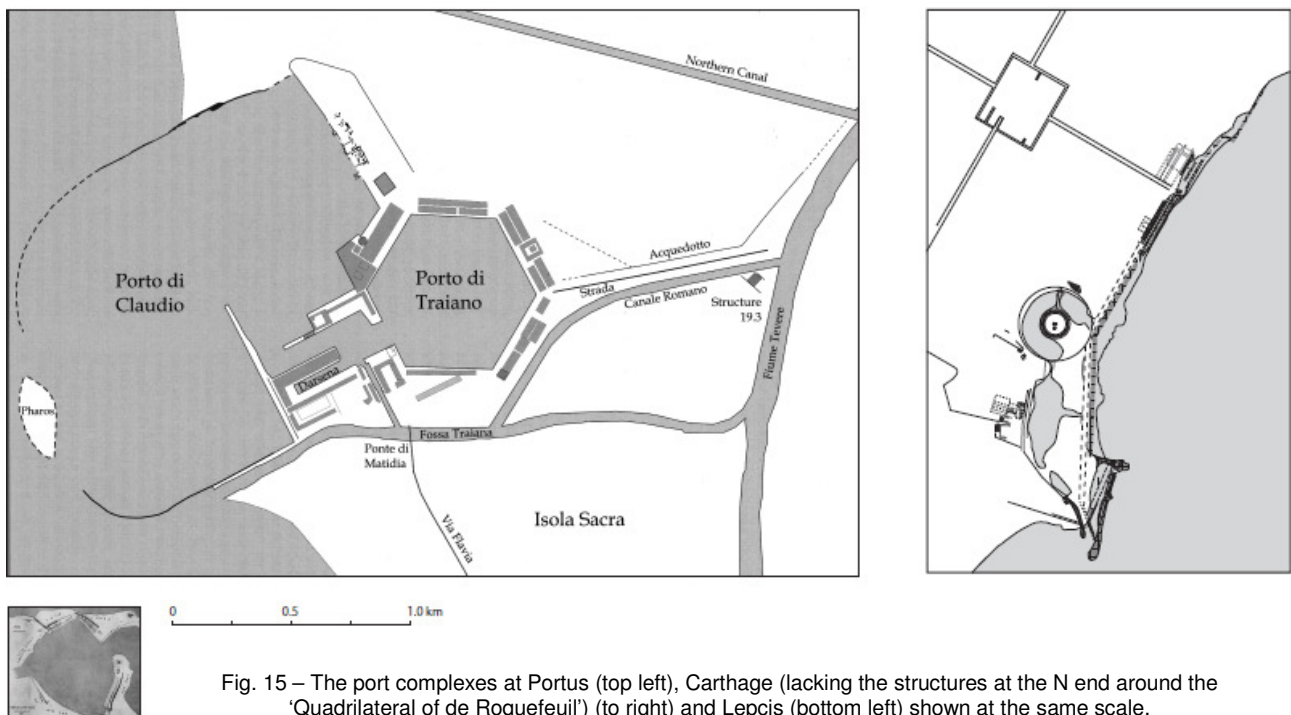


Fig. 15 – The port complexes at Portus (top left), Carthage (lacking the structures at the N end around the 'Quadrilateral of de Roquefeuil') (to right) and Lepcis (bottom left) shown at the same scale.

⁴⁵ HURST 1994, 69-70, 98.

Comparison and conclusion

Carthage's relative scale as a Roman port can be indicated from a rapid comparison with Lepcis and Portus. Its two manmade harbours were slightly larger than the Severan harbour of Lepcis (c. 13/14 as opposed to c. 11 ha), added to which its sea-front buildings extended for more than twice the length of the quaysides surrounding the harbour at Lepcis. Both these sites pale into insignificance by comparison with the colossal complex at Portus (fig. 15).

The present study has restored to Carthage a very substantial seafront facility and, implicitly, a large merchant population. We can see its port more three-dimensionally, as having facilities for rapid unloading as well as inner harbours and in catering for the religious and perhaps marketplace needs of its seafaring population. We can also certainly see an imprint of the *annona*. The precise strength of this is debatable, but on the balance of evidence to hand, it does not look particularly strong; in its physical remains Roman Carthage looks like a merchant port.

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Appendix: first thoughts on the boulder sea walls and Carthage's Late Antique defences

Remains identified with the city wall recorded by the Gallic Chronicle as being constructed in AD 425 have been excavated on a number of sites - at the Avenue Habib Bourguiba, for example, it looked like a conventional late Roman fortification 3-3.5 m wide, having an *opus caementicium* core faced with cut blocks of stone - and its line has been established with reasonable certainty throughout most of its landward length.⁴⁶

A simple topographical argument can be made for linking the boulder sea walls to this, namely that they are present for exactly that part of the sea front which would fit the land circuit. Thus at the southern end, the double-boulder 'East mole' of the Quadrilateral of Falbe stops at the entrance to the manmade harbours, overlapping the Roman mole defining the N side of the entrance, while the land-based wall has been traced along the S side of the S entrance mole. At the northern end, the sea wall of 'Cyclopean blocks' was described by Carton as constituting a revetment to the mass of 'blocage' which he (probably rightly) identifies as the N corner of the walled circuit.⁴⁷ Between these northern and southern points the sea wall, generally of a double line of blocks (though sometimes they merge into a single mass), is present more or less continuously: in front of the Antonine Baths as a single mass, further S mostly as a double line, with some interruptions on the E side of the manmade harbours (explainable as resulting from recent disturbances), and as a mostly double wall 'East mole' of the Quadrilateral of Falbe. Beyond these N and S limits the sea wall (or walls) is not present. So the case for **linking it to the land defences** seems powerful.

If we try to interpret it in greater detail, there are difficulties which deserve more attention than can be given here. Carton plausibly saw the outer line of blocks as being to protect masonry structures on their inside. Thus the inner wall when present might mark the line of the actual city wall (his interpretation was complicated - but only slightly - by the fact that he was thinking about the Punic instead of the Late Roman wall). A complication comes from the S part of the Harbour area.⁴⁸ A structure similar to the 5th-century AD city wall was detected running along the S edge of the mole defining the SW side of the Roman harbour entrance. However, at up to 80 m further S, a double-wall structure of presumed 6th-century date was built into sands which had accumulated after the construction of the Roman mole, as the former sea in this area became dry land (figs. 4, 14). Two foundations, 1.6 (to the N) and 2 m wide and 5.5 m apart, were

⁴⁶ HURST and ROSKAMS 1984, 34-37, figs. 10, 11, amended by EVANS 1999 on the W side..

⁴⁷ CARTON 1911, 232.

⁴⁸ 1992-3 excavation: HURST 1993.

traced for over 70 m, and they could be identified with two walls on Beulé's plan⁴⁹ extending for 126 m (the more northerly) and for 322 m (the more southerly). At the time it was suggested that the two walls might have belonged to a colonnade, but a defensive role seems more plausible: could these walls, interpreted as the front and rear facings of an earthwork defence, have enclosed a stretch of land recently reclaimed on the outside of the city wall? This is not the place to assess that interpretation, but it raises the possibility that when the city wall was repaired (as documented for Belisarius in 533), it may not all have been rebuilt on the same line as previously.

So could the double boulder sea walls reflect such a later repair, with a 5th-century wall line inside them? As fig. 4 shows, the double walls found on land would have run to the harbour entrance opposite the S limit of the double part of the Quadrilateral of Falbe 'East mole'. A different reason for raising this possibility arises from considering the needs of Carthage's merchant community. The 'boulder sea wall' would have prevented ships from coming close enough to unload goods on the seafront, so would have been commercially destructive. That is an argument for it being as late as possible: 533 would then be better than 425. Could there have been a different seafront wall in AD 425 which was less destructive to commerce? Possibly yes, if such a wall were built on the inner part of the quayside right up against the buildings fronting onto it. The outer part of the quayside could then have been like the *choma* at the time of the 3rd Punic war: outside the wall, but usable for loading and unloading from ships. The careful re-examination of the remains on site with these thoughts in mind might clarify these questions.⁵⁰

Bibliography

- AUDOLLENT A., 1901. *Carthage Romaine*. Paris.
- BARADEZ J., 1958. Nouvelles recherches sur les ports antiques de Carthage. *Karthago*, 9, 45-78.
- BARTOCCINI R., 1958. *Il Porto Romano di Leptis Magna*. Rome.
- BEULÉ C.E., 1861. *Fouilles à Carthage*. Paris.
- CARTON L., 1911. Le port marchand et le mur de mer de la Carthage punique. *Revue archéologique*, 18, 229-255.
- CINTAS P., 1973. *Le Port de Carthage* (extrait du *Manuel d'Archéologie Punique*). Paris.
- DE ROQUEFEUIL H., 1898a. Recherches sur les ports de Carthage. *CRAI*, 26, 20-39.
- DE ROQUEFEUIL H., 1898b. Recherches sur les ports de Carthage, 2^{ème} partie. *CRAI*, 26, 653-666.
- DE ROQUEFEUIL H., 1899. Recherches sur les ports de Carthage, 3^{ème} partie. *CRAI*, 27, 19-38.
- EL BEKRI A., 1913. *Description de l'Afrique septentrionale* (traduite par Mac Guckin de Slane). Algiers.
- EVANS G.J., 1999. New evidence for the line of the Roman city wall. *CEDAC Carthage Bulletin*, 19, 27-32.
- FALBE C.T., 1833. *Recherches sur l'emplacement de Carthage*. Paris.
- GSELL S., 1928. *Histoire ancienne de l'Afrique du Nord, Vol. II. L'état carthaginois*. Paris.
- HOPKINS K., 1983. Models, ships and staples. In P. GARNSEY and C.R. WHITTAKER (eds.), *Trade and Famine in Classical Antiquity*. Cambridge, 84-109.
- HURST H., 1993. Excavations in the Southern Part of the Carthage Harbours, 1992-3. *CEDAC Carthage Bulletin*, 13, 11-21.
- HURST H.R., 1994. *Excavations at Carthage: The British Mission, Vol. II.1. The Circular Harbour, North Side: the site and finds other than pottery*. Oxford.
- HURST H.R., 1999. *The Sanctuary of Tanit at Carthage in the Roman period: a re-interpretation* (JRA Suppl. Ser. 30). Portsmouth, RI.
- HURST H.R. and ROSKAMS S.P., 1984. *Excavations at Carthage: The British Mission, Vol. I,1. The Avenue Habib Bourguiba Salammbô: the site and finds other than pottery*. Sheffield.
- HURST H. and STAGER L.E., 1978. A metropolitan landscape: the Late Punic port of Carthage. *World Archaeology*, 9, 334-346.

⁴⁹ BEULÉ 1861, pl. IV.

⁵⁰ YORKE and LITTLE 1975 saw a 'paved road' on the immediate outside of the cellular buildings in the area of the Institut de l'enfance and there was also a 'platform' 2.5 m wide on the outside of the cellular structure in the Quadrilateral of Falbe.

- KEAY S., MILLETT M. PAROLI L. and STRUTT K., 2005. *Portus : an archaeological survey of the port of imperial Rome* (Archaeological Monographs of the British School at Rome, 15). London and Rome.
- LANCEL S. 1995. *Carthage. A History* (translated by A. Nevill). Oxford.
- OLESON J.P. 1985. Herod and Vitruvius: preliminary thoughts on harbour engineering at Sebastos, the harbour of Caesarea. In A. RABAN (ed.), *Harbour Archaeology. Proceedings of the first international workshop of ancient Mediterranean harbours* (BAR Int. Ser. 257). Oxford, 165-172.
- PASKOFF R., HURST H. and RAKOB F., 1985. Géologie Marine - Position du niveau de la mer et déplacement de la ligne de rivage à Carthage (Tunisie) dans L'Antiquité. *Comptes rendus de l'académie des science*, t. 300, s. II, no. 13, 613-618.
- PENA J.T., 1998. The mobilization of state olive oil in Roman Africa: the evidence of late 4th c. ostraca from Carthage. In J.T. PENA, J.J. ROSSITER, A.I. WILSON and C. WELLS (eds.), *Carthage Papers. The early colony's economy, water supply, a public bath, and the mobilization of state olive oil* (JRA, Suppl. Ser. 28). Portsmouth, RI, 117-238.
- PRINGLE D., 1981. *The Defence of Byzantine Africa from Justinian to the Arab Conquest* (BAR, Int. Ser. 99). Oxford.
- RAKOB F., 1991. *Karthago, Band I. Die Deutschen Ausgrabungen in Karthago*. Mainz.
- RAKOB F., 1996. Une découverte à Carthage. *CEDAC Carthage Bulletin*, 15, 53.
- RICKMAN G.E., 1985. Towards a study of Roman ports. In A. RABAN (ed.), *Harbour Archaeology. Proceedings of the first international workshop of ancient Mediterranean harbours* (BAR, Int. Ser. 257). Oxford, 105-114.
- SAUMAGNE C., 1960. Le "lungomare" de la Carthage romaine. *Karthago*, 10, 157-170.
- VERITE J., 1998. Recherches sur la façade maritime des thermes d'Antonin de Carthage. *CEDAC Carthage Bulletin*, 18, 36-48.
- YORKE R.A. and LITTLE J.H., 1975. Offshore survey at Carthage, Tunisia, 1973. *International Journal of Nautical Archaeology*, 4, 85-101.
- YORKE R.A. and Davidson D.P., 1985. Survey of building techniques at the Roman harbours of Carthage and some other North African ports. In A. RABAN (ed.), *Harbour Archaeology. Proceedings of the first international workshop of ancient Mediterranean harbours* (BAR Int. ser. 257). Oxford, 157-164.