

# Carthage Bir Massouda

## *Second preliminary report on the bilateral excavations of Ghent University and the Institut National du Patrimoine (2003-2004)*

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### Abstract

*New investigations on the Bir Massouda site have refined our knowledge of Punic Carthage. In particular the southern casemate city wall has been dated more precisely to around the middle of the 7<sup>th</sup> century BC. Human remains in secondary position seem to confirm the existence of Carthage's earliest necropolis on the site. Special attention goes to the Middle and Late Punic periods: a septic pit and its homogeneous fill are presented and discussed in the perspective of Carthage's garbage collection system. A strongbox or cultic depository with two vessels and red ochre offering is discussed. A terracotta tile floor is presented as a rare example of the pavimenta punica. Finally, some prospects are given on the site conservation's measures and the publication trajectory.\**

### 1 INTRODUCTION

*F. Chelbi, R.F. Docter & B. Maraoui Telmini*

The Bir Massouda site has become a key site in Carthaginian archaeology (*fig. 1*).<sup>1</sup> In this second preliminary report we place a strong accent on the Middle and Late Punic periods, since especially the campaigns of the years 2003 and 2004 yielded many homogeneous contexts of these periods. As such, the report is complementary to the first preliminary report for *BABesch* that mainly outlined the development of the site in the Archaic period, the 8<sup>th</sup>, 7<sup>th</sup> and 6<sup>th</sup> centuries BC.<sup>2</sup> These two preliminary reports on the Punic archaeology of the Bir Massouda site will be complemented in the present volume of *BABesch* by the report on the Roman, Vandal and Byzantine structures in the northern sector excavated by the team of Cambridge University (see pp. 199-226, and here *fig. 1*).

The excavation of summer 2003 (12 July-9 August) saw the involvement of a large team of 22 persons.<sup>3</sup> Besides that, a team of 21 Tunisian and international exchange students of AFS (A Friend Somewhere/American Field Service) helped in the field and the finds' laboratory. In the main excavation campaign of 2004 (1-30 September) the team was with 30 persons even larger than in 2003.<sup>4</sup> The excavation that year was con-

cluded in a very short campaign between 6 and 12 November.<sup>5</sup> The 2004 campaign also saw the participation of a small team of topographers, directed by A. De Wulf of Ghent University (*infra*).

In 2003 we excavated in five trenches at the same time, Trenches 2, 3, 4, 5, and 8 (*fig. 1*).<sup>6</sup> In advance of that campaign, the Tunisian team of the Conservation du Site de Carthage, under the aegis of the Institut National du Patrimoine and directed in the field by F. Chelbi, excavated the upper stratigraphy in three Trenches (3, 4, and 5) till the Late Punic level of 146 BC.<sup>7</sup> The (sub-) recent, Medieval, Byzantine, Vandal, Late Roman, Roman Imperial and Augustan layers in these trenches have been excavated by this team. These layers will be published separately from the bilateral Tuniso-Belgian excavations. In 2004, the fieldwork was limited to four Trenches (1/7, 2, 4, and 6), while only limited excavation took place in Trench 3.

### 2 TOPOGRAPHY

*A. De Wulf*

When the excavations on the Bir Massouda terrain were taken up again in 2000, the teams of Cambridge University and the University of Amsterdam decided to set out a joint master grid over the terrain (*fig. 1*). This would enable coordinated

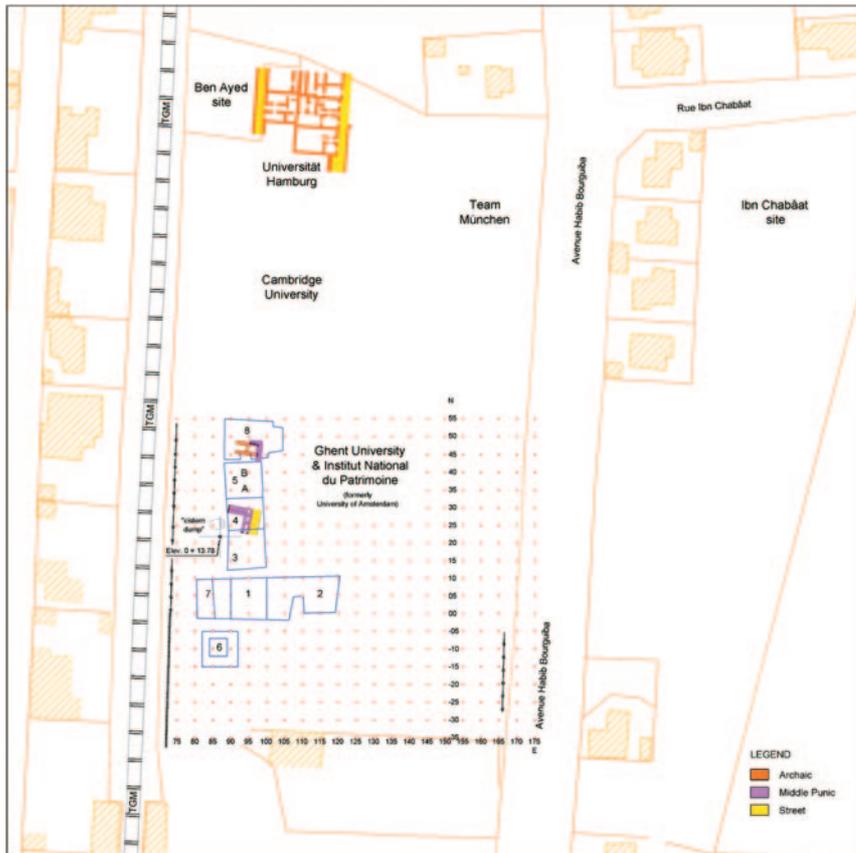


Fig. 1. Bir Massouda site (AutoCAD version prepared by D. Van Damme, 2005). Plan based on versions of the University of Amsterdam (A. Mezzolani, 2001) and UGent/INP (Société ATHAR, 2003). Reconstruction of the exact position of the house architecture of 'layer IVa' in the excavations of the University of Hamburg is inserted (based on Docter et al. forthcoming a).

analyses in the future. The elevations used in the grid system were related to the level of the Hamburg University site in the north of the terrain. The Hamburg point zero (15.84 m above sea level) had been put in place in 1986 by the topographers working for the DAI (Rome) and had in its turn been related to an elevation of the Tunisian Topographical Service near the Magon Quarter in use since 1974.<sup>8</sup> By the year 2000, however, the original point zero of the Hamburg plot, unused since 1995, had become invisible by heavy overgrowth. Moreover, it was suspected that the pressure of tree roots had moved its position. Therefore, the topographers of the Cambridge team and R.F. Docter reconstructed the elevation by re-calculating the known elevation of the stone wellhead of 'phase I', strongly embedded in the virgin soil. This elevation above sea level has been used since as the base of all measuring in the field, facilitating temporary points zero in different places on the site.<sup>9</sup>

While studying the elevations of several features encountered in the excavations of the University of Amsterdam on the site, Docter noticed that a Medieval mosaic floor (BM00/3006+3007), found

just below the present-day surface, theoretically should have been situated well above the ground level in 1958, at the time Carthage had been mapped thoroughly.<sup>10</sup> Since this may be excluded, it was decided to take the first opportunity to re-measure the relative elevation of the Bir Massouda terrain, starting directly from the Tunisian geodetic point on the Byrsa hill.<sup>11</sup> In 2004, starting from that level, the new point zero of the Bir Massouda site could be recalculated to be at 13.781 m above sea level (fig. 3, marked 'Elev. 0 = 13.78').<sup>12</sup> The levels used on the Bir Massouda site from 2000 till 2003, and in the Hamburg excavations from 1986 till 1995 proved to be 28 cm too high.<sup>13</sup>

Next to this altimetric survey, a planimetric survey was carried out with two objectives in mind. In the first place, the existing local master grid, which had partly disappeared, should be reconstructed, starting from two retraced points of this grid system. A general overview ground-map was established using Autocad 2002 software (fig. 1). In it, the location of the trenches and Roman and Punic structures were accurately measured using the totalstation. The planimetric accuracy can be estimated to 2 cm in the real

world coordinate system. In the second place, three other sites in the Carthaginian settlement were to be linked in planimetry and altimetry with the Bir Massouda site: the terrain excavated by the University of Hamburg, the Ibn Chabâat site of the DAI (both *fig. 1*), and the Magon Quarter near the sea. The total distances were divided in 2, 6 and 15 segments respectively, which yielded a maximum line-of-sight distance of approximately 50 m and a planimetric and altimetric accuracy between 3 and 8 cm. This permits the accurate insertion of older excavation maps of these sites into a new groundmap of (Punic) Carthage.

### 3 RESULTS: ARCHAIC PERIOD

*F. Chelbi, R.F. Docter & B. Maraoui Telmini*

The Bir Massouda site has decisively changed our knowledge of the urban structure of Punic Carthage, especially with regard to the earliest phase of the Ancient metropolis, the Archaic period. But what exactly is the earliest phase? Ancient tradition, through Timaios of Taormina (ca 350-260 BC), seems clear in establishing a foundation date: 814/813 BC. It has often been stressed that Carthage holds a special position among the Phoenician settlements in the West.<sup>14</sup> Foundation dates may be calculated for more (and apparently earlier) settlements, like for example Utica and Gadir/Cádiz, but in the case of Carthage this foundation date is closely connected with a foundation myth, a story that may contain some historical elements. This story of princess Elisa of Tyre (the Vergilian queen Dido), who founded the city on the Byrsa Hill after having bought a 'small' piece of land from the Libyans, is too well known to need full rephrasing. An ox hide, cut into stripes, delimited the confines of the future city. The traditional foundation date has never been corroborated by archaeological finds, though, neither in the necropoleis, nor in the tophet (sanctuary annex children's burial place), nor in the settlement. The conventional dates of the Greek Late Geometric pottery imported into Carthage suggest Phoenician presence on the site not earlier than ca 760 BC.<sup>15</sup> This leaves a gap of more than 50 years between the traditional and the conventional archaeological dates. Five years ago, the team of the University of Hamburg excavations in Carthage was approached by A.J. Nijboer of Groningen University with the request of collaboration in a radiocarbon-project. One year later, the first calibrated C<sup>14</sup> dates of cattle bones - so of bred animals with a relatively short life span - that had been found in the earliest layers of the Carthaginian settlement

below the *Decumanus Maximus* (cf. *fig. 1*), yielded rather homogeneously calibrated (absolute) dates of just before 800 BC.<sup>16</sup> These highly suggestive dates posed some difficulties, since two of the five samples came from archaeologically problematic contexts. For that reason, the new bilateral excavation project of the INP and Ghent University has contributed two more series of bone samples for radiocarbon dating. The first series has in the meantime been analysed and seems to confirm the early dates of the Hamburg excavation. The second series, stemming from a deep pit to the southwest of the bastion of Trench 4 (*infra*), is even more promising, since here direct links could be made between the bone material and Greek Geometric pottery fragments within the same contexts.

#### 3.1 Defensive system

*F. Chelbi, R.F. Docter & B. Maraoui Telmini*

In the first preliminary report for *BABesch*, the find of a double wall with transversal reinforcements in Trench 8 has been presented.<sup>17</sup> This is in all likelihood the southern (casemate-) city wall of Carthage in the Archaic period, measuring at least 3.36 m in width. It is clear that this type of city wall is inspired by building techniques from the Levant.<sup>18</sup>

In the spring campaign of 2002 it had been observed on the northern face of BM02/8271 (so on the city side) that this double wall had been founded on the virgin soil, and so probably dated to the 8<sup>th</sup> century BC (*fig. 2*; cf. *fig. 4*). New excavations within the compartments of this city wall in the summer campaign of 2003 have shed more light on its construction date. It could be shown that the city wall was not the first construction on the site. Two or three walls of a building, dated to the second half of the 8<sup>th</sup> and probably the first half of the 7<sup>th</sup> century BC had also been founded directly on top of the virgin soil, but were clearly overbuilt by the city wall (*infra*). Four different phases could be distinguished in the architectural remains and floor levels preceding the construction of the city wall. It became clear that in this period, this particular spot must still have been part of a 'normal' domestic area, although probably lying at the fringes of the inhabited city. It is now clear, too, that the city wall was built at the same time in which the area to the south (partly used as necropolis) was reshaped into a large industrial zone (see also *infra*). This zone had been mainly used for the large scale working of iron, as in situ finds from Trenches 1, 7, 3, 5 and 8 show (cf. *fig. 1*). These



Fig. 2. Casemate city wall foundation in Trench 8, small portion of northern face (BM02/8271), founded on the dark brown virgin soil, visible in the foreground, with two torba floors cut by the city wall (photo UGent/INP).

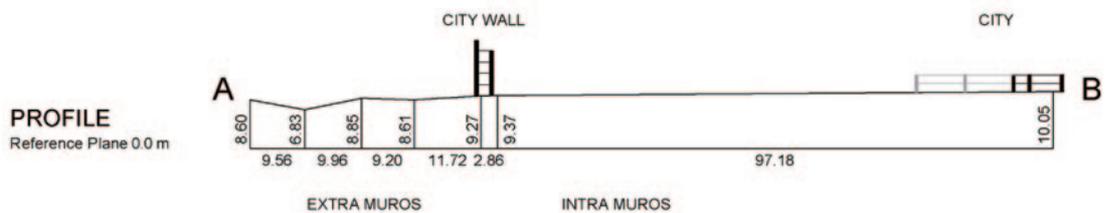
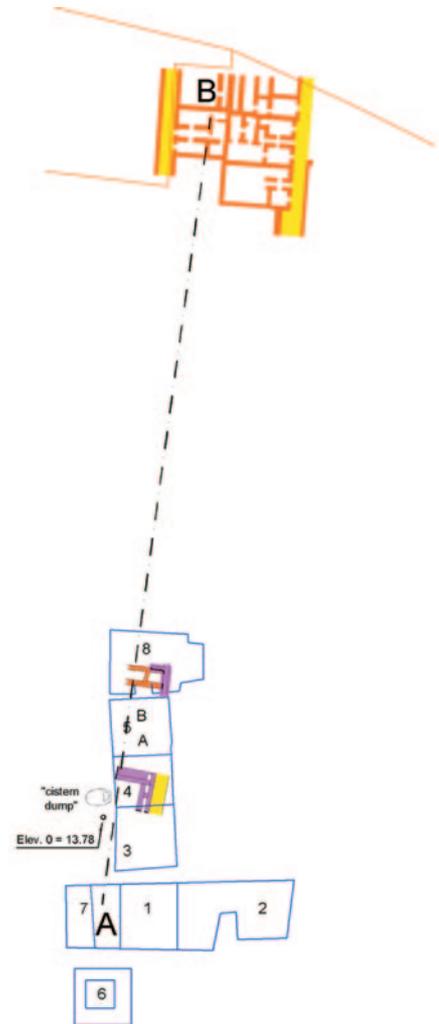


Fig. 3. Bir Massouda site (AutoCAD version prepared by D. Van Damme, 2005). North-south section through the site based on the elevations above sea level of the bedrock and virgin soil. On top of it, the residential area in the north and the city wall of Trench 8 have been reconstructed (about the middle of the 7<sup>th</sup> century BC).

metallurgical installations had also been found inside the compartments of the casemate city wall of Trench 8, but up to now were considered to be secondary usages of the defensive structures. Now that the casemate structure proves to be clearly contemporary with the iron working, we even had to (re-)consider the possibility whether these

new constructions could not just be plain housings for these metallurgical installations, without necessarily being a city wall structure at the same time. However, here are at least three good arguments that favour the casemate city wall interpretation. In the first place, the typological parallels in the East and the West as well as in Carthage for

strong double walls with intermediate reinforcements would argue for a city wall. In the second place, the fact that the two strong parallel walls, which are stronger than the ones regularly encountered in housing areas (as in the Hamburg excavation area, cf. *fig. 1*), are founded till the virgin soil is significant. They must have been intended to bear a considerable superstructure. Only the transversal wall (*fig. 4*), which is built at the same time and binds in with the two other walls, is founded just below the contemporary ground level. In the third place, also the fact that the two parallel walls cut through the stratigraphy below, without respecting earlier house and wall boundaries is very unlike the customary way of Carthaginian city development, as attested in the Hamburg excavation area. We are clearly dealing with a major restructuring operation, probably issued by a central authority.

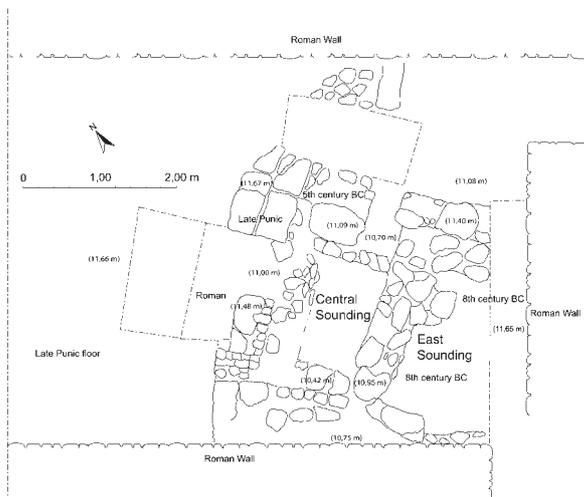
The construction date of the Archaic city wall is tentatively equated with the building phase of 'layer IIIa' (post ca 675 BC) or 'layer IVa' (post ca 645 BC) in the Hamburg excavation (see *fig. 1*). The sequence of constructions with their respective torba floors of crushed limestone preceding the city wall finds a good parallel in the excavations of F. Rakob in the Ibn Chabâat site (cf. *fig. 1*). Here, a (semi-)circular mud-brick construction with surrounding torba floor had been overbuilt by the Archaic city wall too.<sup>19</sup>

The different levels of the virgin soil or bedrock encountered in the series of trenches on the site, show that the highest point of the Bir Massouda site would have been situated exactly on this point, in Trench 8, at the moment the first colonists settled here (*fig. 3*; cf. *fig. 2* foreground).<sup>20</sup> Especially the new excavations in Trench 3 show that here the level dropped considerably, forming a sort of gully between Trenches 1/7 and 8. It is hardly surprising, then, that the Carthaginians choose exactly this point of the eastern Byrsa Hill as the strategically most favourable place to build their southern city wall. The buildings that existed on this spot before had to be demolished in the course of the construction of the city wall viz. were partly left incorporated in the foundations of the new casemate wall.

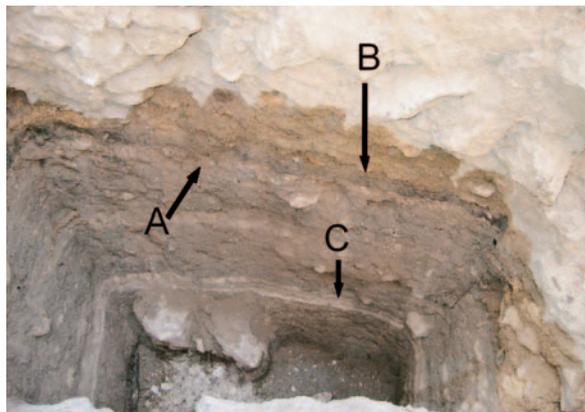
#### Excavation and architecture

*E. Deweirtd, L. Verdonck & B. Maraoui Telmini*

In the excavation campaign of 2003, the interior of the southern casemate-city wall (BM02/8230+8271), running east-west, could be investigated till the virgin soil (*fig. 4*).<sup>21</sup> Excavation proceeded in



*Fig. 4. Trench 8: plan of western sector in 2003; central and east soundings within casemate city wall (drawing E. Deweirtd & L. Verdonck).*



*Fig. 5. Trench 8, east sounding: west section and part of north and south sections showing stratigraphy within casemate city wall. A) torba floor, covered by B) a dark levelling layer BM03/8305, C) sequence of three torba floors (cf. *fig. 9A*) (photo UGent/INP).*

two sectors, on either side of the transversal wall BM00/8032+BM02/8209, termed 'east sounding' and 'central sounding' respectively. The following rather detailed description is presented in this preliminary report not only to document the different phases of the structure(s) preceding the city wall, but also as an illuminating example of the difficulties encountered when excavating in a multiperiod site like Carthage. At some 4.0 to 5.5 m below the present surface, the spaces left for excavating are extremely limited, cramped between walls of different epochs.



Fig. 6. Trench 8, east sounding: east section showing stratigraphy within casemate city wall. Fill (arrow) in robber trench on Archaic east-west wall (photo UGent/INP).

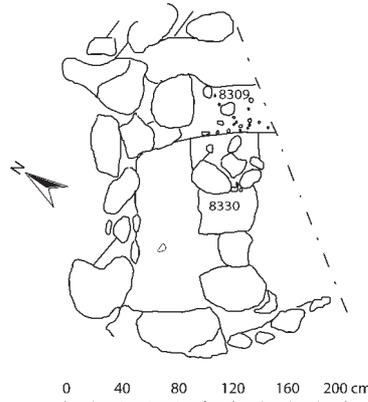


Fig. 7. Trench 8, east sounding: plan of architecture below casemate city wall. Two intersecting walls BM03/8309 and BM03/8330 (drawing E. Deweirdt & L. Verdonck).



Fig. 8. Trench 8, east sounding: two intersecting walls BM03/8309 and BM03/8330 below casemate city wall (photo UGent/INP).

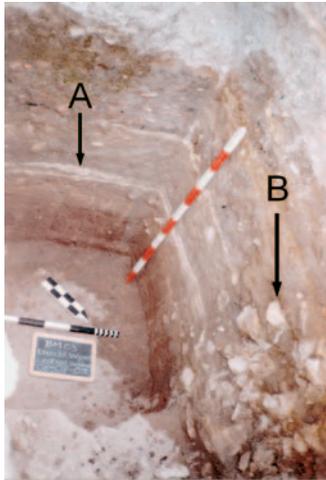


Fig. 9. Trench 8, central sounding, south and west sections. A) sequence of three torba floors (cf. fig. 5C), B) wall structure of east-west wall (photo UGent/INP).

Fig. 10. Trench 8, central sounding: plan of east-west wall or treshold or pavement BM03/8336 (drawing E. Deweirdt & L. Verdonck).

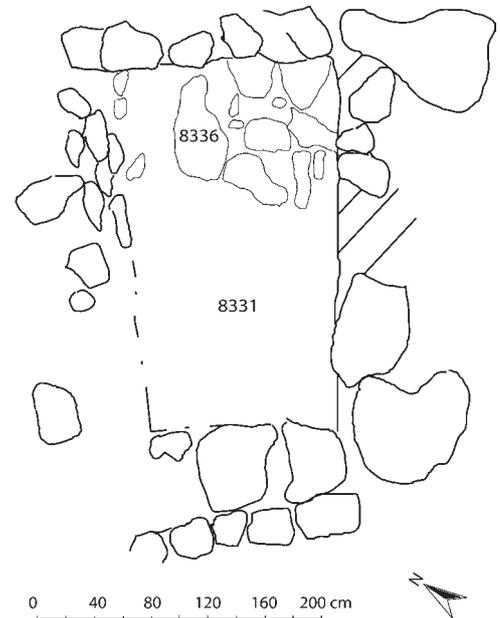


Fig. 11. Remains of 8th century BC cremation necropolis: pozzi cut into the bedrock of Trench 7, viewed from the north (photo UGent/INP).

The east sounding yielded the remains of a white torba floor at a level of 10.07 m above sea level, which is clearly visible in the section (BM03/8305; fig. 5 A), lying on top of a light grey preparation layer, and covered by a dark levelling layer (BM03/8305a; fig. 5 B). At a level of about 10.02 m above sea level in the northern part of the east sounding, a structure appeared, consisting of few large stones set in light grey mortar with calcareous inclusions (BM03/8309; fig. 7). This structure may be connected with a greyish fill of an almost vertical robber trench in the east section, which

has exactly the same width and cuts through several later layers from a level of at least 11.22 m (indicated with an arrow in *fig. 6*). This shows that the east-west wall BM03/8309 must have existed for quite some time. It is very likely that the walls had just been topped off at the time the casemate wall was built in its place. Over the topped off structures and levelled terrain, a thick sterile compact yellowish clayish layer (BM02/8227 and BM02/8245) was spread out on the walked surface level, preparing the terrain for its new metallurgical function.<sup>22</sup> The transversal wall BM00/8032+BM02/8209 clearly sits on top of and embedded in this layer (*fig. 5*, above B). The spaces within this city wall must have been open and accessible, used for iron forging.

Further excavation of the east sounding brought to light a north-south running wall, consisting of heavy stones (BM03/8330; *figs. 7-8*). A difference in colour could be observed between wall BM03/8330 and BM03/8309. Given the lower level of its foundation, the former is probably the earlier one, perhaps originally continuing farther to the north. Unfortunately, BM03/8309 could not be investigated further, due to the extremely limited space in the sounding. To either side of wall BM03/8330 a levelling layer rich in phosphates, charcoal and ash was found (BM03/8317+8319). This layer has preliminarily been dated in the finds' laboratory to the 8<sup>th</sup> century BC.

Below this layer BM03/8317+8319, a sequence of three white torba floors was encountered at an elevation of about 9.60 m, which is paralleled in the central sounding, west of the transversal wall BM00/8032+BM02/8209, at a level of about 9.65 m (*figs. 5 C, 8 and 9 A*). These torba floors have been dated, on the basis of a first analysis of the finds in the filling layers in-between the torbas, to the second half of the 8<sup>th</sup> and the 7<sup>th</sup> centuries BC.<sup>23</sup> In the central sounding, the lowest of the three torba floors covered a structure (?) (BM03/8336), consisting of one single layer of stones (*fig. 10*). It remains unclear whether these stones have been part of a stone pavement or are just the lowest part of an east-west wall that is still visible in the west section of this central sounding in the shape of a robber trench fill (*fig. 9 B*). The latter interpretation would imply that structure BM03/8336 has been broken out till its present level before the torba floors were laid out. Alternatively, it may have been a threshold in that east-west wall, over which torba floors had been laid out in three subsequent renovations. In this connection, the finds from the northern sounding of the year 2002 (*fig. 4*) are of interest. Here, a thick torba floor BM02/

8252 has been found at almost exactly the same level (elevation 9.62 m in the east and 9.69 m in the west). This is most likely the northern continuation of this architectural assemblage, viz. the floor in a room north of the east-west structures BM03/8336 with western extension (?) in the central sounding and wall BM03/8309 in the east sounding (*figs. 6*-arrow, *7* and *9 B*). In *fig. 2* it is clearly visible that the city wall BM02/8271 cuts the white torba floors, of which BM02/8252 is the lowest one. Moreover, it is also visible that the outer surface of the wall was apparently not meant to be seen, but served as a foundation, covered in greasy yellowish clay mortar (*fig. 2*). In a very small portion in the east sounding, west of wall BM03/8330, and below the sequence of torba floors, the remains of yet another east-west wall have been documented (BM03/8366a), running parallel to and being contemporary with BM03/8336.

The internal relations of the east-west structures discussed above, however, pose some problems. Although wall BM03/8309 lies exactly in the axis of structure BM03/8336 and the east-west one visible in the robber trench fill in the central sounding (*fig. 9 B*), the former is probably only founded at 9.97 m above sea level, whereas structure BM03/8336 is founded some 40 cm lower at 9.57 m above sea level. It seems, therefore, at first sight improbable that these structures have once belonged together. However, it is not to be excluded that they are different phases or renovations of the same structure.

In conclusion, one may distinguish up to four Archaic phases in the period before the casemate city wall was rigorously put in place (from earliest to most recent): 1) the two parallel east-west walls/structures BM03/8336 and BM03/8366a), 2) the three torba floors in the east-, central, and northern soundings, 3) north-south wall BM03/8330, and 4) east-west wall BM03/8309.

### 3.2 Earliest necropolis of Carthage

*F. Chelbi, R.F. Docter & B. Maraoui Telmini*

In the first preliminary report, the important find of a cremation necropolis of the first generation Carthaginians has been presented.<sup>24</sup> The new campaigns have yielded additional information helping in reconstructing this funeral zone. The necropolis had been discovered in the united trenches 1 and 7 by a Tunisian team of the INP Conservation du Site de Carthage during the winter campaign of January 2003 and consisted of nine shallow *pozzi*, cut into the soft limestone bedrock (*fig. 11*). They are interpreted as the lowest parts



Fig. 12. Painted ostrich egg fragments BM02/32227 from context BM02/8239 (photo UGent/INP).

Fig. 13. Human cranium fragment from context BM03/3338 in situ (photo UGent/INP).



of cremation pits, which had been dug from an originally higher level within the dark brown, very compact virgin soil (which has now disappeared; cf. fig. 2 foreground) and the underlying limestone bedrock. One is very much tempted to draw a parallel with the contemporary (i.e. earliest) tophet burials that also cut through an original dark brown virgin soil till just into the bedrock.<sup>25</sup>

The analysis of the pottery fragments in the fills of these *pozzi* showed that the original funerary fills must have been cleared out already in Antiquity, probably around the middle of the 7<sup>th</sup> century BC and most likely in relation with the installation of the metallurgical workshops in the area.<sup>26</sup> In all trenches on the Bir Massouda site we found fragments of typical funerary pottery (oinochoai, mushroom jugs and 'table amphorae' / cremation urns) in remarkably high numbers, dating to the very earliest phase of Carthage.<sup>27</sup> Also typical funerary objects as painted ostrich eggs have been attested with some fragments in the same contexts (fig. 12).<sup>28</sup> All these are clear signs of the disturbance of an early necropolis in this southern *extra muros* zone of Carthage. It has been suggested from the start that this 'disturbance' was in fact a deliberate and carefully planned enterprise by people who still felt some emotional affiliation with their ancestors buried in this part of the city. That this procedure is not without parallel in Punic Carthage, is now proved by a similar find in the Swedish excavations on the north slope of the Byrsa Hill. Here, an inhumation grave (originally with sarcophagus) of the Middle Punic period, probably of the second half of the 4<sup>th</sup> or beginning of the 3<sup>rd</sup> century BC had been cleared out at the beginning of the 2<sup>nd</sup> century BC prior to the final urbanisation of this part of the city.<sup>29</sup> The differences with the French excavations on the southern slopes of the Byrsa Hill are clear.

There, an Archaic necropolis of the 7<sup>th</sup> and 6<sup>th</sup> centuries BC gave way to a metallurgical zone after the middle or even late in the 4<sup>th</sup> century BC,<sup>30</sup> and only still later, at the end of the 3<sup>rd</sup> or early in the 2<sup>nd</sup> century to a residential quarter ('Quartier Hannibal'). Apparently, at that time, these Archaic graves had not been visible anymore and so the Carthaginians felt no obligations to piously exhume the dead, as they would otherwise probably have done.

One of the main concerns after the discovery of the *pozzi* early in 2003 had been the lack of unambiguous indications of human remains. In itself this could be a sign of the fact that the Carthaginians who exhumed their dead in the middle of the 7<sup>th</sup> century BC had done a good job, but it did not seem quite in accordance with the fact that so many fragments of funerary pottery were found. The analysis of the animal bone material of the campaigns 2002 and 2003 by A. Alen, however, showed that some human skeletal remains had been included in the sample. S. Roudesli Chebbi has in the meantime studied these remains (*infra*), showing that without exception one is dealing with fragments of human crania (fig. 13). This anomalous situation asks for an explanation. Another striking fact is that these fragments, with the exception of two, have been found in contexts that contain almost exclusively finds of the earliest occupation phase of Carthage, conventionally dated to the second half of the 8<sup>th</sup> and first quarter of the 7<sup>th</sup> centuries BC (but see also above on possibly earlier dates). It is not insignificant in this respect that exactly these contexts also contained pottery fragments with clear funerary connotations. These contexts were, however, never found in the stratigraphical position that would correspond to the typological date of the finds included in them; they are consequently in secondary position.

So, in 2003 we found human bone material and, again, funerary pottery in secondary position, but no single trace of new in situ burials nor of further cleared out cremation pits. In the 3 large trenches excavated between the earlier Trench 1/7 and Trench 8 (Trenches 3, 4 and 5; *fig. 1*), only the dark brown virgin soil and partly the bedrock was reached. In Trench 3, which is closest to Trench 1/7, this dark brown soil lay in a 30-45 cm layer on top of the limestone bedrock, that is to say at an elevation of 6.83-6.86 m above sea level. The conclusion has to be drawn that the rest of the earliest necropolis is not to be found here, but probably south of Trench 1/7 (and perhaps east and west of it).

In the campaign of 2003, we were also faced with another unexpected element in the archaeological documentation. Where we had hoped or expected to find only or at least some traces of cremated human remains among the bone material, hinting at cremation burials, the bone fragments were with one exception (from BM03/5321, *infra*) clearly not burnt, and may, therefore, probably have belonged to inhumations. This is a remarkable fact, since cremation is generally considered to be the oldest rite of the two, originating in the Levant and occurring for example in the Junon necropolis (admittedly next to inhumations).<sup>31</sup> The *pozzi* and necropolis material in secondary position on the Bir Massouda terrain would clearly hint at an early date, still in the 8<sup>th</sup> century BC. In the French excavations on the south slope of the Byrsa Hill, the two burial rites are found next to each other in the 7<sup>th</sup> and 6<sup>th</sup> centuries BC.<sup>32</sup>

One last question to be answered is: why have only skull fragments been found? The most likely explanation is that the persons who exhumed the bones have been proceeding extremely carefully, but that they only missed those bone fragments that could easily be confounded with pottery fragments in the humid soil, like for example skull fragments (*fig. 13*).<sup>33</sup>

It is a remarkable fact that also in the contemporary Phoenician settlement of La Fonteta near Alicante (Spain) an almost identical pattern could be documented: extra muros shallow pits (*pozzi*) in the virgin soil, only one of which containing a cremation without pottery (La Fonteta phase I).<sup>34</sup> Apart from that, reworked necropolis material (in this case stelae) has been found, as well as (exclusively) fragments of human skulls in La Fonteta phase III.<sup>35</sup> The likeness is even closer than that, since also in La Fonteta, the assumed necropolis gave way to a metallurgical zone around the city walls.

## Human skeletal remains

S. Roudesli Chebbi

Human remains have been encountered in several contexts, in which four groups may be distinguished. The first group consists of BM02/7239, a red brown sandy levelling layer (material Archaic), BM02/7299, a dark brown fill, partly below BM02/7239 (material Archaic), and BM02/7302, with finds of the 8<sup>th</sup> century BC. This greyish sandy layer is probably identical with BM02/7299. The second group consists of BM03/3336, BM03/3337, BM03/3338 (in situ; *fig. 13*), and BM03/3339, all with finds of the 8<sup>th</sup> century BC. The third and fourth groups consist of one fragment each. BM03/5321 (female chin bone) shows traces of cremation. This fragment was found in secondary position within a temporary retaining wall built in an early Roman ('Augustan') robber trench. It may either have belonged to the Archaic necropolis, or to one of the victims of the 146 BC fire catastrophe. BM04/4400 (BM04/38417), a cheek bone fragment, was found, while cleaning the west section in the northern part of Trench 4. The material included dated to the Archaic till Late Punic or early Roman ('Augustan') period, but has to be considered as disturbed. As with the last human skull fragment, it may either have belonged to the Archaic necropolis, or to one of the victims of the 146 BC fire catastrophe. The presence of molar M3 shows that the cheek bone fragment had been of a young adult of over 18 years old; in fact, the M3 has been fully erupted, but on the other hand does not show any signs of wear.<sup>36</sup> One may conclude that the fact that the fragments belong, without exception, to skulls of adult individuals, is extremely unusual.

## 4 RESULTS: MIDDLE PUNIC PERIOD

### 4.1 Defensive system

F. Chelbi, R.F. Docter & B. Maraoui Telmini

The excavations of the year 2003 in the eastern extension of Trench 8 showed that the southern city wall of the Archaic period, described above, apparently did not continue towards the east (*fig. 1*). Instead, it could be shown that it joined up with a north-south running tract of the city wall. The exact date of this tract could not be established, but further excavations in the southern Trenches 3 and 4 in the years 2003 and 2004 (and perhaps also the earlier documentation in Trench 1/7) gave evidence of similar portions of this north-south city wall, lying more or less in the

same orientation, that may be dated to the Middle Punic period (*fig. 1*). Especially the investigations in Trench 4 yielded a clear proof of the existence of a double-faced wall of the casemate type, with intermediate reinforcements, dating probably not before the (late) 5<sup>th</sup> century BC (*fig. 14*). It is clearly smaller than the city wall in Trench 8, having an overall width of 2.20 m. The construction of this city wall has been characterised by a reinforcing buttress to its eastern face (i.e. towards its exterior). Moreover, it seems to have been bordered at its eastern side by a road running parallel to it. The limited size of the excavations, however, did not allow further investigations into questions of date and width of this street. The most important feature encountered in connection with this city wall in Trench 4 was the find of a series of very strong foundations, most likely marking the position of a tower or a bastion in the city wall (*fig. 15*).<sup>37</sup>

That older city walls became incorporated in the urban tissue as the city developed and still retained some sort of defensive function is not uncommon in Antiquity. A good example has been found in Hazor, where a 10<sup>th</sup>-century BC city wall became an internal one after the expansion of the city in the 9<sup>th</sup> century BC.<sup>38</sup> In the case of the present assemblage of city walls in Carthage, one may hint at the fact that the preliminary date of the portion found in Trench 4, (late) 5<sup>th</sup> century BC, corresponds well with the late 5<sup>th</sup>-century BC urbanisation of the area. On the other hand, the fact that there are indications of Archaic predecessors for the wall and bastion in Trench 4, may just imply a late 5<sup>th</sup>-century BC renovation of these constructions. Also the city wall in Trench 8 seems to have undergone some restructuring in the 5<sup>th</sup> century BC, with at least the northern wall BM02/8271 (cf. *fig. 4*) getting a new and even stronger superstructure.

#### Excavation and architecture

*S. Garsallah, J. Mabrouk, J. Van Kerckhove & T. De Schacht*

In Trench 4 a structure came to light during the 2004 campaign that clearly belongs to a defensive system of double walls with intermediate reinforcements (*fig. 14*). In fact, already in 2003 remains of a very strong east-west wall had been documented (feature BM03/4345; *fig. 15*), which has been built with large irregular ashlar blocks of greyish yellow colour bound in a clay mortar.<sup>39</sup> The foundations of that wall reached till the virgin soil, so it was presumed that we were dealing with a portion of an Archaic wall. Its position, south of



*Fig. 14. North-south casemate city wall in Trench 4 (photo UGent/INP).*



*Fig. 15. East-west part of bastion with large stones, BM03/4318+4345 (photo UGent/INP).*

the city wall found in 2002 (*figs. 1, 4*), however, remained somewhat puzzling. In 2004, the excavation in Trench 4 was enlarged towards the south in order to get a better picture of the structures that may have been in relation to this large wall.



Fig. 16. Middle-Late Punic septic pit in Trench 4, BM03/4340 (photo UGent/INP).



Fig. 17. Middle Punic septic pit in Trench 7, BM04/7457 (photo UGent/INP).

Two parallel walls were found, running north-south, with a short intermediate wall (fig. 14). This set of walls (BM04/4428 in the east and BM04/4406 in the west) has also been constructed with large stones of greyish yellow colour, and had also

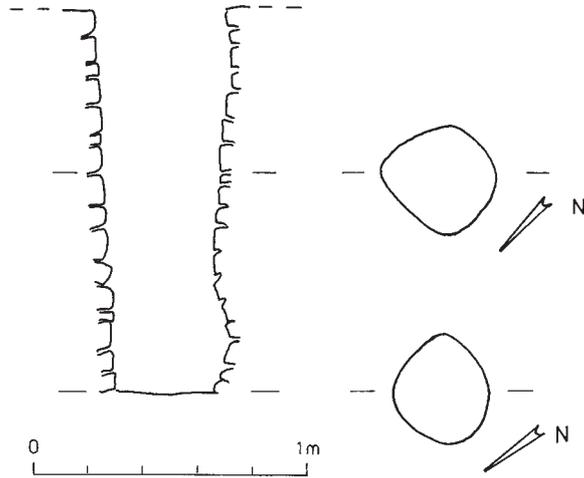


Fig. 18. Middle Punic septic pit in Trench 7, BM04/7457, section (drawing B. Maraoui Telmini, inked by J. Angenon).

been bound by clayish mortar. The stones are smaller than those of BM03/4345. At its northern end, wall BM04/4406 turns towards the west, joining up with the portion of the Archaic wall found in the 2003 campaign (BM03/4345; fig. 15). The latter wall may belong to a tower or bastion-like structure (BM04/4474) and measures 1.20 m in width. Hence, the total width of the east-west structure is 2.0 m. It is likely that we are dealing with a part of the Carthaginian north-south city wall and one of its bastions (BM04/4474).

During a short campaign in November 2004 (supra), we excavated the stratigraphy next to the western face of wall BM04/4406 in order to establish the precise date of its construction and, at the same time, to establish its connection with the Archaic east-west wall BM03/4345. The excavation was also enlarged in order to obtain a better picture of the double wall, partly by demolishing the overlying Roman foundation walls (after full documentation). This resulted in the discovery of two more transversal walls in the double wall (BM04/4472 and BM04/4473; fig. 14). The distances between the transversal walls, from south to north are 1.50 and 1.20 m, respectively. The stratigraphy in this last campaign started from a Late Punic terrazzo pavement (context BM04/4466) that had traces of burning, probably of the fire of 146 BC. Below its compact white to yellow preparation layer (context BM04/4468), two greyish filling layers with clay parts were excavated (BM04/4470 and BM04/4475). The layer below these filling layers is composed of a sandy levelling layer of yellowish colour containing small rock frag-



Fig. 19. Middle Punic basin BM04/7441 to the right; fill with destruction material BM04/7442 to the left; and bench-like structure BM04/7445 in the center (photo UGent/INP).



Fig. 20. Middle Punic basin BM04/7441 with south wall (photo UGent/INP).

ments (BM04/4479). Its upper part is situated at an elevation of 10.19 m above sea level. A thin layer of yellowish stone fragments and some ash and charcoal (BM04/4481) has been found in the southern part adjacent to the wall. The layer below it (BM04/4482) is composed of yellowish stone chips and has a thickness of 10 to 15 cm. This is clearly the level on which the stonemasons had been cutting the stones for the construction of the wall. The wall itself has been preserved to a height of about 1.50 m. The preliminary examination of the pottery in context BM04/4481 suggests a dating not before the 5<sup>th</sup> century BC.<sup>40</sup> Below context BM04/4482, a levelling layer was found that is extremely rich in Archaic pottery. This levelling layer is composed of several separate layers of different composition and colour (dark brown, grey and even black) and has been excavated till the virgin soil/bed rock (found at an elevation of

8.85 m), on which the wall has been founded.<sup>41</sup> On the other hand, it is also possible that the Middle Punic city wall used an Archaic wall (predecessor?) as foundation.<sup>42</sup> In this connection, it is perhaps not insignificant that exactly at the level on which the stones had been worked (context BM04/4482), the wall slightly projects towards the west and, moreover, becomes more irregular in its outer appearance. The technical characteristics of stones and mortar in the lower part of the wall (below level BM04/4482), probably being its foundation, are identical to those of the Archaic wall portion found in the 2003 campaign in the northern part of Trench 4 (BM03/4345).

#### 4.2 Septic pits

F. Chelbi, R.F. Docter, B. Maraoui Telmini

On the Bir Massouda site two pits were found, which may be interpreted as septic pits, toilets/latrines or waste collection pits. Both had been carefully constructed with stones: BM03/4340 in Trench 4 and BM04/7457 in Trench 7 (figs. 16-18). They belong to the Middle and Late Punic periods. In the present preliminary report, only the one found in Trench 7 will be discussed in full, in combination with its contents (BM04/7453; figs. 17-18).<sup>43</sup> The septic pit is more or less cylindrical and its approximate capacity can, therefore, be calculated; it may have contained some 0.18 cubic metres.

#### Excavation and architecture

B. Maraoui Telmini & K. Ryckbosch

Context BM04/7453 is the fill of a small built pit of about 35 cm diameter (context BM04/7457), which is framed in its upper part by stone masonry of large and medium-sized rubble set in a sand and clay mortar (figs. 17-18). It has a depth of about 1.35 m (fig. 18). The base of the pit is situated at 9.06 m above sea level. The fill itself (BM04/7453) consists of rather loose sand of greyish colour with many small stones, bone and pottery fragments. As it became clear that the context consisted of an undisturbed and sealed deposit of a septic pit, it was decided to have the whole fill systematically sieved (on the procedure, *infra*).<sup>44</sup> The finds within the deposit contained many rather large pottery fragments and, moreover, three almost completely preserved vessels. At a depth of about 15 cm from the base of the pit, an almost intact casserole was found in upright position (Cat. 30, figs. 24c, 32). Higher in the fill, an Attic squat lekythos was found (Cat. 3, figs. 24b, 30) as

well as a Punic one-handed juglet (Cat. 24, *figs.* 25*f*, 31). All these finds may have belonged to the last use of pit BM04/7457 as a septic pit.

Context BM04/7457 is situated in the eastern part of a basin-like structure of Middle Punic date (context BM04/7441). The floor and the south wall of this structure have been preserved rather well, the latter till a height of about 60 cm, and both consist of the same material, a greyish hydraulic (watertight) mortar (*figs.* 19-20). Where the pit BM04/7457 has been constructed, in the east, the floor of the basin has been cut away (or ended) neatly, which would at first sight lead to the conclusion that the septic pit is a later addition to this ensemble. However, it is clear from the stratigraphy below that it must have been constructed in an earlier phase, since a preceding burnt torba floor (BM04/7454, *fig.* 21, *infra*) already takes account of its existence.

Upon excavation, a series of layers has been encountered above the greyish mortar floor, clearly in connection with the abandonment of this ensemble. The topmost layer of this series (context BM04/7442) contained fragments of greyish hydraulic mortar, probably originating in the partial destruction of the south wall of the basin (*fig.* 19, *cf.* *fig.* 20). Below this layer, a light brown sandy layer (context BM04/7443) appeared in the southeast corner of the basin, where the basin's floor BM04/7441 has not been preserved. It is in all likelihood composed of infiltrated sand. Partly below this context (BM04/7443) was still another very thin layer of loose sand (context BM04/7450), that equally delimits the placement of the septic pit (BM04/7457). The material of contexts BM04/7442, 7443 and 7450 seems to be rather homogeneous, being essentially composed of Punic Plain Ware pottery and numerous fragments of Attic pottery; the complete absence of Campanian Black Glaze Ware should be noted as a chronological indicator for the abandonment of this installation.

Upon excavation of the thin sand layer BM04/7450, we encountered the rubble masonry of the construction of the septic pit. Its upper part is situated at the same level as the preparation layer of the basin's floor (BM04/7441). The preparation layer itself, context BM04/7452, is composed of large and medium-sized stones set in a thin clay bed. The latter context was found to be very greasy towards the eastern part of the basin, where it touched the border of the septic pit's construction. Just below the preparation layer BM04/7452 and only in the eastern part of the basin, a rather compact layer appeared, which is



*Fig. 21. Middle Punic torba floor of first phase BM04/7454; in the back, the section through the second basin's floor BM04/7441 is visible (photo UGent/INP).*

a sort of burnt torba floor of 4 cm thickness, badly preserved and black in places. This floor (BM04/7454) is best preserved in the southeastern part of the basin and bounds in a certain way the septic pit's masonry to the west (*fig.* 21). Below this context, the first (Late) Archaic contexts were encountered that are connected with the levels of the metal working quarters in the area.

On the basis of this stratigraphical sequence, the ensemble of contexts (features and layers) belonging to the basin and the septic pit may clearly be attributed to the first restructuring measures in the area, *viz.* the installation of a Punic residential quarter in the last quarter of the 5<sup>th</sup> century BC.<sup>45</sup> The existence of two floors, one on top of the other, in the eastern part of the basin seems to show the existence of at least two use phases of this domestic installation.<sup>46</sup> In fact, the lower torba floor (BM04/7454) seems to be at the same level as the border of the septic pit and may, therefore, be contemporary. A robber trench over the torba floor to the west suggests that in this first phase

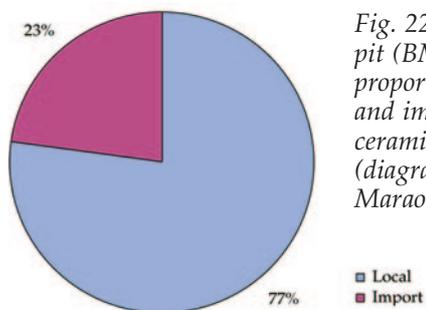


Fig. 22. Fill of septic pit (BM04/7453): proportions of local and imported ceramics; N=333 (diagram by B. Maraoui Telmini).

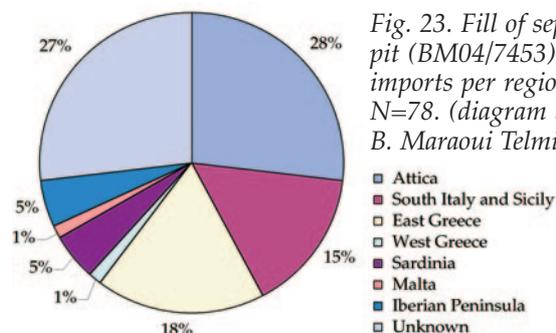


Fig. 23. Fill of septic pit (BM04/7453): imports per region; N=78. (diagram by B. Maraoui Telmini).

the space of the toilet perhaps had been more restricted, being no more than 1.10 m (north-south) by 1.70 m (east-west). The second pavement, the one of the basin (BM04/7441), which lies some 30 cm above the torba floor, also seems to be in perfect relation to the rubble masonry of the pit's border (fig. 17). The second use phase is connected with the installation of the spacious and more elaborately executed basin with hydraulic mortar on the floor and the wall (BM04/7441; figs. 17, 19-20). In the course of this renovation, one had laid out a new preparation layer, which necessitated at the same time raising the border of the septic pit. The renovation of the masonry of the septic pit's border may be connected with this second phase since it made use of the same type of stones as the preparation layer of the basins floor. To the northeast of the pit, a sort of drain has been documented, which probably served as an overflow of the pit. At the same time, this second phase testifies to an apparent raise in the standard of living in this residential quarter; the existing septic pit's area is now provided with a new large basin (with mortar walls and floor) and a washbasin that occupies the south side of the room, including an overflow hole through the ashlar to the east (fig. 20). This definitely is a costly layout, very much comparable to the installations known in Kerkouanne.

The contexts above the septic pit and on top of the basin's floor seem to be connected with the abandonment of this domestic ensemble (BM04/7442, 7443 and 7450; fig. 19). These three homogeneous contexts are sealed off by a levelling layer, which prepares the area for the installation of the new Late Punic quarter. This levelling layer BM04/7440 consists of a rather thick sandy layer of yellowish-orange colour, situated at 11.18 m above sea level. In the material found in this levelling layer a fragment of an Attic cup of the 5<sup>th</sup> or early 4<sup>th</sup> century BC may provide a *terminus post quem*. On the other hand, the absence of Campanian

Black Glaze Ware may provide a *terminus ante quem*. Similarly, the pottery found in the fill of the septic's pit (BM04/7453) may provide a sound *terminus post quem* for the architectural change of the area, described above. One may reasonably assume that the septic pit had been cleaned and emptied regularly in the course of its ca 75 years of existence.<sup>47</sup> It is argued that the contents of the fill represent the last use of the pit as a toilet, which may be dated to the third quarter of the 4<sup>th</sup> century BC, viz. shortly after ca 340 BC.

#### The pottery contents<sup>48</sup>

B. Maraoui Telmini

Context BM04/7453 contains 257 fragments of local pottery, 76 fragments of imported pottery (figs. 22-23) and 10 fragments of construction debris (stucco and pavement).<sup>49</sup> The full contents of the context are discussed below in connection with a more detailed analysis of a large and representative selection of the finds: 36 pottery items (Cat. 1-36, figs. 24-32), 16 metal fragments (Cat. 37-52, figs. 33a, 34), and 2 glass objects (Cat. 53-54, figs. 33b, 40).

There are four categories that may be considered to be residual in the context:

- 32 pottery fragments, which are clearly 'water rolled' or eroded due to constantly running water. 22 Fragments (walls, rims and bases) belong to local transport amphorae and 10 to imported ones;
- 1 very small rim fragment of a Red Slip Ware plate;
- possibly also the 4 wall fragments of closed forms and 2 small rim fragments of plates (?) of Plain Ware pottery with smoothed surface (infra).

To the residual material one may also count 3 fragments of misfired pottery, which are probably remains of the earlier artisanal functions of the terrain (before the late 5<sup>th</sup> century BC). To these

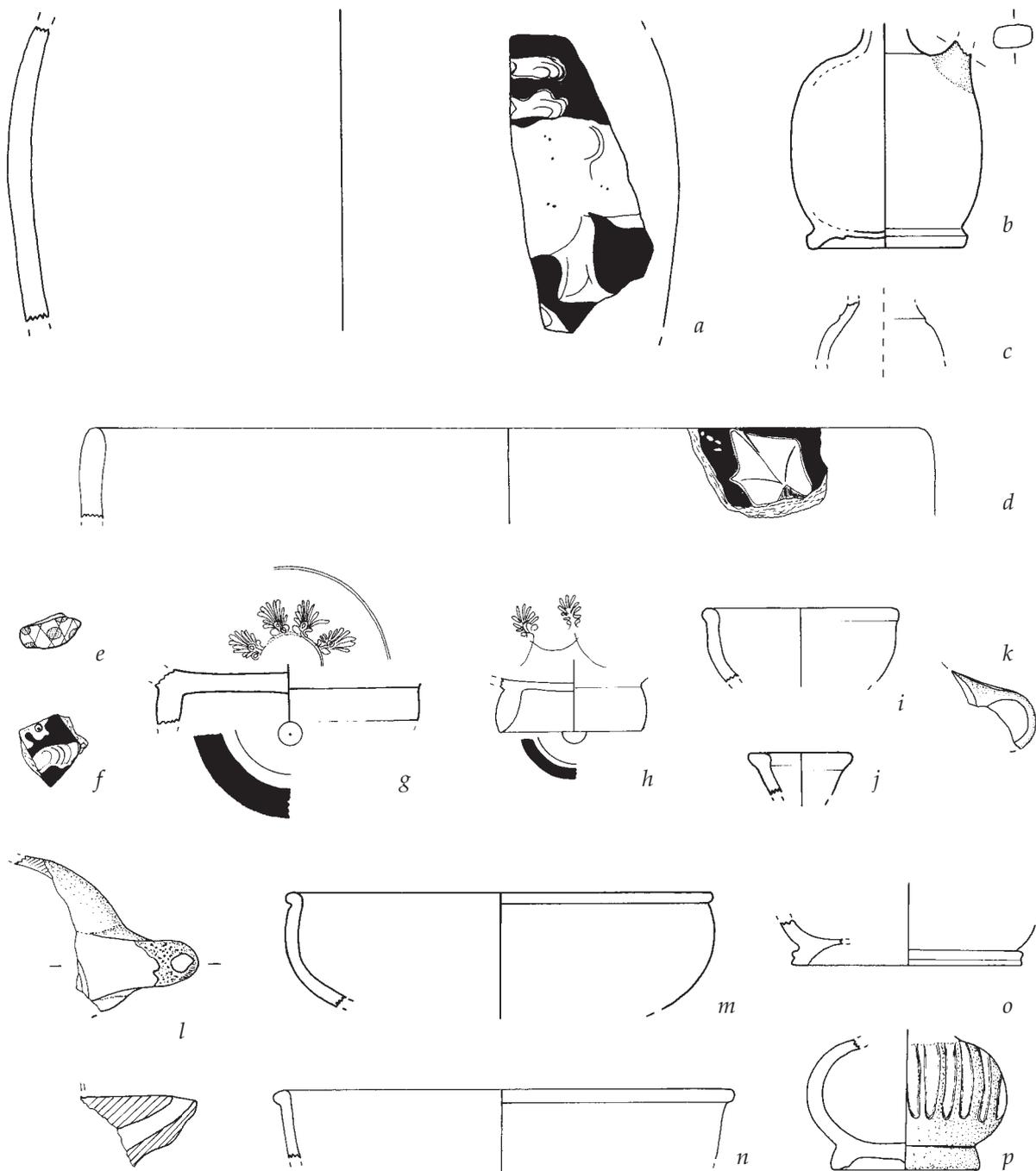


Fig. 24. Fill of septic pit (BM04/7453). Imported Greek pottery: a) Attic Red Figure skyphos Cat. 1, b) Attic Red Figure lekythos Cat. 3, c) Attic Red Figure (?) lekythos Cat. 4, d) Siciliote Red Figure skyphos Cat. 6, e) Attic net lekythos Cat. 2, f) Attic askos/guttus Cat. 5, g-h) Attic stamped Black Glaze bowls Cat. 9-10, i) Attic Black Glaze bowl Cat. 7, j) Attic miniature pyxis Cat. 8, k-l) Attic Black Glaze lamps Cat. 12-13, m-n) South Italian/Siciliote Black Glaze bowls Cat. 14-15, o) Attic Black Glaze oinochoe Cat. 11, p) Siciliote Black Glaze oinochoe Cat. 16 (drawings by B. Maraoui Telmini, M. Achour and R.F. Docter, inked by J. Angenon).

industrial residues one may also count the metal slag fragment and the crushed murex fragments (*infra*).

The rest of the assemblage shows the following composition.

#### *Local pottery*

- tabouna (household furnace) and handmade pottery: 14 fragments;<sup>50</sup>
- transport amphorae: 102 wall fragments, 5 handle fragments and one rim (Cat. 20, *fig. 25d*);
- Plain Ware pottery, mostly jugs and jars: 18 wall fragments, 2 handle fragments, 1 rim fragment of a trefoil-mouthed jug (Cat. 25, *fig. 25i*) and one almost complete juglet (Cat. 24, *figs. 25f, 31*); 1 small rim fragment of an unguentarium; 2 joining rim fragments of a small bowl (Cat. 28, *fig. 26a*) and 3 joining base fragments of the same shape (Cat. 29, *fig. 26b*); 2 joining rim fragments of a basin (Cat. 27, *fig. 26j*) and two bases of basins (Cat. 26, *fig. 26k*);<sup>51</sup> 12 fragments belong to filtre vases (fragments of different thicknesses with perforations);
- Painted Ware pottery: 5 wall fragments of jugs decorated with single or double wine-red or brown lines; 1 rim fragment of a jug with painted stripes on the lip (Cat. 22, *fig. 25h*); 1 rim fragment of a basin covered with red painted lines (Cat. 23, *fig. 25e*);
- Cooking Ware pottery: 29 wall fragments of cooking pots or casseroles, 4 base fragments (flat or slightly rounded), 3 horizontal handle fragments and 1 vertical handle fragment, 2 joining rim fragments of a cooking pot (Cat. 32, *fig. 26e*), 6 joining rim and wall fragments of one cooking pot (Cat. 31, *fig. 26d*), 3 joining rim fragments of a casserole (Cat. 33, *fig. 26g*), one near intact casserole (Cat. 30, *figs. 26c, 32*), 3 very damaged rim fragments of cooking pots; and 4 rim fragments of lids (Cat. 34-36, *fig. 26h,i,f*).

#### *Imported pottery*

- Attic Fine Ware: 5 Red Figure fragments (1 shoulder fragment of askos/guttus, Cat. 5, *figs. 24f, 28*, 1 wall fragment of large skyphos, Cat. 1, *figs. 24a, 27*, 1 wall fragment of a squat net lekythos, Cat. 2, *fig. 24e*, a squat lekythos, Cat. 3, *figs. 24b, 30*, and 1 shoulder fragment of small oinochoe, Cat. 4, *fig. 24c*); 16 Black Glaze Ware fragments (7 wall and 2 base fragments of open shapes Cat. 9-10, *fig. 24h,g*, 1 base of small oinochoe, Cat. 11, *fig. 24o*, 3 joining spout fragments and 1 spout of lamps, Cat. 12-13, *fig. 24k,l*, 1 rim fragment of small bowl, Cat. 7, *fig.*

*24i*, and 1 rim fragment of miniature pyxis, Cat. 8, *fig. 24j*);

- South-Italian and Siciliote Fine Wares: 1 Red Figure fragment (1 rim fragment of large skyphos, Cat. 6, *figs. 24d, 29*); 11 Black Glaze Ware fragments (5 wall fragments of open shapes, 1 base of a pyxis, Cat. 16, *fig. 24p*, 5 rim fragments of bowls, of which 4 belong to the type with 'outturned rim', Cat. 14-15, *fig. 24m, n*);
- East Greek Plain Ware: 1 base fragment of transport amphora from Samos (Cat. 19, *fig. 25b*), 10 wall fragments of the same transport amphora, 3 wall fragments of as much different transport amphorae;
- West Greek Plain Ware (Corfu or Butrint area): 1 rim fragment of transport amphora (Cat. 17, *fig. 25a*);
- Sardinian Painted and Plain Wares: 1 rim fragment of lid (Cat. 21, *fig. 25g*), 3 wall fragments of transport amphorae;
- Maltese Plain Ware: 1 rim fragment of transport amphora (Cat. 18, *fig. 25c*);
- Plain Ware from the Iberian Peninsula (probably Andalusia): 4 wall fragments of transport amphorae;<sup>52</sup>
- Plain Wares of unknown provenances: 11 wall fragments of transport amphorae.

BM04/7453 is a homogeneous Punic context, which is very rich in pottery, with a strong presence of imported wares (23% of all pottery fragments; *figs. 22-23*). The local pottery is functionally characterised by a domestic repertoire, which confirms the nature of the site's occupation at that time. At the same time, the rather large number of cooking vessels, casseroles, lids and filtre fragments shows that the pottery in the context originates in a kitchen area, probably to be located nearby.

From a chronological point of view, the datable pottery is generally consistent with a dating to the last quarter of the 5<sup>th</sup> till the end of the 4<sup>th</sup> century BC, although a closer date range for the formation of the context may be suggested: the decades around 350 BC, that is to say ca 360-340 BC. The dates of the material within the context are based on the fragments of imported pottery and on the local classes for which a reasonably precise chronology has been established. In fact, three or four of the eleven Attic fragments (especially the ring base fragments Cat. 9-10, *fig. 24g-h*) seem to date to the end of the 5<sup>th</sup> and the first quarter of the 4<sup>th</sup> century BC. This may perhaps be a sign of some more residual elements in the context, although the circulation of Attic pottery of

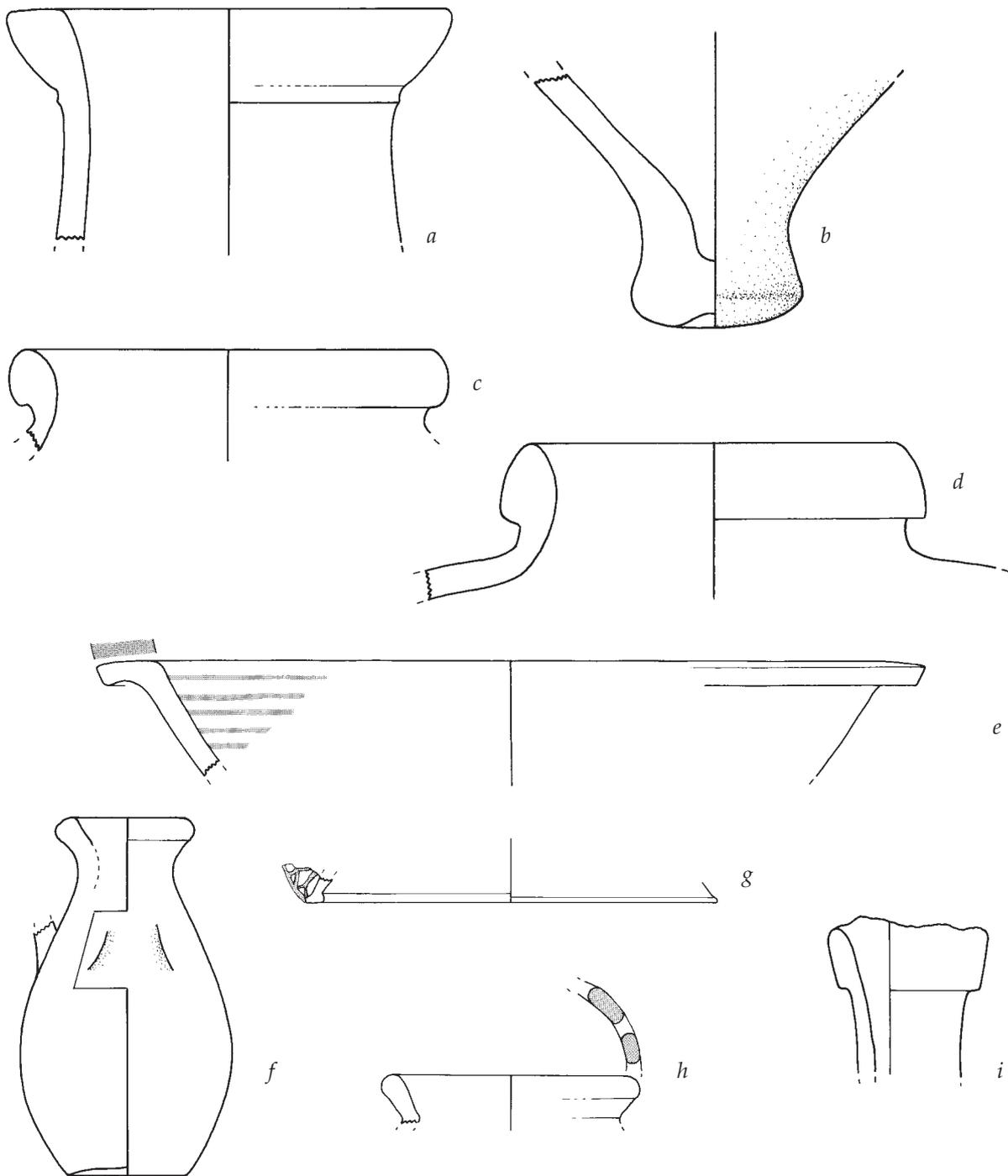


Fig. 25. Fill of septic pit (BM04/7453). Transport amphorae, Painted Ware and Plain Ware: a) Corfiote 'Corinthian B' type amphora Cat. 17, b) Samian amphora Cat. 19, c) Maltese amphora Cat. 18, d) local Punic amphora Cat. 20, e) local Painted Ware basin Cat. 23, f) local Plain Ware one-handed juglet Cat. 24, g) Sardinian (?) Painted Ware lid Cat. 21, h) local Painted Ware jug Cat. 22, i) Local Plain Ware trefoil-mouthed jug Cat. 25 (drawings by B. Maraoui Telmini, inked by J. Angenon).

this general time period in non-Athenian contexts is still a largely unexplored terrain (cf. also Cat. 7, *infra*). The presence among the local pottery of smoothed Plain Ware fragments is probably also a sign of some residuality. It has been established on the basis of stratigraphical pottery studies by the Hamburg excavation team, that this local production disappears during the last quarter of the 5<sup>th</sup> century BC at the latest.<sup>53</sup> On the other hand, one should notice the remarkable absence within the context of local Black Glaze Ware productions, which in contexts of the late 4<sup>th</sup> century BC tend to make up for larger proportions of the finds, and are regularly found in contexts of the 3<sup>rd</sup> century BC.<sup>54</sup> This allows proposing a date for the context, and so for the abandonment of the septic pit, that does not surpass the third quarter of the 4<sup>th</sup> century BC. Moreover, it seems that the abandonment of the domestic structures in this particular spot has not been caused by an accident. The fragmentation of the pottery, especially on top of the basin's floor suggests a planned abandonment.<sup>55</sup> The fact that the septic pit contained three near-complete vessels and few other larger profiles (reconstructed from various joining fragments) may be explained by the fact that these vessels had been thrown in the pit during the last use phase, perhaps accidentally as in the case of the complete casserole Cat. 30 (*figs.* 26c, 32).

The fairly high proportion of Attic imports in Carthage in the late 5<sup>th</sup> century BC and during the first half of the 4<sup>th</sup>, reflects the importance of the Carthaginian commerce. This commerce is even more significant considering the fact that these imports come from different areas of the ancient world, both from the East and the West and both from Greek and Punic areas. In fact, Carthage seems to be, as J.-P. Morel recently stressed: 'Une mégapole dont le cosmopolitisme se marquait entre autres par la diversité de ses importations céramiques.'<sup>56</sup> On the other hand, exactly the diversity and the richness of the Greek pottery repertoire reflect the strong impact that Greek culture must have had on Carthaginian civilisation. This tendency, which mainly concerns the 4<sup>th</sup> century BC, has already been noted for Carthage before,<sup>57</sup> but equally for other Punic centres such as Tharros, Cagliari and Olbia on Sardinia,<sup>58</sup> and Lilybaeum on Sicily.<sup>59</sup>

The close analysis of the date ranges of these imports allows for the formulation of some thoughts on the Carthaginian commercial relations with the exterior, especially with the Greek world in the period between the end of the 5<sup>th</sup> and the end of the 4<sup>th</sup> century BC (*fig.* 23). In fact, it is remarkable

that a third of the Attic imports centred between the end of the 5<sup>th</sup> and the middle of the 4<sup>th</sup> century BC. On the other hand, the imports from Sicily and South Italy are mainly grouped in the second and third quarters of the 4<sup>th</sup> century BC. In the course of the second half of the 4<sup>th</sup> century BC, the South Italian and Siciliote productions enter the repertoire of Greek imports in Carthage, with a marked concentration in the last quarter of the 4<sup>th</sup> century BC. These observations confirm, in fact, the conclusions of Chelbi concerning the Black Glaze pottery from the Carthaginian necropoleis dating to the 5<sup>th</sup> and 4<sup>th</sup> centuries BC. In this connection he writes: 'Dans le 1<sup>er</sup> quart du IV<sup>ème</sup> s., on assiste à un développement très important et très rapide des importations attiques qui connaissent leur apogée au cours du 2<sup>ème</sup> quart de ce siècle.'<sup>60</sup> On the other hand, he notices the appearance of Siciliote productions in the Carthaginian funerary repertoire of the second half of the 4<sup>th</sup> century BC, developing towards the last quarter or the end of that century.<sup>61</sup> The same observations have been put forward for the South Italian productions, of which the majority is found in Carthage in contexts dated towards the last quarter of the 4<sup>th</sup> century BC and the first quarter of the 3<sup>rd</sup> century BC.<sup>62</sup>

In conclusion, it should be stressed that the horizon of imported pottery in Carthage between the end of the 5<sup>th</sup> and the middle of the 4<sup>th</sup> century BC is characterised by the predominance of Attic pottery. This has long been underestimated,<sup>63</sup> imports from Magna Grecia being mentioned far more often. In a recent contribution, Morel even suggests a direct supply of Carthage with Attic pottery from Athens.<sup>64</sup>

#### ATTIC RED FIGURE

*Cat. 1: BM04/40428, wall fragment of a large skyphos (figs. 24a, 27)*

Clay reddish yellow (5 YR 6/6), black glaze on the interior, glaze on the exterior, black in the upper part, over-fired to red in the lower part. Representation of hind parts of large quadruped (deer, horse or cow) above which two horizontally placed forelegs of attacking feline. Surface heavily worn and encrusted. Max. diam. 19 cm; preserved H 8.8 cm.

The fragment belongs to a rather large skyphos for which no good comparisons can be proposed. The last quarter of the 5<sup>th</sup> and first half of the 4<sup>th</sup>-century Attic skyphos repertoire is rather limited in subject matter. Owls between olive sprigs are popular, mostly on small skyphoi. One of the other larger groups is that of the Fat Boy Group ('F.B.

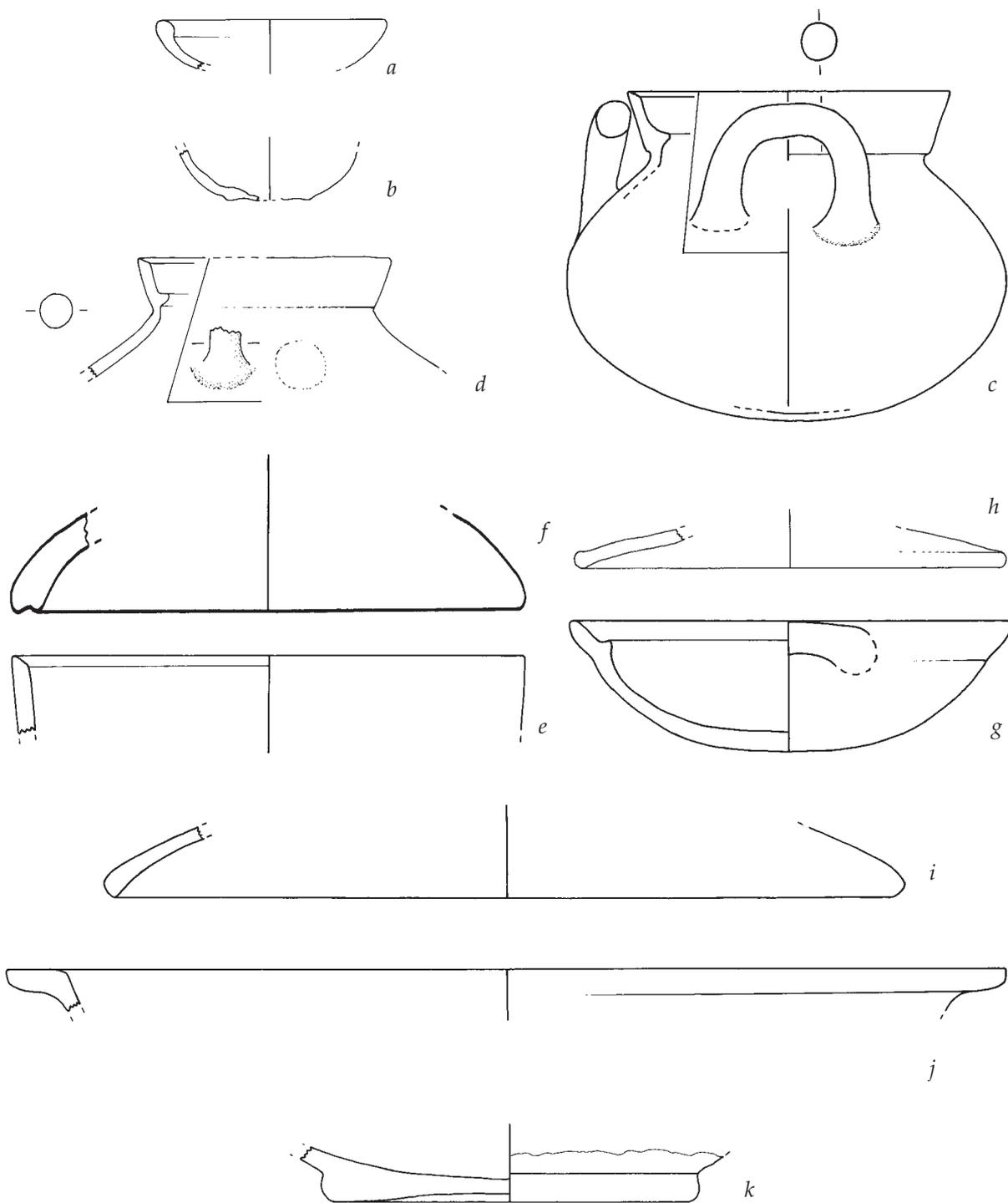


Fig. 26. Fill of septic pit (BM04/7453). Local Cooking and Plain Wares: a-b) small bowls Cat. 28-29, c-d) casseroles Cat. 30-31, e) casserole Cat. 32, f) lid of last? Cat. 36, g) casserole Cat. 33, h) lid of last? Cat. 34, i) large lid of next? Cat. 35, j-k) large Plain Ware basins Cat. 26- 27 (drawings by B. Maraoui Telmini, inked by J. Angenon).

Group') of J.D. Beazley, showing a standard scheme of a nude athlete and a draped figure or other combinations of the two figure types to both sides.<sup>65</sup> In this connection, a large skyphos of the Fat Boy Group from the Hamburg excavations below the *Decumanus Maximus* may be mentioned, especially since it had perhaps been used as a foundation deposit.<sup>66</sup> A Red Figure skyphos, most likely of the Fat Boy Group too, from the Byrsa necropolis has been dated to the first quarter of the 4<sup>th</sup> century BC.<sup>67</sup> The subject matter of Cat. 1 finds no direct parallels in the accessible bibliographical repertoires for the second half of the 5<sup>th</sup> and the first half of the 4<sup>th</sup> century BC.<sup>68</sup> More Attic Red Figure fragments from this general time period have been found in the Carthaginian settlement, see for example the ones published from the DAI excavations.<sup>69</sup>

*Cat. 2: BM04/40432, wall fragment of a squat net lekythos (fig. 24e)*

Clay reddish yellow (5 YR 7/6); pattern of a grid of oblique intersecting lines (net motif) carefully drawn in black, over-fired partly light brown and red; irregularly spaced dots in added white. Dimensions: 0.8 x 1.9 cm.

At Olynthus, this type of lekythos is generally dated to the first half of the 4<sup>th</sup> century BC, whereas as most may be attributed more precisely to the second quarter of the 5<sup>th</sup> century BC.<sup>70</sup> Two similar squat net lekythoi from Tharros, now in the British Museum, are also dated to the 4<sup>th</sup> century BC.<sup>71</sup> At Carthage, these lekythoi are frequently found in graves of the first half of 4<sup>th</sup> century BC.<sup>72</sup> The Attic ones, which are considered to be older, date to the first quarter or the first thirty years of the 4<sup>th</sup> century BC.<sup>73</sup>

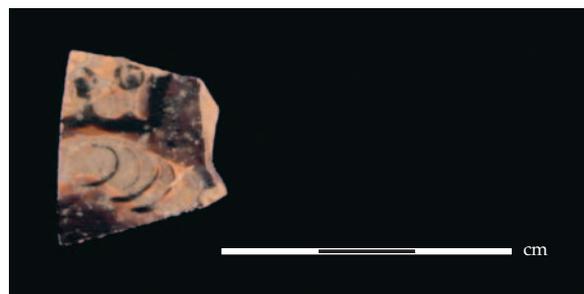
*Cat. 3: BM04/40817, squat lekythos with shallow ridge at the attachment of the neck; neck, lip and handle broken off, ring base chipped (figs. 24b, 30)*

Clay reddish yellow (5YR7/6), surface black glazed, for the better part over-fired to red (2.5 YR 4/8); very few, very fine mica. On the belly, representation of female head on reserved band looking left is just visible; surface extremely worn. Preserved H 6.7 cm, diam. base 4.8 cm, max. diam. belly 5.8 cm.

The shape of the belly, the foot and the dimensions find close comparisons in Class XIIIc ('Klasse des L.M. Malers') of the Attic squat lekythoi of W.W. Rudolph, dated to the last quarter of the 5<sup>th</sup> to within the first quarter of the 4<sup>th</sup> century BC.<sup>74</sup> Especially a lekythos from the Cyrenaica, now in London, is close in shape and dimensions.<sup>75</sup> Squat



*Fig. 27. Attic skyphos fragment Cat. 1 from fill of septic pit BM04/7453 (photo by G. Toch).*



*Fig. 28. Attic askos fragment Cat. 5 from fill of septic pit BM04/7453 (photo by G. Toch).*



*Fig. 29. Siciliote skyphos fragment Cat. 6 from fill of septic pit BM04/7453 (photo by G. Toch).*

lekythoi occur in Carthaginian tombs of the end of the 5<sup>th</sup> century BC and especially of the first half of the 4<sup>th</sup> century BC.<sup>76</sup> The two (Attic and Siciliote) Red-Figure ones studied by Chelbi are dated to the second quarter or the middle of the 4<sup>th</sup> century and the last thirty years of that century, respectively.<sup>77</sup> At the same time, Chelbi draws



Fig. 30. Attic lekythos Cat. 3 from fill of septic pit BM04/7453 (photo by W.D.J. van de Put).

attention to the fact that this type of vase is missing in Carthaginian habitation layers from the last quarter or end of the 4<sup>th</sup> century BC onwards.<sup>78</sup>

*Cat. 4: BM04/40431, shoulder fragment with transition to neck of small oinochoe, probably as last one, shallow ridge at the attachment of the neck; orientation uncertain (fig. 24c)*

Clay reddish yellow (5 YR 7/6), surface black glazed, surface worn. Preserved H 1.9 cm, diam. at ridge 2.6 cm.

The fragment is too small to allow for a precise date and attribution.

*Cat. 5: BM04/40430, shoulder fragment of askos/guttus (figs. 24f, 28)*

Clay reddish yellow (5 YR 7/6), on the left, head of a panther or a griffin, looking right, with part of its clumsily rendered foreleg to the right. Dimensions 1.9 x 1.9 cm.

Some good parallels for the occurrence of griffins and especially the clumsy rendering of the forelegs, may be found in Attic and possibly South-Italian Red-Figure askoi, for example an Attic one from Rhodes, now in Munich,<sup>79</sup> an Italian one ('attico-italiote sans origine déterminée') now in the Musée de Sèvres,<sup>80</sup> and an Attic one of the 'Group of the Cambridge Askos' from grave 343 of the Necropoli del Canal Bianco of Adria.<sup>81</sup> In all three cases, a sitting griffin is depicted on both sides of the handle. The askoi are generally dated to around 350 BC or in the 4<sup>th</sup> century BC. Especially askoi of the 'Group of the Cambridge Askos' and the related ones of the Painter of Ferrara T.408 show many depictions of panthers (and

griffins), almost always in connection with a head of an Arimasp.<sup>82</sup>

Panthers, and more regularly griffins, may also be depicted on the lids of lekanides or pyxides,<sup>83</sup> but the fact that the present fragment is unpainted and not smoothed on its interior, suggests that we are dealing with a closed vessel, viz. an askos or guttus.

#### SICILIOTE RED FIGURE

*Cat. 6: BM04/40429, rim fragment of a large skyphos (figs. 24d, 29)*

Clay reddish yellow (5 YR 7/6), glazed black on interior, heavily pitted, decoration below rim on exterior consists of vegetal band, of which one ivy leaf has been preserved. To the left, a dot-cluster (rosette) in added white is visible. The stem of the ivy leaf seems to have been incised in the black glaze. Diam. rim about 26 cm, preserved H 2.7 cm.

An ivy band around the rim is regularly found on Siciliote Red Figure vases of the 4<sup>th</sup> century BC.<sup>84</sup> However, no (large) skyphos with such a decoration on the rim has come to my notice in the most accessible published repertoires; it seems to be much more typical for lids of skyphoid pyxides and calyx- and bell-craters. The rather squarish rendering of the ivy leaf finds good comparisons on, for example, the lid of a skyphoid pyxis from Spina attributed to the Lentini Painter.<sup>85</sup> Also larger vases as, for example, calyx-kraters of the Adrastos Group show similar renderings of the ivy leaf (with added white dot-clusters/rosettes) in the upper zone of the rim.<sup>86</sup> Also two calyx-craters of the Gibil Gabib Group, part of the Lentini Group, show a comparably rendered ivy leaf band.<sup>87</sup> The Lentini Group is dated to about 350-330 BC, the Adrastos Group to about 330-320 BC.

#### ATTIC BLACK GLAZE WARE

*Cat. 7: BM04/40403, rim fragment of a small bowl with incurved rim (fig. 24i)*

Clay reddish yellow (5 YR 7/6), very glossy black glaze. Diam. rim 8 cm, preserved H 1.8 cm.

The shape is very common in contexts of the last quarter of the 5<sup>th</sup> century BC and lasted into the Hellenistic period.<sup>88</sup> The present fragment is close to the Athenian Agora bowls 876 and 882, the former dated to the late 5<sup>th</sup> and the latter to the first quarter of the 4<sup>th</sup> century BC.<sup>89</sup> The present fragment may also be connected with serie 2714 of Morel's classification, in which an Attic example from a deposit in Megara Hyblaea is dated to shortly after 340 BC.<sup>90</sup> Very similar small bowls from Tharros date to the 4<sup>th</sup> century BC, but main-

ly to about 400 BC.<sup>91</sup> At Carthage, very similar small bowls have been dated to the last quarter of the 5<sup>th</sup> century BC.<sup>92</sup> Thus, a dating to the 5<sup>th</sup> century till the early 4<sup>th</sup> century BC may be put forward for this fragment, although the Megara Hyblaea date suggests that a circulation of these vessels till the third quarter of the 4<sup>th</sup> century BC is possible.

*Cat. 8: BM04/40417, rim fragment of miniature pyxis (fig. 24j)*

Clay reddish yellow (5 YR 6/6), very glossy black glaze. Diam. rim 3.2 cm, preserved H 1.1 cm.

For this rim fragment one may cite the small pyxides nos 940-944 in the excavations at Olynthus as good parallels. These are of the 'salt-cellar' type with concave sides and flaring base, dating to the early 4<sup>th</sup> century BC.<sup>93</sup>

*Cat. 9: BM04/40404, ring base fragment with tondo of a small bowl (fig. 24h)*

Clay reddish yellow (5 YR 7/6), very glossy black glaze, stamped decoration on interior. Diam. base 4.7 cm, preserved H 1.6 cm.

The base fragment is characterised by a ring-foot of double convex section and a horizontal base plate. Of the stamped decoration two of originally four deep palmettes with nine petals are preserved. They are connected by incised curved lines and framed similarly.<sup>94</sup> Two light concentric grooves are partly visible just around the palmettes.<sup>95</sup> The reserved underside is decorated with two concentric circles painted in black encircled by a black painted line. This kind of biconvex ringfeet, with hardly pronounced curve, is highly characteristic for examples of the late 5<sup>th</sup> century BC.<sup>96</sup> Besides, the presence of grooves to delimit the palmettes and the arrangement of reserved and painted surface on the underside of the base support a dating to within the late 5<sup>th</sup> century and the first quarter of the 4<sup>th</sup> century BC.

*Cat. 10: BM04/40405, ring base fragment with tondo of a bowl (fig. 24g)*

Clay reddish yellow (5 YR 7/6), very glossy black glaze, stamped decoration on interior. Diam. base 8 cm, preserved H 1.9 cm.

The stamped decoration on the interior consists of eight separate palmettes of 11 petals each (six palmettes preserved) around an incised circle, and a design of ovules. The reserved underside is decorated with painted circles and a central dot, enclosed by a black line.<sup>97</sup> A similar ringbase fragment from Carthage has been dated to the first quarter of the 4<sup>th</sup> century BC.<sup>98</sup> The decoration of

palmettes around an incised circle, typically of the late 5<sup>th</sup> century BC, and the presence of ovules and the delimiting double incised lines, may suggest a dating for the present fragment to within the late 5<sup>th</sup> century BC and the beginning of the 4<sup>th</sup> century BC.<sup>99</sup>

*Cat. 11: BM04/40413, ringbase fragment of oinochoe with lower part of belly (fig. 24o)*

Clay reddish yellow (7.5 YR 7/6), very glossy black glaze preserved on exterior, leaving the underside reserved/unpainted. Diam. base 7 cm, preserved H 1.4 cm.

For such bases one may refer to the typology of Morel.<sup>100</sup> It is possible that the fragment belongs to a squat lekythos.

*Cat. 12: BM04/40426, 3 joining fragments of a lamp spout (fig. 24k)<sup>101</sup>*

Clay pale olive (5 Y 6/3) very glossy black glaze. Preserved L. 2.7 cm.

*Cat. 13: BM04/40427, spout fragment of a lamp with part of body and long nozzle (fig. 24l)*

Clay reddish yellow (7.5 YR 6/6), black glaze on the inside, completely gone on the outside. Preserved H. 2.1 cm; L. of spout 3.5 cm.

Although Cat. 12 has not been preserved sufficiently enough to allow for a certain attribution, it may well have been of the same type as Cat. 13. This lamp type with globular body, of which the upper part is flat and provided with a narrow groove around the filling hole (just visible in Cat. 13, fig. 24l), and a rather long spout, is of type 25A in the classification of lamps from the Athenian Agora.<sup>102</sup> The lamps of this type are dated to the second quarter of the 4<sup>th</sup> century BC till the first quarter of the 3<sup>rd</sup> century BC.<sup>103</sup> Good comparisons for Cat. 13 may also be found in the repertoire excavated in the mining town of Thorikos (Laurion, Attica): 'Lamps with rim set off from rounded shoulder by a pronounced groove; globular body and high base.' These are dated more generally to the 4<sup>th</sup> (and early 3<sup>rd</sup>) century BC.<sup>104</sup>

#### SOUTH ITALIAN AND SICILIOTE BLACK GLAZE WARE

*Cat. 14: BM04/40402, rim fragment of a bowl with outturned rim (fig. 24m)*

Clay light brown (7.5 YR 6/4), very glossy black glaze. Diam. rim 13.1 cm, max. diam. of the body 13.1 cm, preserved H 3.5 cm.

Bowls with outturned rim are not common before the last quarter of the 5<sup>th</sup> century BC.<sup>105</sup> In the 4<sup>th</sup> century BC, however, the type becomes rather popular, remaining so till well into the Hellenistic period.<sup>106</sup> The present fragment is

closely matched by Athenian bowls dated to before the middle of the 4<sup>th</sup> century BC.<sup>107</sup> In the typology of N. Lamboglia it corresponds to type 22, which is common in Greece during the whole 4<sup>th</sup> century BC.<sup>108</sup> In the typology of Morel it occurs as type 2681a, which includes both Attic examples and imitations in other production centres, dating to the first half of the 4<sup>th</sup> century BC.<sup>109</sup> In Carthage, Chelbi has discussed the occurrence of such bowls in the necropoleis.<sup>110</sup> The earliest examples in the Carthaginian settlement may date to the second quarter of the 4<sup>th</sup> century BC.<sup>111</sup>

*Cat. 15: BM04/40416, rim fragment of a bowl with outturned rim (fig. 24n)*

Clay reddish yellow (5 YR 6/6), very glossy black glaze. Diam. rim 14.2 cm, preserved H 2.1 cm.

On typology and comparisons, see Cat. 14. However, the profile of this fragment is more 'relaxed' than the last fragment and may be compared to Athenian examples of the second half of the 4<sup>th</sup> century BC.<sup>112</sup>

*Cat. 16: BM04/40406, lower part of small oinochoe (ring base with lower part of belly) (fig. 24p)*

Clay gray (7.5 YR N6/), interior pink (5 YR 7/4). Diam. base 4.2 cm, max. diam. belly 6.2 cm, preserved H 4 cm.

This fragment is in all likelihood to be attributed to a Siciliote production, and more precisely to a production situated in Lilybaeum.<sup>113</sup> The fragment is very close to a Black Glaze Ware lekythos with vertically grooved (a strigilato) body, found in the necropolis of Lilybaeum.<sup>114</sup> It is a Black Glaze production that is very well distributed in Sicilian contexts of the second half of the 4<sup>th</sup> century BC.

#### IMPORTED TRANSPORT AMPHORAE

*Cat. 17: BM04/40433, rim fragment of amphora of 'Corinthian B' type (fig. 25a)*

Clay very pale brown (10 YR 7/4). Diam. rim 14 cm, preserved H. 7.2 cm.

The triangular rim has a flat top and a ridge at the transition to the neck. It may be attributed on the basis of the shape and the clay properties to the so-called Corinthian B type amphorae of the Classical period. These amphorae have been produced mainly in the area of Kerkyra/Corfu and Bouthrotos/Butrint.<sup>115</sup> In the recent classification of V. Gassner, this particular rim shape is called 'Randform 5'.<sup>116</sup> The amphora type is among the main types imported in Carthage during the Middle Punic period. It is particularly frequent in the

American excavations in the Commercial Harbour area and especially within the material found in the fill of the Punic channel dated to about 350 BC.<sup>117</sup> Several fragments have been published in the DAI excavations in the Rue Ibn Chabâat (cf. fig. 1) in a context of the second half of the 4<sup>th</sup> century BC.<sup>118</sup> The type seems to disappear in Carthaginian contexts during the 3<sup>rd</sup> century BC.<sup>119</sup>

*Cat. 18: BM04/40423, rim fragment of amphora, from Malta? (fig. 25c)*

Clay red (2.5YR 5/8), surface light red (2.5 YR 6/8). Diam. rim 11.5 cm, preserved H 5 cm.

The rim fragment is close in shape to amphora profiles of J. Ramón's type T-2.2.1.2, which seems to have been produced on Malta and in Tunisia.<sup>120</sup> The type is dated principally to the first half of the 4<sup>th</sup> century BC till ca 330 BC, but the production may have started already in the last decennia of the 5<sup>th</sup> century BC. Of this type an example has been published from the DAI excavations in the Magon Quarter.<sup>121</sup>

*Cat. 19: BM04/40437, base fragment of amphora, from Samos? (fig. 25b)*

Clay red (10 R 5/6), surface reddish yellow (7.5 YR 7/6); some quartz (0.5 mm), lime, and grey particles. Diam. base 5.4 cm, preserved H 8 cm.

The base fragment may probably be attributed on the basis of the shape and the clay properties to a Samian amphora. A similar base, attributed to Samos, has been published from Carthage in a context of 'stratum VI-1a1' in the excavations of the University of Hamburg, dated to ca 480-425 BC.<sup>122</sup> The present fragment seems to show a less 'bulky' profile in its lower part, for which reason one may perhaps assign it a later date.

#### LOCAL TRANSPORT AMPHORA ('KTS CLAY STRUCTURE')

*Cat. 20: BM04/40424, rim fragment of amphora (fig. 25d)*

Clay KTS, surface white (2.5 Y 8/2). Diam. rim 13 cm, preserved H 3.1 cm.

The local amphora fragment may be attributed to Ramón's type T-2.2.1.2, which had apparently been produced in Tunisia and on Malta. Context BM04/7453 contains also an imported amphora of more or less the same shape, attributed to Malta (see Cat. 18, supra). The shape appeared during the two last decades of the 5<sup>th</sup> century BC and became very common mainly during the first thirty years or even first half of the 4<sup>th</sup> century BC.<sup>123</sup> Two very closely related amphorae have been found in the necropolis of the area dei Vivai Gitto at Palermo, in graves that had been in use



Fig. 31. Local Punic juglet Cat. 24 from fill of septic pit BM04/7453 (photo by M. Achour).

during the 4<sup>th</sup> century BC, but mainly between ca 350 and 340 BC.<sup>124</sup>

#### IMPORTED PAINTED WARE

Cat. 21: BM04/40412, rim fragment of a lid, from Sardinia? (fig. 25g)

Clay reddish yellow (5 YR 6/8) at core, exterior surface reddish yellow (5 YR 6/6) with probable traces of light reddish brown painting (5YR 6/3) consisting of a horizontal line at the rim's exterior and at least one vertical line touching it. Diam. rim c. 13 cm, preserved H 1.1 cm.

The rim fragment is probably to be attributed to a lid of Vegas' form 43.1.<sup>125</sup> The ones decorated with painted lines (Painted Ware) are of rather small dimensions (9-10.5 cm in diam.). The present one is only slightly larger, but is also to be considered as an import, perhaps from Sardinia (see also infra, Cat. 56).

#### PUNIC PAINTED WARE, LOCAL FABRIC ('KTS CLAY STRUCTURE')

Cat. 22: BM04/40420, rim fragment of a jug (fig. 25h) Clay KTS, reddish yellow (5 YR 7/6) in core, white (2.5 YR 8/2) on surface, painted strokes on the rim, yellowish brown (10 YR 5/4). Diam. rim 8.1 cm, preserved H 1.5 cm.

The rim fragment finds its best comparisons in egg-shaped jugs of Vegas' form 25, although these seem to have been generally executed in Bichrome Ware and to have smaller rim diameters.<sup>126</sup>

Cat. 23: BM04/40410, rim fragment of basin (fig. 25e) Clay KTS, reddish yellow (5 YR 6/8) in core, reddish yellow (5 YR 8/4) on external surface, white slip? (10 YR 8/2) on internal surface; red painted (10 R 5/6) on top of the rim. Diam. rim 33.2 cm, preserved H 4.6 cm.

This rim fragment of a large basin in the Painted Ware is a variant of form 51.1 in Vegas' recent typology, which appears in levels of the 5<sup>th</sup> and 4<sup>th</sup> centuries, being probably residual in 3<sup>rd</sup>-century BC contexts.<sup>127</sup> This form is also attested among the pottery of Middle Punic date from the metallurgical workshops at the southern Byrsa Hill.<sup>128</sup> For local Plain Ware versions of the same shape, see also infra, Cat. 26-27 (fig. 26j-k). It is tentatively suggested that these basins may sometimes have been covered with large lids, as for example Cat. 35 (fig. 26i, infra).

#### PUNIC PLAIN WARE, LOCAL FABRIC ('KTS CLAY STRUCTURE')

Cat. 24: BM04/40435, one-handed juglet, incurved bottom, oval body, cone-shaped shoulder to neck with rounded flaring rim; handle broken off (figs. 25f, 31) Clay pink (5 YR 8/4) in core, white (5 Y 8/2) on external surface. Diam. rim 4.4 cm, diam. base 3.8 cm, max. diam. belly 6.6 cm, max. H 11.3 cm.

The one-handed juglet has been rather well preserved. It may be compared with 4<sup>th</sup> and 3<sup>rd</sup> century BC examples from Carthage and elsewhere in North Africa.<sup>129</sup> Its shape corresponds to juglets BR 6A and BR 6B of the Lilybaeum necropolis, of which B. Bechtold sees the prototypes in the Athenian banded and the black footless jugs of the 6<sup>th</sup> century BC and the first quarter of the 5<sup>th</sup> century BC.<sup>130</sup> These vessels are particularly frequent in Sicily during the 5<sup>th</sup> and 4<sup>th</sup> centuries BC.<sup>131</sup> At Ibiza, J.H. Fernández attributes these jugs to 'Grupo B' of his type Eb.13, of which the examples from well-dated tomb contexts provide a date between the late 5<sup>th</sup> and the middle of the 4<sup>th</sup> century BC.<sup>132</sup> On Sardinia, these jugs are equally well distributed during the 5<sup>th</sup> and 4<sup>th</sup>

centuries BC. In the publication of the necropolis of Bitia, P. Bartoloni lists these jugs as Form 22 and dates them between the first quarter of the 5<sup>th</sup> and the middle of the 4<sup>th</sup> century BC.<sup>133</sup> A jug of similar profile has been published in the necropolis material from Tharros, now in the British Museum, generally dated to the 4<sup>th</sup> till 2<sup>nd</sup> century BC.<sup>134</sup> It has been found in association with an Attic squat net lekythos dating to the 4<sup>th</sup> century BC, just as in the present context BM04/7453 (Cat. 2, *fig. 24e*). The jug type is also attested in the material from the Arg-el-Gazouani necropolis near Kerkouane, where it is generally dated to the 4<sup>th</sup> century BC.<sup>135</sup>

*Cat. 25: BM04/40421, rim fragment of trefoil-mouthed jug (fig. 25i)*

Clay light red (10 R 6/8) in core, white (5 Y 8/2) on external surface, in places pink (5 YR 8/4). Diam. rim ca 5 cm, preserved H 5.7 cm.

The rim is clearly of a trefoil-mouthed jug of form 33.2 in Vegas' classification, which is generally dated to the Archaic till Middle Punic periods.<sup>136</sup> In the typology of P. Cintas several parallels for this particular shape can be found, both in the Painted and in the Plain Wares. Cintas dates them to the 4<sup>th</sup> and 3<sup>rd</sup> centuries BC.<sup>137</sup> The type is also rather frequently encountered among the material of the Arg-el-Gazouani necropolis at Kerkouane.<sup>138</sup>

*Cat. 26: BM04/40407, base fragment of basin (fig. 26k)*  
Clay reddish yellow (5 YR 6/6) in core, white (2.5 Y 8/2) on external surface (bottom).

Dimensions: diam. base 13.3 cm, preserved H 2 cm.

*Cat. 27: BM04/40409, two joining rim fragments of basin (fig. 26j)*

Clay light red (10 R 6/8), brownish yellow (10 YR 6/6) in core, pale yellow (5 Y 8/3) on external surface. Max. diam. rim ca 40 cm, preserved H 1.5 cm.

The rim fragments of Cat. 27 (*fig. 26j*) may be attributed to Plain Ware versions of large basins of form 51.1 in Vegas' recent typology.<sup>139</sup> These had also been produced in the local Painted Ware (*supra*, Cat. 23, *fig. 25e*). These basins appear in levels of the 5<sup>th</sup> and 4<sup>th</sup> centuries, being probably residual in 3<sup>rd</sup> century BC contexts. The base fragment Cat. 26 (*fig. 26k*) probably belongs to a similar basin, but the clay does not match that of Cat. 27, so we are dealing with two different vessels.

*Cat. 28: BM04/40418, two joining rim fragments of a small bowl (fig. 26a)*

Clay reddish yellow (5 YR 6/6), pinkish white (5

YR 8/2) on surface, traces of firing on surface. Diam. rim 6 cm, preserved H 2.2 cm.

This type of small bowl is close to cooking pots of Cintas' form 58.<sup>140</sup> It belongs to the main forms found in the funerary layers of the Byrsa Hill from the second quarter or middle of the 7<sup>th</sup> century BC onwards.<sup>141</sup> Being of variable dimensions,<sup>142</sup> they are provided with one handle or a knob/grip.<sup>143</sup> Two comparable small bowls of the same diameters have been found among the Archaic finds from the DAI excavations.<sup>144</sup> Numerous fragments of this type have been published from the stratigraphy below House II in the Magon Quarter.<sup>145</sup> The 1983 rescue excavations at the Ben Ayed plot in the northern part of the Bir Massouda terrain (*cf. fig. 1*) yielded a 'vase à feu' or 'braser' with a comparable profile, albeit of larger dimensions.<sup>146</sup> In fact, one is dealing with an intermediate variety, situated between Vegas' form 60.1, which is dated to the 7<sup>th</sup> and 5<sup>th</sup> centuries BC, and Vegas' form 60.2, dated to the 5<sup>th</sup> and 4<sup>th</sup> centuries BC.<sup>147</sup>

*Cat. 29: BM04/40419, three joining base fragments of a small cup/bowl (fig. 26b)*

Clay reddish yellow (5 YR 6/6), pinkish white (5 YR 8/2) on surface with traces of firing. Diam. base 3 cm, preserved H 1.7 cm.

The base fragments may have belonged to a similar shape as the preceding vessel (Cat. 28, *fig. 26a*).

PUNIC KITCHEN WARE, LOCAL FABRIC ('KTS CLAY STRUCTURE')

*Cat. 30: BM04/40816, casserole (figs. 26c, 32)*

Clay red (2.5 YR 5/8), external surface reddish grey (5 YR 5/2), traces of firing on surface. Intact, rim slightly damaged. Diam. rim 11.3 cm, max. H 11.5 cm, max. diam belly 15.5 cm.

The almost intact globular marmite with rounded base, internal ridge on the rim's interior and two horizontal handles, which are circular in section, finds no convincing parallels within the recent typology of Punic cooking vessels from the DAI excavations in Carthage.<sup>148</sup> Also the earlier typology of Cintas only yields Carthaginian examples with much straighter walls, generally dated to the 4<sup>th</sup> and 3<sup>rd</sup> centuries BC.<sup>149</sup> The best comparison may be found in a casserole from the necropolis of Lilybaeum, where it has been published as type PE 1, 'pentola biansata con pancia globulare'.<sup>150</sup> This particular piece has been found in a funerary context of the first quarter of the 3<sup>rd</sup> century BC, although Bechtold cites examples of the 4<sup>th</sup> century as well.



Fig. 32. Local Punic casserole Cat. 30 from fill of septic pit BM04/7453 (photo by H. Ben Romdhane).

A very close parallel can be found among the lidded chytrai of the Athenian Agora, especially cat. 1956, dated to the middle or late 4<sup>th</sup> century BC.<sup>151</sup> It is also a chytra with globular body, but without spout, considered to be a direct descendant of the lidded chytrai of the middle and second half of the 5<sup>th</sup> century BC.

Cat. 31: BM04/40422, six joining rim fragments of casserole, rim slightly deformed (fig. 26d) Clay 'sandwich', reddish brown (5 YR 4/4), at the interior dark reddish gray (5 YR 4/2), dark gray on surface. Diam. rim ca 8.8 cm, preserved H 3.8 cm.

The rim belongs to a cooking pot of form 67 in Vegas' recent typology.<sup>152</sup> The contexts in which these vessels have been found in the DAI excavations in Carthage point to a dating in the 5<sup>th</sup> and 4<sup>th</sup> centuries BC.

Cat. 32: BM04/40434, two joining rim fragments of casserole (fig. 26e)

Clay dark gray (2.5 YR N4/), surface dark gray (2.5 YR N4/). Diam. rim 18 cm, preserved H 2.4 cm.

The rim is characterised by a vertical profile and may have belonged to a one-handed globular casserole, for which the necropolis of Lilybaeum has yielded a good parallel. It is discussed by Bechtold as type PE 2 ('pentola monoansata con orlo verticale e corpo sferico').<sup>153</sup> A general dating in the 4<sup>th</sup> or 3<sup>rd</sup> century BC seems likely on the basis of the parallels quoted by Bechtold. In Carthage, it is to be compared with numbers 99 and 100 in the typology of Cintas, which have a similar date range.<sup>154</sup> It is not to be excluded that this casserole went together with lid Cat. 36 (fig. 26f, infra).

Cat. 33: BM04/40408, three joining rim fragments of a casserole (fig. 26g)

Clay red (2.5 YR 5/8); traces of fire on the external surface. Diam. rim 15.5 cm, preserved H 4.5 cm.

This rim of a casserole may be attributed to form 68.1 in the typology of Vegas.<sup>155</sup> This Carthaginian cooking vessel imitates the Greek *lopades* and had been in use during the 5<sup>th</sup> and 4<sup>th</sup> centuries BC. An almost identical example has been found in the Tuniso-Belgian excavations of the year 2002 and has been published in the first preliminary report.<sup>156</sup> Bechtold dates the context (BM02/1234) to the first 30 years of the 4<sup>th</sup> century BC. In the excavations of the University of Hamburg below the *Decumanus Maximus* (cf. fig. 1), these casseroles essentially appear in contexts of the second half of the 5<sup>th</sup> and the first half of the 4<sup>th</sup> centuries BC.<sup>157</sup> It is not to be excluded that this casserole went together with lid Cat. 34 (fig. 26h, infra).

Cat. 34: BM04/40414, rim fragment of lid (fig. 26h)

Clay red (2.5 YR 5/8), external surface reddish yellow (5 YR 7/6), internal surface pink (5 YR 7/3). Diam. rim 15 cm, preserved H 1.3 cm.

The lid fragment is to be compared with form 70.1 in Vegas' typology, generally dated to the 5<sup>th</sup> till 3<sup>rd</sup> century BC.<sup>158</sup> It may well have belonged to one of the casseroles discussed above. In fact the rim diameter of Cat. 33 (fig. 26g) would perhaps fit.

Cat. 35: BM04/40415, rim fragment of lid (fig. 26i)

Clay 'sandwich', internal half grayish brown (2.5 Y 5/2), external half strong brown (7.5 YR 5/6), surface gray 5 Y 6/1). Diam. rim ca 28 cm, preserved H 2.1 cm.

Cat. 36: BM04/40411, rim fragment of lid (fig. 26f)

Clay red (10 R 5/6), surface light yellowish brown (10 YR 6/4). Diam. rim ca 18 cm, preserved H 1.5 cm.

Although these lids may theoretically have belonged to one of the casseroles discussed above, only the rim diameter of the straight-walled casserole Cat. 32 (fig. 26e) would go with the rim diameter of Cat. 36. Also the groove in the lid's rim profile would then find a logical explanation. The rim diameter of Cat. 35 is too large to correspond to any of the other cooking vessels discussed above. However, the rim diameter suggestively matches that of basins like Cat. 23 (fig. 25e). Had these basins sometimes been closed with such large lids? Otherwise, no logical shape (to be covered) can be proposed in the Punic pottery repertoire.

## Metal objects

H. Koens

The fill of the septic pit contained 16 fragments of metal: copper/bronze (7), iron (8) and silver (1). Apart from that, 1 porous fragment of possible slag was encountered (BM04/42980), which may well be a residual element of the former metallurgical zone in the area. After a first X-ray scanning in the Academic Medical Centre (University of Amsterdam),<sup>159</sup> the metal objects have been studied and partly analysed with more advanced techniques (Energy Dispersive X-Ray spectrometer in a scanning electron microscope, SEM/EDX) at the Netherlands Institute for Cultural Heritage (ICN) in Amsterdam. Restoration proved, in most cases, not to be worthwhile given the desperate state of preservation in relation to the fact that often not even the original shape or function could be established. The composition of this small group of metals is rather characteristic for Carthaginian settlement contexts of the Punic period. On the other hand, the occurrence of a silver ring (from a sieving context) is a rarity. Only once before has a silver object (pendant with blue faience scarab from Naucratis) been found on the Bir Massouda site, in the excavations of the University of Hamburg below the *Decumanus Maximus* (cf. fig. 1).<sup>160</sup>

### COPPER/BRONZE

- Cat. 37: BM04/40813, 1 amorphous fragment  
L. 5.5 cm, max. w. 1.4 cm, max. th. 1.1 cm.  
Cat. 38: BM04/42969, 1 amorphous fragment, flake  
Cat. 39: BM04/42970, 1 amorphous fragment, flake  
Cat. 40: BM04/42971, 1 almost round fragment  
Max. diam. 1.2 cm.  
Cat. 41: BM04/42972, 1 flat fragment  
L. 1.6 cm, max. w. 0.9 cm, max. th. 0.6 cm.  
Cat. 42: BM04/42778, 1 complete nail, convex head, slightly tapering shaft, round in section  
L. 2.9 cm, max. diam. head 2.2 cm, diam. shaft below head 0.5 cm.  
Cat. 43: BM04/42954, 1 irregularly shaped fragment of bronze  
L. 0.7 cm, max. w. 0.6 cm, max. th. 0.3 cm.

### IRON

- Cat. 44: BM04/42958, 1 fragment of rod, perhaps part of a nail  
L. 1.8 cm, max. diam. 0.7 cm.  
Cat. 45: BM04/42973, 1 fragment, irregular shaped  
L. 3.6 cm, max. diam. 0.9 cm.  
Cat. 46: BM04/42974, 1 irregular-shaped fragment, flake.

Cat. 47: BM04/42975, 1 irregular-shaped fragment, flake.

Cat. 48: BM04/42976, 1 irregular-shaped fragment, flake.

Cat. 49: BM04/42977, 1 irregular-shaped fragment, flake.

Cat. 50: BM04/42978, 1 irregular-shaped fragment, flake.

Cat. 51: BM04/42979, 1 irregular-shaped fragment, not magnetic, totally corroded

L. 0.9 cm, max. w. 0.6 cm, max. th. 0.3 cm.

### SILVER (I. Joosten & H. Koens)

Cat. 52: BM04/42955, 1 fragment, tiny silver ring with small faience bead (figs. 33a, 34)

The faience bead has a white core with a light yellowish touch; glazed surface almost completely worn off. Diam. ring outside 0.38 cm, max. th. 0,06 cm. Diam. bead approximately 0.1 cm.

This object has been examined by SEM/EDX. The metal was shown to be silver covered with silver chloride, the latter being a regular corrosion product. It is a remarkable fact that no single trace of lead could be observed in the silver (fig. 35). The silver chloride (but not the metallic silver) contains a relatively high level of bromine (Br), which is not surprising since the properties of both elements (bromine, Br, and chlorine, Cl) are almost identical (fig. 36). Bromine is the most important element in purple and is to some extent soluble in water, and chlorides are porous and absorbent (in contrast to metallic silver). The bromide may therefore well be a post-depositional inclusion in the object, perhaps in relation with the deposit of crushed murex shell fragments found in the same context. In the corrosion product of the silver ring, the way of production has been clearly preserved: the eye has been made by turning the silver wire into a loop.<sup>161</sup>

The small bead, still in place in the silver ring, is most probably made of faience. The elements found in the EDX analyses show that all elements present in clay, silicium (Si), calcium (Ca), potassium (K), aluminium (Al) and traces of sodium (Na) and iron (Fe), are also present in the bead's

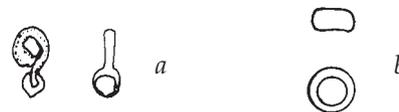


Fig. 33. Fill of septic pit BM04/7453:  
a) silver pendant with faience bead Cat. 52,  
b) glass bead Cat. 53 (drawings by J. Angenon).

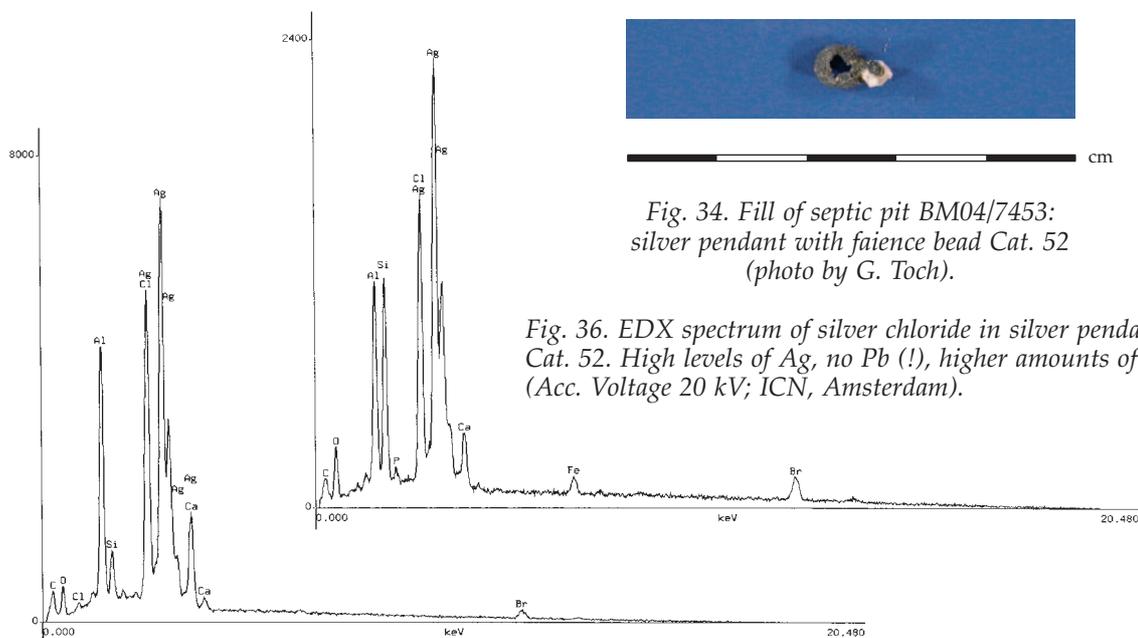


Fig. 35. EDX spectrum of metallic silver in silver pendant Cat. 52. High levels of Ag, no Pb (!), small amounts of Br (Acc. Voltage 20 kV; ICN, Amsterdam).

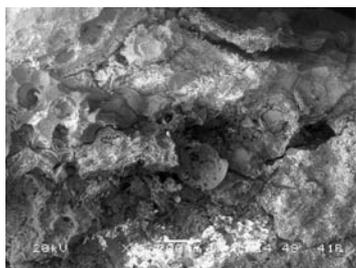


Fig. 37. Backscattered electron image of faience bead in silver pendant Cat. 52: ceramic ground mass (ICN, Amsterdam).



Fig. 38. Backscattered electron image of faience bead in silver pendant Cat. 52: glazed surface in left half (ICN, Amsterdam).

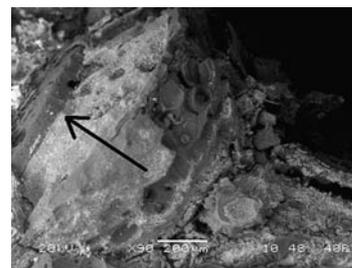


Fig. 39. Backscattered electron image of faience bead in silver pendant Cat. 52: ceramic ground mass covered by glazed surface, see arrow (ICN, Amsterdam).

core (figs. 37, 41). When magnified 500 times, it could be observed that only part of the original smooth surface with encapsulated airholes has been preserved (figs. 38-39). The EDX spectrum of this surface (fig. 40) is shown to be mainly composed of sodium (Na), silicium (Si) and calcium (Ca) with the regular corrossions (combinations with oxide, O). This is a clear indication of either glass or a glazed surface. Also attested are clear concentrations of antimony (Sb). It was used in Antiquity mainly as a pigment for broken white or yellow, so, in all likelihood, the faience bead had originally been of one of these colours.

Faience and glass paste

T. Redissi

Cat. 52: BM04/42955, see the description above (figs. 33a, 34)

The use of silver wire passing through the hole of an object (beads and the like) and shaping its end into a suspension ring, is a very well known technical procedure in Phoenician and Punic silver smithing. One may cite examples for it with glass paste beads in a funerary context (tomb 159), which probably dates to the Cypro-Archaic II period (ca 600-475 BC), at Amathus on Cyprus,<sup>162</sup>

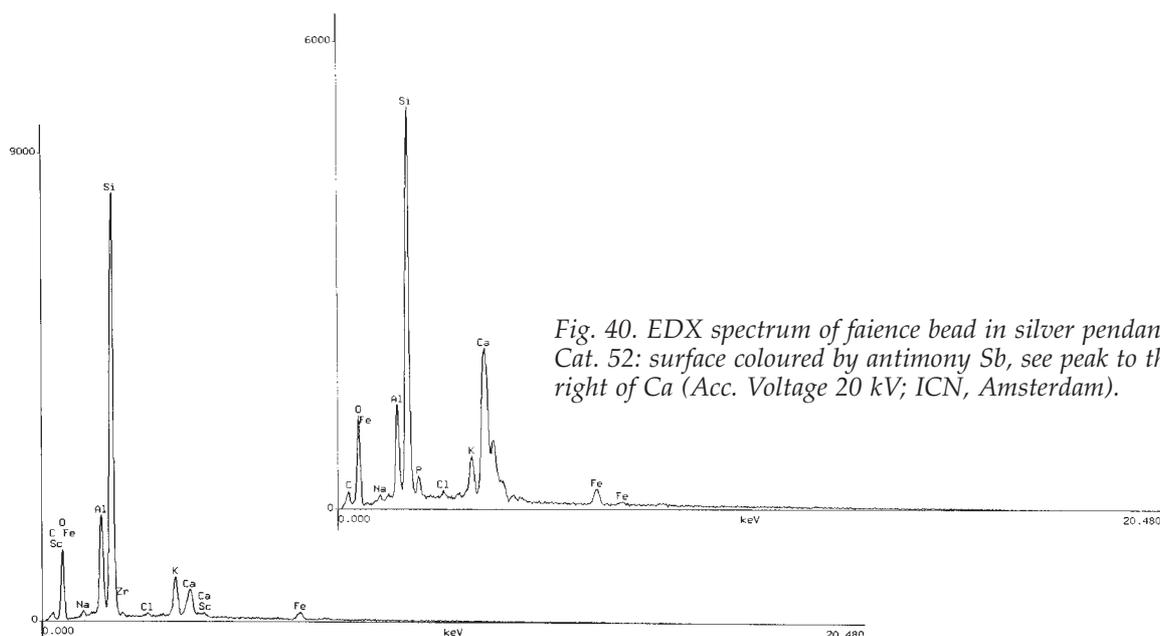


Fig. 40. EDX spectrum of faience bead in silver pendant Cat. 52: surface coloured by antimony Sb, see peak to the right of Ca (Acc. Voltage 20 kV; ICN, Amsterdam).

Fig. 41. EDX spectrum of faience bead in silver pendant Cat. 52: ceramic ground mass, note the absence of antimony Sb (Acc. Voltage 20 kV; ICN, Amsterdam).

and in tomb 186 of the Dermech necropolis at Carthage,<sup>163</sup> dated to the 5<sup>th</sup> century BC. Similarly, pendants in blue silicious paste, shaped as lotus flowers and provided with silver suspension rings, have been published from 'Atlit in Israel within tomb 24, which is dated to the end of the 5<sup>th</sup> and the beginning of the 4<sup>th</sup> century BC.<sup>164</sup> Comparable but fragmentary suspension rings, originally used to receive necklace elements, have been documented in tombs of the 6<sup>th</sup> and 5<sup>th</sup> centuries BC, again at Amathus<sup>165</sup> and 'Atlit.<sup>166</sup> A related technique has been used by Phoenician jewellers employing faience beads for the additional ornamentation of earrings. See for these, for example, the piece excavated in tomb ZR II of Akhziv, which one largely dates to the period of 800-650 BC.<sup>167</sup> In Sardinia, Phoenician and Punic jewellers have equally employed this tradition of combining silver (or bronze) wire with faience or stone beads, with or without shaping their ends into suspension rings, in the round rods, used in making bracelets, as is clearly attested in examples from Tharros.<sup>168</sup>

Cat. 53: BM04/42959, small bead of yellowish white opaque glass, pitted (figs. 33b, 42a)

Diam. 0.6 cm, int. diam. 0.3 cm, th. 0.2 cm.

The ring-shaped bead of almost translucent, greenish glass paste shows some air holes on the surface. Although this rather simple type of glass

bead is very commonly represented in necklaces found in funerary contexts, it has never been studied into detail on a separate basis. The *status quaestionis* of these beads is consequently exactly the opposite of that of the well-studied glass paste core-formed beads that have been widely distributed in the Mediterranean world of the first millennium BC.<sup>169</sup>

Ring-shaped glass beads are documented in large numbers all over the Mediterranean. In the context of the present preliminary report, it is impossible to present an exhaustive overview of the published examples of this genre.<sup>170</sup> By way of example, I will only give the statistics on glass beads in the Museum of Ibiza and Formentera. E. Ruano Ruiz, who published the glass beads, lists these plain ones as 'monochrome anulares'.<sup>171</sup> They are with 57.54% of all beads the commonest type. Stratigraphical information from tomb contexts gives dates from the 7<sup>th</sup> till 3<sup>rd</sup> centuries BC. In the East, the majority of the finds of these beads are reported in funerary contexts, dating essentially from the end of the 7<sup>th</sup> till the 4<sup>th</sup> century BC. I only mention the pieces found in the tombs of Akhziv,<sup>172</sup> the Deve Hüyük necropolis in Syria,<sup>173</sup> of Kamid el-Loz in Lebanon<sup>174</sup> and of 'Atlit in Israel.<sup>175</sup> Among the Phoenician-Punic settlements in the western Mediterranean, Carthage stands out by its high number of this type of ring shaped beads. The best-known examples, dating to with-

in the same chronological range as the ones in the East, have been found in different contexts: necropoleis,<sup>176</sup> open-air sanctuaries,<sup>177</sup> and in settlement contexts.<sup>178</sup> Other comparable finds, which have been attributed to the 4<sup>th</sup> century BC and originate in the Carthaginian territory, have been published from funerary contexts in the Arg-el-Gazouani necropolis near Kerkouane.<sup>179</sup> Other beads of the same type have been published in funerary contexts of the 5<sup>th</sup> and 4<sup>th</sup> centuries BC in Ampurias,<sup>180</sup> and Los Nietos<sup>181</sup> on the Iberian Peninsula, on Ibiza, the Balears<sup>182</sup> and in Tharros on Sardinia,<sup>183</sup> to mention just a few of the many examples.

*Cat. 54: BM04/40438: fragment of glass paste (fig. 42b)* Dimensions: 1.6 x 1.1 cm, th. 0.2 cm; porous surface, covered with air holes; small yellowish surface that has turned white; a brown line or glass wire runs over the surface, partially turned into dark yellow. On the interior of the fragment traces of the clay core have been preserved.

The limited dimensions of the fragment do not allow for a reconstruction of the original shape of the vessel. It may, however, in all likelihood have belonged to a small core-formed flask with polychrome decoration formed by the application of glass paste in different colours. These small flasks, which may sometimes be among the best the Phoenician-Punic and Greek Hellenistic glass ateliers have produced, have been widely distributed over the ancient Mediterranean world, essentially between the 7<sup>th</sup> century BC and the 1<sup>st</sup> century AD. The best-known types in the Phoenician-Punic world are the alabastra, the aryballoi, the small oinochoai, the amphoriskoi and the unguentaria.<sup>184</sup> From earlier campaigns on the Bir Massouda site, two core glass vessel fragments from Late Archaic and Middle Punic contexts as well as one residually from an Early Roman ('Augustan') context have been presented in relation to an overview of such finds from other Carthaginian settlement contexts.<sup>185</sup>

#### Garbage disposal in Punic Carthage

R.F. Docter

Garbage disposal and garbage collection form important issues in our understanding of archaeological assemblages in any ancient Mediterranean city. Carthage forms no exception to this rule. So, in a contribution to the 5<sup>th</sup> International Congress of Phoenician and Punic Studies in Marsala and Palermo in 2000, these issues were used to explain the scarcity of settlement finds in Carthage in the period of ca 550-480 BC.<sup>186</sup>

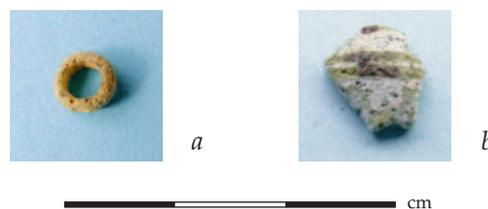


Fig. 42. Fill of septic pit BM04/7453: a) glass bead *Cat. 53*, b) fragment of glass paste vessel *Cat. 54* (photo's UGent/INP).

The scarcity of settlement finds in the relevant period is obvious. A recent inventory of all published settlement contexts has shown that no single context within the not inconsiderable number of 257 Punic contexts can be attributed to the second half of the 6<sup>th</sup> century BC.<sup>187</sup> Also the number of contexts securely dated to the first half of the 5<sup>th</sup> century BC is still rather low: only seven out of 257 published Punic contexts. By way of example, the contexts found by the two German teams that worked in Carthage may clearly document this pattern. In the area excavated by the University of Hamburg below the *Decumanus Maximus* (cf. fig. 1), the contexts of 'Phase V' (ca 550-480 BC) are limited to ten rather thin levelling layers in Houses 1-North and 1-South and six similar fillings in the street, mostly yielding relatively few finds (on a total of 1180 contexts, 746 of which belonging to the Punic period). In the excavations of the DAI in Carthage no archaeological contexts dating to the second half of the 6<sup>th</sup> century BC were found (published), but a context of the first half of the 5<sup>th</sup> century BC from the Magon quarter contained some residuals of the 6<sup>th</sup> century BC. It was found in the filling of the Punic House IV, Room 75, and contained fragments of 13 vessels, 5 of which imports.<sup>188</sup> Two elements come to the fore: the context is extremely small and the number of imports within it is considerable.

If one compares this pattern with the typical composition of the Archaic settlement contexts in Carthage, the difference could not be greater. Finds in Archaic contexts are generally counted by the hundreds. Context K 78/68 of House II, Room P57 in the Magon quarter is a good example, dated to the second half of the 7<sup>th</sup> century BC: more than 211 fragments, of which a large proportion of cooking and food preparation vessels and only a small number of imports.<sup>189</sup> The bellow's pipe (tuyère) fragment in it shows, moreover, that it is probably situated in a (former?) zone *extra muros* of the city, at the seaside fringes of the residential area.

How can this shift from quantitatively rich contexts in the 7<sup>th</sup> to rather small contexts in the 6<sup>th</sup> century BC be explained? In comparison with the building practises in the preceding Archaic period, that is to say from the 8<sup>th</sup> century till the middle of the 6<sup>th</sup> century BC, the use of household rubbish as filling and levelling material in the preparation of new floors seems to have become rare. Instead, the fillings are now typically thinner and the pavements in the houses have a more permanent character. Consequently, the number of pottery fragments within each filling diminishes in comparison with the contexts of the preceding period.

This has probably all to do with changes in management of the streets and so of the public space. The fact that the street levels now remained rather stable on one level, instead of continuously growing in height because of the uncontrolled disposal of household refuses, would probably have triggered the changes within the houses. In fact, the street level of 'Phase V' (ca 550-480 BC) of the East-Street excavated below the *Decumanus Maximus* by the University of Hamburg (cf. fig. 1) has only been raised slightly in comparison to the 'Layer IVc' level, mainly in order to restore an inclination for better drainage.<sup>190</sup> If the street level stays on more or less the same height and even is consolidated by a stone pavement in the following phase (VI), there is no need for raising the floor levels in the houses with every generation or so, in order to prevent rainwater and other disgusting fluids from running into the houses. It would now have become worthwhile to invest in more permanent floorings (up to that moment, Carthage's floorings consisted of white calcareous material, the ephemeral torba floors). And this is exactly the pattern emerging from the archaeological record. It is with constructions of 'Phase V' in the Hamburg *Decumanus Maximus* excavations that the first permanent mortar pavement has been found (see K. Schmidt, *infra*).

All in all, one gets the strong impression that at least by the second half of the 6<sup>th</sup> century BC the city of Carthage established some sort of garbage collecting system. Given the fact that (second half of the) 6<sup>th</sup> and 5<sup>th</sup>-century BC levels are so rare in all excavated parts of the city, it is very likely that this garbage and dung collecting was organized *centrally*. One may imagine a system of *koprologoi* or garbage collectors as is attested in the Greek world.<sup>191</sup> The inevitable question would then be: where did one dispose of the collected garbage if not anymore on the streets and in the floor fillings? It is likely that one dumped on the fringes of the inhabited city area, creating levelling layers,

on which the further development of the city took place.<sup>192</sup> The new evidence from the Bir Massouda site with its two septic pits shows that at least from the Middle Punic period onwards, Punic houses in the city had been provided with toilet pits. This may in all likelihood imply that at least from then on, a certain distinction would have been made within the whole garbage collecting system. Human faeces was now kept and collected separately in view of its potential use as manure in the horticulture of Carthage's immediate hinterland (in the 'Megara').

#### 4.3 Safe-deposit or cultic depository with construction offerings

##### Excavation and architecture

H. Ben Romdhane, T. De Schacht & B. Taverniers

The 2003 excavations in Trench 5 started from the Late Punic level. In the centre of the trench, a series of early Roman ('Augustan') walls defined an area of about 2.80 x 3.30 m that during the excavation was designated as 'Trench 5-Area B' (cf. fig. 1). Here, a remarkable architectural feature was encountered, which is to be interpreted as either a safe-deposit or strongbox or a cultic depository (fig. 44). It dates to the Middle Punic period. The find of an equally remarkable pottery deposit connected with this subterranean box-like structure justifies the presentation of these finds in the present preliminary report.

In the central north-eastern part of 'Area B', the remains of a Late Punic terrazzo pavement were found in situ (BM03/5319; fig. 43). The broken surface measured approximately one square meter. To the west and south of this pavement, two Roman robber trenches (BM03/5315 and BM03/5316), running north-south and east-west, had clearly disturbed a large portion of the original Punic stratigraphy next to and below the pavement. They hint at the existence of Punic walls, now robbed out.

Below the terrazzo pavement and its preparation layer (BM03/5323) a rectangular structure appeared. This architectural feature has been documented with context numbers BM03/5324 and BM03/5344. The bordering stones (BM03/5324) to the north and the east still stood upright, whereas the south-western corner (south and west faces) had been robbed out in Roman times (cf. *supra*). That the northern and eastern sides have been preserved can be explained by the fact that two early Roman ('Augustan') foundation walls sat directly on top of them. These northern and



Fig. 43. Late Punic terrazzo floor BM03/5319 over strongbox/depository BM03/5324+BM03/5344 (photo UGent/INP).

eastern sides each consisted of three El-Haouaria blocks. The stone slabs in the northern face had a clear rectangular shape in their upper parts, whereas the eastern slabs had more triangular tops. Mudbrick walls backed both of these sides. The bricks measured approximately 15 x 25 cm. Of the original cover only one rectangular limestone slab remained, still lying horizontally in the north-western corner (immediately in front of the 'Augustan' foundation wall; Fig. 44). The other, southern covering slabs, on which the Punic pavement originally must have rested, have disappeared, probably in connection with the later Roman robber activities. It could be observed that these slabs had been removed from the south, leaving part of the Punic terrazzo pavement 'hanging' in place. Although the space below the pavement had been filled up with loose soil since, the lack of support for the floor above has resulted in several large cracks in the pavement (fig. 43). In view of the two Roman robber trenches to the west and south



Fig. 44. Strongbox/depository BM03/5324 + BM03/5344 (photo UGent/INP).

that probably robbed out Punic walls, it is clear that the box was built in the south-western corner of a room.

The floor of this rectangular box-like structure is composed of a bed of white limestone rubble, on which lay some pebbles (BM03/5346) surrounded by a 6 to 7 cm wide band of green clay (fig. 44). Inside the box, on top of these pebbles, a red-brownish filling of max. 28 cm thickness has been documented (BM03/5342). It is in the lower part of this layer, directly on top of the pebbles, that two Punic Painted Ware vessels were found: a plate filled with red ochre and the upper body of a 'table amphora' (figs. 45-48). The plate was found in an almost horizontal position with the ochre still in place. Apparently, the amphora had already been broken (intentionally?) in Antiquity, perhaps at the time of deposition. Some loose fragments of this amphora were found in the fill of the Roman robber trenches surrounding the box (cf. supra), suggesting at least some post-depositional destruction. It seems clear from the dimensions of the vessels that the plate accompanied the amphora but did not serve as its lid.

#### Interpretation

*F. Chelbi, R.F. Docter & B. Maraoui Telmini*

The interior dimensions of the box are ca 85 x 60 cm. The original interior height of the box is about 45 cm from the rubble floor with pebbles to the covering slab. In view of the reconstructed original height of the amphora (ca 40-50 cm), it is not altogether to be excluded that the box had been used to contain the amphora in an upright position. But had this been the original function of the box below the Punic terrazzo floor? Let us first look at the architectural parallels.

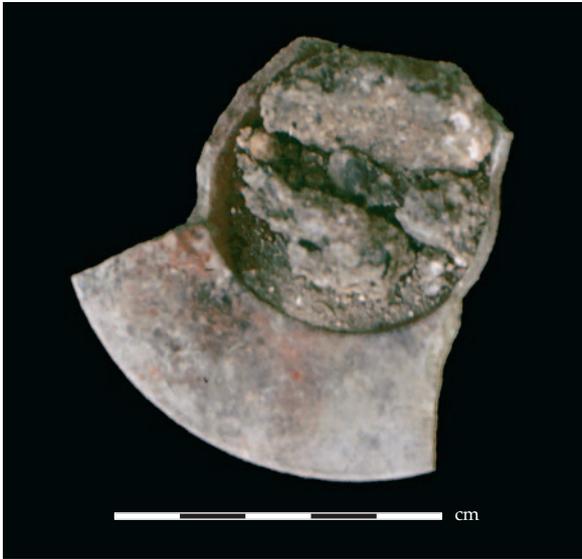


Fig. 45. Local Middle Punic plate with red ochre votive offering Cat. 55, from fill of strongbox/depository (context BM03/5342) (photo UGent/INP).



Fig. 47. Detail of handle shape of Sardinian Middle Punic amphora in Painted Ware Cat. 56, probably from Tharros, from fill of strongbox/depository (context BM03/5342) (photo UGent/INP).



Fig. 46. Sardinian Middle Punic amphora in Painted Ware Cat. 56, probably from Tharros from fill of strongbox/depository (context BM03/5342) (photo UGent/INP).

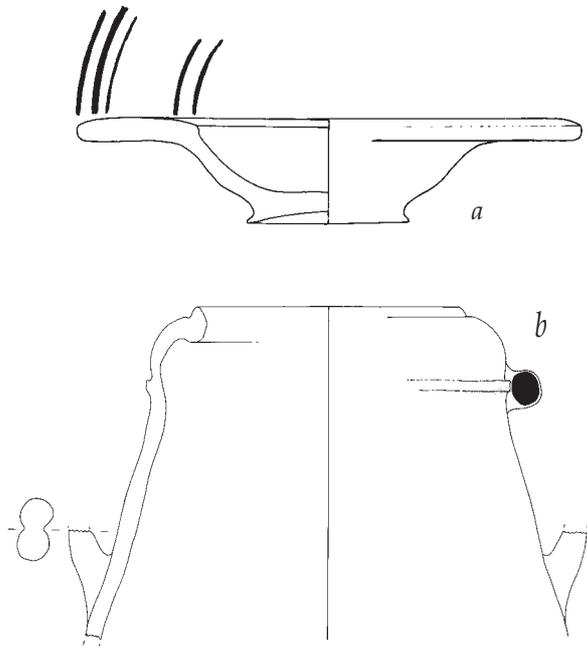


Fig. 48. Fill of strongbox/depository (context BM03/5342): a) local Punic plate Cat. 55, b) Sardinian amphora in Painted Ware Cat. 56 (drawings by B. Bechtold, inked by J. Angenon).

Similar structures have been documented in Carthage in the excavations of the two German teams. In the Magon Quarter, G. Stanzl excavated an 'Unterbodenbecken' below room P32/34, which he interpreted as a 'Tresor' or a cage in which snakes were kept.<sup>193</sup> Farther to the north on the Bir Massouda terrain (cf. fig. 1), the Hamburg team excavated a very comparable structure below a Late Punic terrazzo floor (36 x 21 cm), which has been interpreted as a safe-deposit or strongbox on the basis of a narrow opening in the pavement.<sup>194</sup> Seen in this light, the new stone box below a Punic terrazzo floor found in Trench 5 may be interpreted as a safe-deposit or strongbox too.

There are other arguments, though, which may link at least the new subterranean box with a cultic function from the start. The deposition of well-rounded pebbles on the floor is highly suggestive in this respect; one is reminded of the find of such pebbles in a Middle to Late Punic temple at Carthage (Rue Ibn Chabâat; cf. fig. 1),<sup>195</sup> the sanctuary at Kerkouane and the tophets at Carthage, Hadrumetum and El-Hofra.<sup>196</sup> Kerkouane gives also a second argument for a cultic interpretation. The courtyard of the same sanctuary contained a Roman box-like 'cchette' filled with lamps dating till within the 3<sup>rd</sup> century AD. This installation and the apparent votive offerings had been placed there by the local (Neopunic) population, who would have remembered the religious content of the spot, even some 500 years after the final destruction of Kerkouane by the troops of Attilius Regulus in 255/254 BC.<sup>197</sup> A still better comparison is found in Punic-Mauretanian Lixus (Morocco, ca 175/150-80/50 BC). Here, a stone box with interior dimensions of 1.05 x 0.45 x 0.48 m had been built in below the floor of a room. It contained a cylindrical Catalanian kalathos of the second or third quarter of the 2<sup>nd</sup> century BC, of which remarkably also the base was missing (cf. Cat. 56, figs. 47, 48b), which may have contained organic materials (food offerings?).<sup>198</sup>

But how do we explain, then, the two vessels in the lower fill of the box? The strongbox or cultic depository/foundation deposit had probably been constructed in Middle Punic times. There are two possible lines of interpretation. After the floor on top of it had been renovated or replaced by the present one in Late Punic times, the box was given up as such and used instead as a recipient for votive gifts and at the same time filled in with red-brownish earth containing few other pottery fragments (BM03/5342). Alternatively, the box would already in Middle Punic times have been intended exactly to contain these votive

gifts, which in view of the date of the vessels (infra) may well be the most plausible option.

Construction offerings<sup>199</sup>

B. Bechtold

Two relatively well-preserved pottery vessels have been found in the fill of the strongbox or cultic depository (figs. 45-48). In addition to these vessels, which are published here as a possible foundation deposit, the small archaeological context BM03/5342 contained five fragments of local Plain Ware, two fragments of closed forms of local Painted Ware decorated with violet lines, and one body sherd possibly of a closed form of Levantine fabric.

The discussion on the find circumstances of the disturbed deposit context BM03/5342 (supra) shows that the interpretation of the archaeological data offers only two possible lines of interpretation:

- 1 The two vessels Cat. 55-56 had been placed in an already existing box-like structure of the Middle Punic period (context BM03/5324 and BM03/5244; fig. 44) at a relatively late moment, viz. in the Late Punic period. This may have happened in relation with the renovation of the terrazzo floor (context BM03/5319; fig. 43). The amphora Cat. 56 may well have been broken intentionally.
- 2 The two vessels are contemporary to the box-like structure (context BM03/5324 + BM03/5344; fig. 44) and had been intended as votive gifts related to the construction of a Middle Punic building, the walls of which had already been robbed out during the Early Roman period (supra).

The amphora has a height of approximately 40-50 cm and may, hence, well have been placed in an upright position within the box. Given the fact, however, that its lower part and bottom are missing, it seems more likely that the vessel has been broken intentionally at the occasion of its deposition.

Independent of the absolute date of deposition, in the Middle Punic or Late Punic period, the two vessels seem clearly linked to the sphere of votive gifts or foundation deposits. K. Mansel recently discussed Phoenician-Punic foundation deposits, publishing six of them from the nearby Hamburg excavation below the *Decumanus Maximus* (cf. fig. 1).<sup>200</sup> Here, the phenomenon of placing construction offerings is attested for almost the whole Punic period, from the late 8<sup>th</sup> till the second quarter of the 2<sup>nd</sup> century BC ('layers IIb-VIIIa'). The six contexts represent foundation deposits, excavated

inside private houses, near or below the walls.<sup>201</sup> Most deposits consist of one vessel only, one deposit of two vessels. These may be slightly damaged, but generally seem to have retained their original functions. The nine pots studied by Mansel are typical of the Phoenician-Punic pottery repertoire: a bowl, a beaker, a plate and a lamp. Closed shapes are in the majority, though: jugs, table amphorae and dipper juglets. One imported jug ('bouteille') of Levantine fabric has been identified,<sup>202</sup> the other vessels are of local clay. In two cases the vessels appear to be clearly older than their stratigraphical position, viz. the moment of their deposition would imply. Among the foundation deposits identified in the nearby Hamburg excavation no indication of animal offerings could be noted. In one case, ash found within a bowl has been analysed pointing to burnt plants viz. an incense offering.<sup>203</sup> Most of the closed vessels would have contained liquids, however, alluding to libations. Mansel draws attention to the fact that Carthaginian foundation deposits are so heterogeneous. This may be due to the private character of the rituals involved in their deposition, stipulated by the individual building contractors. This is in sharp contrast with for example an extremely rich foundation deposit in the Phoenician temple of Kition (on Cyprus), clearly a more public or official building.<sup>204</sup>

Deposit BM03/5342 exactly fits the characteristics of Punic foundation deposits analysed by Mansel. The composition of the context, an imported table amphora<sup>205</sup> accompanied by a small plate of local fabric of the same date (early 4<sup>th</sup> century BC; infra Cat. 55-56), may be compared more or less to 'Bauopfer 5' of the Hamburg excavations. This construction deposit consists of an almost intact table amphora and a broken jug, both of local clay. They have been found within the preparation level of a Middle Punic pavement near the base of a wall and are attributed to 'layer VIIb' of ca 390-250 BC.<sup>206</sup> The present deposit should date to the (first half of the) 4<sup>th</sup> century BC. The table amphora may have contained liquids.

In the case of the ensemble of context BM03/5342, the particular detail of lotus flowers - referring to rebirth and immortality - in combination with other vegetal patterns may be related to the original significance of the offering. It should be borne in mind, though, that this old Egyptian symbol has not necessarily the same meaning in any given archaeological context; one is reminded in this case of similar symbols on two amphora sherds in a normal levelling layer on the Bir Mas-souda site.<sup>207</sup> Only in its combination with the

clear deposit of red ochre on the small plate (Cat. 55; fig. 45) and perhaps the association with the pebbles (supra, fig. 44), is it possible to link the motif in some way with a cultic ceremony. The colour red symbolises life and power in Antiquity, and its use - especially in painting by means of red ochre and cinnabar - would make a deceased immortal (see also below).<sup>208</sup> Its frequent application in Carthaginian cemeteries has been studied thoroughly by H. Benichou-Safar, who suggests a Libyan or Libo-Phoenician influence on Phoenician-Punic religious behaviour.<sup>209</sup> Both elements together strongly suggest a religious meaning, related to rebirth and/or immortality for the deposit of context BM03/5342. Foundation deposits are generally interpreted as rituals or ceremonial acts in advance of construction or structural alterations of buildings in order to secure their successful accomplishment and future protection.<sup>210</sup> Seen in this light, the two symbols in this deposit, which are linked to rebirth/immortality, may either relate to the floor (in case of hypothesis 1) or the building (in case of hypothesis 2), below which they have been found.

#### *Catalogue (figs. 45-48)*

PUNIC PAINTED WARE, LOCAL FABRIC ('KTS CLAY STRUCTURE')

*Cat. 55: BM03/34721: 5 joining fragments of a plate of Vegas' form 1.3 (figs. 45, 48a)*

Clay fairly hard fired, pale yellow (5 Y 8/3); pale yellow scum on inside and outside; reddish brown paint (5 YR 5/3) on top of rim (5 lines). Traces of primary firing on rim. Diam. rim 12 cm, diam. base 4.2 cm, H. 2.8 cm.

The plate contained a good quantity of a red substance, which has been analysed by H. Koens and I. Joosten and was shown to be red ochre (fig. 45; infra).

Cat. 55 represents a variant of the Middle Punic plates of Vegas' form 1.3, which is of Phoenician origin and in its latest evolution, during the 5<sup>th</sup> and 4<sup>th</sup> centuries BC, is characterised by a large rim and a very reduced tondo.<sup>211</sup> The best morphological comparison for Cat. 55 was found in the nearby excavations of the University of Hamburg below the crossroads of *Decumanus Maximus* and *Cardo X* (cf. fig. 1).<sup>212</sup> It has a deeper tondo than the present piece and has been found in a context of the second quarter of the 2<sup>nd</sup> century BC ('stratum VIIIa1'), where it must be residual. The small plate from the Hamburg excavations does not present smoothed surfaces anymore, which is characteristic of open vessels of local Plain Ware

till the last quarter of the 5<sup>th</sup> century BC.<sup>213</sup> Another indication for a dating towards the late 5<sup>th</sup> or first half of the 4<sup>th</sup> century BC is the presence of a sort of ring base, a morphological element introduced into the local repertoire as a result of Greek influence. Within the abundant stratified finds' material yielded by the Hamburg excavations, it does not occur earlier than 'layer VIIb', when it is introduced as a substitution for the 'pseudo-ring base'.<sup>214</sup> This too implies a date from the beginning of the 4<sup>th</sup> century BC onwards for the present piece.

A second parallel for Cat. 55 has been published from the DAI excavations in the Magon Quarter.<sup>215</sup> It was found in a sandy deposit below a second half of the 4<sup>th</sup>-century BC pavement in Punic House VI, which contained mainly 6<sup>th</sup>-4<sup>th</sup>-century BC pottery. The rim diam. is larger than the present piece (15 cm) and the rim itself is more inclined towards the tondo, the base is simply concave.

The lack of a smoothed surface and the typical concave base, which may have intended to imitate a sort of ring foot, in addition to the two comparisons from other Carthaginian Middle Punic deposits, suggest a chronology between the late 5<sup>th</sup> and the middle of the 4<sup>th</sup> century BC for the present plate.

#### PUNIC PAINTED WARE, IMPORTED FABRIC

*Cat. 56: BM03/42592, 37 fragments of the upper body of a table amphora of Cintas' Form 255 (figs. 46-47, 48b)*

Clay hard fired, very pale brown (10 YR 7/3), with some small vacua and round reddish brown particles, many large white particles and some golden mica on the surface. Surfaces very pale brown (10 YR 8/3) with reddish brown paint (2.5 YR 5/4) on exterior. Diam. rim 16.6 cm, max. preserved H. 20.9 cm.

Description of decoration (from rim downwards): a large horizontal band on the rim's exterior, two horizontal lines on the shoulder, slanting stripes on ridge. The handle zone is decorated on both sides of the vessel with three much schematised lotus flowers, each consisting of three hanging petals of rounded elongated shape (*fig. 46-47*). Downward curving stems, starting at the bases of the petals, link the flowers. Immediately below the lower handle attachment runs a horizontal stem with myrtle or laurel leaves. The lower part of the body has been decorated with a wide horizontal band, framed by two horizontal lines. At least the vertical surfaces of the upper attachments, shaped as rotelle, have been painted (*fig. 47*). Possibly the vertical double-reeded handles

had been painted with dots or drops too.

The amphora from the foundation deposit finds a nice comparison in a painted vessel from the Ard el-Khéraïb necropolis (Carthage), dated to the 4<sup>th</sup> century BC.<sup>216</sup> This vessel is decorated with horizontal wavy lines (stem) to which ivy leaves attach. Several other 'table amphorae', used as urns and characterised by richly painted decorations, were found by A.L. Delattre at an unidentified locality at the Byrsa hill.<sup>217</sup> They consist of either large widely spaced lotuses or lotus/myrtle leaves linked by a wavy horizontal stem in the handle zone. The zones below the lower handle attachments have invariably a repetitive scheme of horizontal lines and bands.

In a recent article, E. Cotza discusses vegetal patterns painted on 'table amphorae' with angular or convex shoulders from both the tophet and the metal-working area of Muru Mannu at Tharros. The shape of these local amphorae from Tharros is clearly of Carthaginian origin, as Cotza observes.<sup>218</sup> It corresponds in Carthage to D. Harden's class F, 'oval amphora with plain and angular or convex shoulder, vertical handle on shoulder', especially 'subtype a'.<sup>219</sup> These amphorae have been found in the Tanit II stratum of the tophet, dated to ca 700/650-350/300 BC, but 'subtype a' possibly dates to the 7<sup>th</sup>-5<sup>th</sup> centuries BC. From a morphological point of view, Cat. 56 corresponds well to Docter's subclass 'Karthago 3 B5', too.<sup>220</sup>

According to Cotza, amphorae with angular or convex shoulders became the commonest type of urn in the tophet of Tharros during the 4<sup>th</sup> century BC. Part of these had been richly painted with vegetal patterns, which she interprets as Greek influence.<sup>221</sup> It seems clear that all vegetal patterns identified on Cat. 56 and especially their combination nicely fit the ornamental repertoire, which is so characteristic of the 4<sup>th</sup>-century BC amphora workshop of Tharros. Also when considering the fabric of the present vessel, a provenance from Tharros becomes quite likely.<sup>222</sup>

To the best of my knowledge, no 4<sup>th</sup>-century BC Painted Ware vessels from Sardinia have been identified at Carthage up to this moment (but see now above, Cat. 21, *fig. 25g*). Phoenician transport amphorae from Sardinia, however, have been imported to Carthage from the second half of the 7<sup>th</sup> century BC onwards and especially during the 6<sup>th</sup> century BC.<sup>223</sup> A small number of amphorae of possible Sardinian fabric have been found in second half of the 5<sup>th</sup>-first half of the 4<sup>th</sup>-century BC deposits, excavated below the crossroads of *Decumanus Maximus* and *Cardo X* (cf. *fig. 1*).<sup>224</sup> Two more amphora fragments of Ramón's type

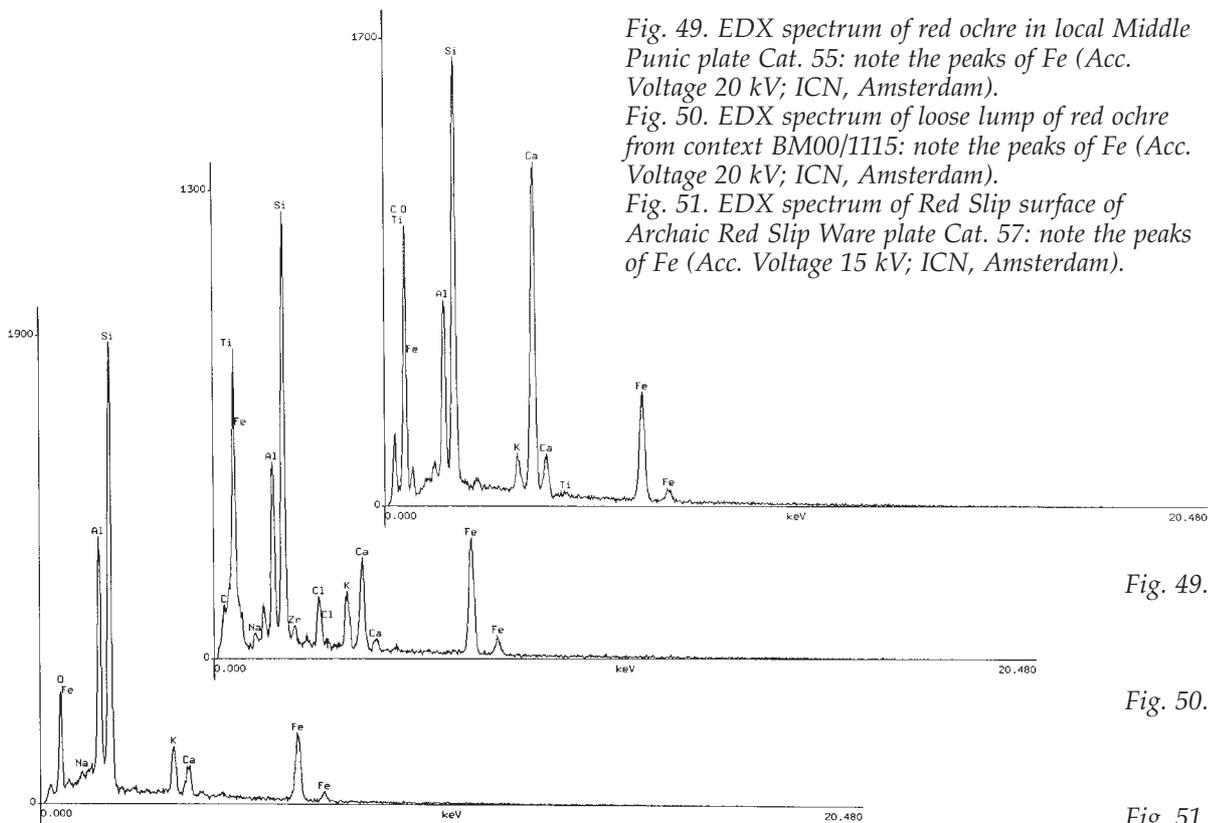


Fig. 49. EDX spectrum of red ochre in local Middle Punic plate Cat. 55: note the peaks of Fe (Acc. Voltage 20 kV; ICN, Amsterdam).

Fig. 50. EDX spectrum of loose lump of red ochre from context BM00/1115: note the peaks of Fe (Acc. Voltage 20 kV; ICN, Amsterdam).

Fig. 51. EDX spectrum of Red Slip surface of Archaic Red Slip Ware plate Cat. 57: note the peaks of Fe (Acc. Voltage 15 kV; ICN, Amsterdam).

Fig. 49.

Fig. 50.

Fig. 51.

T-4.1.1.3 of probable Sardinian provenance come from secondary contexts in the University of Amsterdam excavations on the Bir Massouda site, dated by comparisons to the late 5<sup>th</sup>-first half of the 4<sup>th</sup> century BC.<sup>225</sup> In fact, it is exactly in the late 5<sup>th</sup> and first half of the 4<sup>th</sup> century BC that a rapid increase of imported amphorae from 50% to 75% is visible, on a total of some 160 identified amphora fragments in the University of Hamburg excavations below the *Decumanus Maximus*.<sup>226</sup> Within these, Sardinian vessels form a relatively small but stable number. The hitherto limited indications for Sardinian vessels in Middle Punic Carthage may well be a question of insufficient knowledge of the precise clay characteristics with scholars working in Carthage (but see now also Cat. 21, fig. 25g). It seems, therefore, worthwhile to pay more attention to ascertaining the exact origins of such material.

With regard to the decorative patterns used on Cat. 56 (figs. 46-47), the motif of the lotus flower, symbol of Egyptian origin and alluding to rebirth after death, has already been found on three local Painted Ware fragments in the excavations at the Bir Massouda site. One of these was found in sec-

ondary position in a context of the early Imperial period, the other ones belong to a layer dated within the first thirty years of the 4<sup>th</sup> century BC.<sup>227</sup>

Cotza argues that the inspiration of decorative motifs derived from the East Greek repertoire reaches Sardinia during the 4<sup>th</sup> century BC through Carthage, which functioned as a sort of distribution centre for the West.<sup>228</sup> If the suggested Sardinian provenance of 'table amphora' Cat. 56 proves to be correct, it may be used in combination with the transport amphorae of possible Sardinian fabric to show that commercial and cultural contacts between the North-African metropolis and Sardinia were not one-way only. Apparently, some commodities produced on the island had been in demand at Carthage during the late 5<sup>th</sup> and first half of the 4<sup>th</sup> centuries BC. This historical period corresponds, in fact, to one of the most powerful and flourishing periods of the North-African city, expanding its interests in Sardinia. It is much clearer documented in the pottery repertoires by the impressive increase of imported Fine Wares from Athens, together with considerable amounts of West-Greek and Corcyrian, Corinthian B type wine amphorae (cf. fig. 25a).<sup>229</sup>

## Red ochre from the plate

I. Joosten & H. Koens

The red substance found on the Middle Punic plate Cat. 55 in the deposit (fig. 45), described above, has been analysed at the Netherlands Institute for Cultural Heritage (ICN, Amsterdam).<sup>230</sup> It consists of a finely ground powder, which has become compact in time. Upon its discovery, the plate had been lifted with its contents, put in a plastic bag and for better protection stored in a carton box. Apart from taking a digital photograph, the vessel has hardly been manipulated thereafter. At the laboratory of the ICN, the red contents of the plate (BM03/34721) were analysed by means of SEM/EDX (fig. 49). Apart from that, a loose lump of the same material from context BM00/1115 excavated during the University of Amsterdam excavations on the Bir Massouda site in 2000 has been analysed in the same way (fig. 50).<sup>231</sup> The two samples yielded almost identical results. The spectra of elements show the presence of iron (Fe), aluminium (Al), and silicon (Si) (figs. 49-50). It seems clear that the composition of the red substances is iron oxide ( $\text{Fe}_2\text{O}_3$ ), better known as hematite. In both cases, one is clearly dealing with natural red ochre.

## Provenance of the ochre and its symbolic context

H. Koens

Ochre, in its natural state occurring mainly in two colours, red and yellow,<sup>232</sup> has always been a much desired and sought after pigment. Upon establishing the fact that the Carthaginian plate contained natural red ochre, the question came up what the origin of this base material could have been; is it local or had it been imported?<sup>233</sup>

In the late 19<sup>th</sup> century, the Dumble geological survey inventoried all natural deposits of ochre in the area around Carthage.<sup>234</sup> The descriptions of the deposits, lying in a range of no more than few kilometres from Carthage, read as a manual of how to look for ochre.

A report of Charlette SA lists more deposits of ochre in Tunisia, mainly in the South-West, occurring in different shades of red: Djerba (pink), Douz (light pink), El Borma (red), Ksar Ghilane (red), Kriz (pale red), and the Large Eastern ERG (red).<sup>235</sup>

Seeing that ochre was still available in the surroundings of Carthage and on many other places in Tunisia in the late 19<sup>th</sup> century - in large quantities and in many different colours - one may reasonably assume that the situation in Antiquity

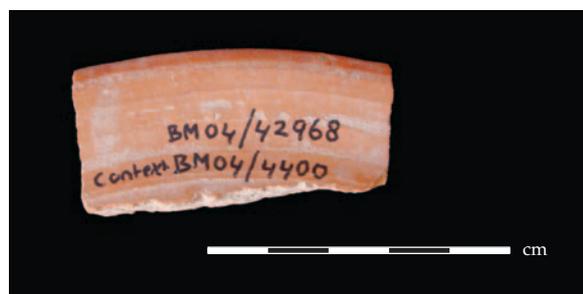


Fig. 52. Red Slip Ware plate fragment Cat. 57; underside with Red Slip and Plain Ware, smoothed surface (photo UGent/INP).



Fig. 53. Red Slip Ware plate fragment Cat. 57 (drawing by L.P. Dupiêd, inked by J. Angenon).

would not have been different. More probably the deposits would even have been richer and more numerous. All the ochre deposits are easy to mine and most often lie just beneath or even at the surface. One may, therefore, conclude that the intrinsic value of (red) ochre would not have been very high for those having access to it. But does this hold for the symbolic value as well? And did the Carthaginians have unlimited access to these deposits?

To start with the latter question, it seems clear that by the Middle Punic period, at the time the plate with red ochre discussed above had been deposited, the Carthaginians must have controlled a large part of the surrounding territory. When they founded their colony, though, the situation may have been different. Tradition holds that they bought only a small portion of the land of the native Libyans, and even had to compensate them on a regular basis by paying 'tribute', probably till the second quarter of the 5<sup>th</sup> century BC.<sup>236</sup> Also archaeologically there is no hard evidence for Carthaginian penetration of the immediate hinterland till the 6<sup>th</sup> century BC.<sup>237</sup>

As for the first question, the symbolic value of (red) ochre, the situation may be completely different from that of the intrinsic value. Colour symbolism is one of the symbolic frameworks used extensively by contemporary societies to convey information and abstract messages through material objects. Ethnographic data document the worldwide use of carefully chosen colours and patterns in for example body decoration, ritual,

and practical and social contexts. Red in particular has a symbolic significance that crosscuts cultural boundaries - often the colour is associated with life, success, and victory.<sup>238</sup>

#### Preliminary thoughts on red ochre and Phoenician Red Slip Ware

I. Joosten & H. Koens

As the results of the plate's contents and the loose lump from Trench 1 proved to be so clear and additional study showed that the red ochre in question may have been extracted in the near vicinity of Carthage, the suggestion came up that perhaps also the typical Phoenician-Punic Red Slip Ware had been produced with the same material. To test this supposition, a rim fragment of a local Red Slip plate from the excavations (Cat. 57; *figs.* 52-53) has been subjected to EDX analyses (*fig.* 51). The results of the Red Slip surface were surprisingly identical with the red ochre results (cf. *figs.* 49-50).

The clay core of the fragment contained the typical clay elements Calcium (Ca), Silicium (Si) and small amounts of iron (Fe) and aluminium (Al). The Red Slip surface of the fragment consisted of a bright red layer, containing the same elements as the clay core with extremely high values for iron (Fe) and aluminium (Al) as well as silicium (Si) in the spectrum (*fig.* 51). The orange/light red surface on the plate's underside, however, also showed the same elements as the clay core with lower values for iron (Fe) and aluminium (Al).

When the spectrums of the red ochre and the exterior Red Slip layer of the rim fragment are being compared, they turn out to be exactly matching from a qualitative point of view. It is, therefore, beyond doubt that the Carthaginian potters, who produced the typical Red Slip Ware, used red ochre, possibly from the same sources as that found in the Middle Punic votive plate Cat. 55 (*fig.* 45) and the loose lump from Trench 1. After the vessels had been turned on the wheel using clays that are poor in iron, they were left to dry for some time. Thereafter, the leather hard vessels were (partially) covered with a slip consisting of a very much diluted clay mass and a certain amount of grounded up red ochre.<sup>239</sup>

The earliest finds from the Carthaginian settlement show that the local potters had been able to produce the qualitatively superb Red Slip Ware almost from the start (*fig.* 52). This leaves earlier observations of S. Lancel obsolete, who, referring to studies of Cintas, and based on the necropolis

material of the late 8<sup>th</sup> century BC onwards, states that 'there was no doubt that these vessels coated with red slip had been imported from Phoenicia, the first potters working in Carthage having lacked the ability or knowledge to carry out this technique for finishing the vessels.'<sup>240</sup>

PUNIC RED SLIP WARE: LOCAL FABRIC ('KTS CLAY STRUCTURE')

Cat. 57: BM04/42968 (context BM04/4400), rim fragment of Red Slip Ware plate of A. Peserico's type P1 (*figs.* 52-53)

Fairly hard fired clay yellowish red (5 YR 5/6); surface light brown (7.5 YR 6/4), Red Slip (10 R 4/6), horizontally burnished. Diam. rim 18 cm; preserved H. 1.4 cm.

This rim has a mouth plate width of less than 3.5 cm and clearly belongs to Peserico's type P1.I or P1.II.<sup>241</sup> Type P1 finds its main distribution in contexts of the second half of the 8<sup>th</sup> and the first half of the 7<sup>th</sup> century BC. Although it can still be found (residually) in contexts of the following one-hundred years, Peserico pleads for a production till the middle of the 7<sup>th</sup> century BC.<sup>242</sup> The upper surface has been covered with Red Slip in a way stamped by Peserico as decoration type a.<sup>243</sup>

#### 5 RESULTS: LATE PUNIC PERIOD

##### 5.1 Corridor with tile floor

###### Excavation

V. De Clercq, T. De Schacht, E. Deweyrdt & L. Verdonck

In the central part of Trench 2, a Late Punic tile floor has been found in situ at a level of 8.93 m above sea level (BM03/2313+BM04/2413). It has been excavated in two campaigns (2003-2004).

The floor consisted of square terracotta tiles of 8 x 8 x 3 cm and has been preserved over a distance of ca 1.80 m, running north-south (*figs.* 54-55). The maximum width of the floor is ca 0.80 m. Although bordering walls to the east and the west have not been preserved, it may be suggested that the floor belonged to a corridor. The floor had been laid out on a dark grey, sandy preparation layer (BM03/2331), below which a light grey layer has been preserved (BM03/2332).

Two metres to the south - on exactly the same level as the tile floor - a torba floor of crushed limestone (BM04/2414) has been found. Its whole surface was blackened and showed traces of heavy fire, which is in all likelihood to be associated with the 146 BC Roman destruction of Carthage.



Fig. 54. Late Punic terracotta tile floor in Trench 2, viewed from the north (BM03/2313+BM04/2413) (photo UGent/INP).



Fig. 55. Part of Late Punic terracotta tile floor in Trench 2, viewed from the south (BM03/2313 + BM04/2413). Loose tiles in secondary position in post-Roman robber trench fill BM04/2415 + BM04/2416 (photo UGent/INP).

The relation between the tile floor and the torba floor level could not be further investigated. The torba floor has an irregular shape and has been preserved only incompletely. To the north of the torba floor, a ca 0.90 m wide post-Roman robber trench separated the two floor levels. It had clearly disturbed the original floor and strata and was found filled with a dark earth (BM04/2415 and BM04/2416), containing also some tiles (fig. 55).

Under the greyish fill of this robber trench, a Roman foundation wall (BM04/2430) was revealed. It is not to be excluded - but could not be confirmed - that this Roman wall lies in fact on top of a Punic predecessor, which once divided two spaces, one with the torba floor in the south and one with the terracotta tile floor (corridor?) to north.

The tile floor was covered by a thick, brown sandy layer with building debris (BM03/2308, BM03/2312 and BM04/2412), consisting mainly of destruction material of the Late Punic city. This layer originates in the Roman destruction of Carthage in 146 BC but must have been reworked various times. It contained among other things two coins of Byzantine date, one of which a half *foliis* of Heraclius (AD 610-641), struck at Carthage.<sup>244</sup> The Punic tile floor had been damaged in the Medieval period or in sub-recent times, since the south section of Trench 2 in 2003 clearly showed a fill of a robber trench with loose tiles of the floor at much higher levels (ca 9.20 and 10.70 m above sea level) and also in the robber trench discussed above tiles of the floor were documented (fig. 55). In almost all cleaning contexts and surface levels of Trench 2 from the campaign 2000 onwards, tiles of this floor turned up.

The tile floor

K. Schmidt

The find of a floor of square terracotta tiles in Trench 2 is of considerable importance for our knowledge of the *pavimenta punica*.<sup>245</sup> It is quite rare to find terracotta floor tiles in their original layout over such a large surface (figs. 54-55). Due west of this trench, in Trench 1/7, a second terracotta tile floor was found in the summer campaign of 2004, but this time only one hexagonal tile remained in situ (BM04/7497, with dowelled tongue system, fig. 56 and infra). As the other examples cited below, it may well be dated to the 3<sup>rd</sup> century BC. In all excavation campaigns, more loose terracotta tiles of this type have turned up in residual positions, that is to say in later levels containing Punic destruction material.



Fig. 56. Hexagonal terracotta floor tile with dowelled tongue system BM04/7497 in situ; covered by Late Punic drain BM04/7494 (photo UGent/INP).

The first Punic mortar floors turn up already in the early 5<sup>th</sup> century BC and mosaics of stone and terracotta tessellae in the late 5<sup>th</sup> or early 4<sup>th</sup> century BC.<sup>246</sup> Floors made of terracotta tiles seem to be a later development within the *pavimenta punica*; the first occur in contexts of the first half of the 3<sup>rd</sup> century BC. As the mosaic floors with terracotta tessellae (*opus figlinum*), the terracotta tile floors seem to be used preferably in rooms that were subject to constant and heavy wear, like corridors and small courtyards viz. light wells.

On the basis of the present documentation, this type of floor is to be considered as relatively rare. It is for example not surely attested within the wide spectrum of floor types in the Late Punic Byrsa Quarter ('Quartier Hannibal') dated to the late 3<sup>rd</sup> century till 146 BC,<sup>247</sup> and also among the Middle and Late Punic floors in the Magon Quarter the type is not mentioned.<sup>248</sup> A pavement with rectangular (?) tiles has been excavated in a corridor of a Late Punic house in Carthage Dermech on the Terrain Clariond (3<sup>rd</sup> century BC).<sup>249</sup> In the area excavated by the University of Hamburg in the north of the Bir Massouda terrain (cf. fig. 1), a pavement of hexagonal floor tiles has been found in situ, which may very well have belonged to a corridor of a Late Punic house (about the middle of the 3<sup>rd</sup> century BC; cf. fig. 56).<sup>250</sup> The same hexagonal tile shape is also attested, next to lozenge-shaped and rectangular ones, in Kerkouane. These pavements can be dated to the first half of the 3<sup>rd</sup> century BC at the latest.<sup>251</sup>

At the edges and lower sides of most of the terracotta tiles mortar remains in various thicknesses could be observed, which means that they had been set mostly in a mortar bedding. Sometimes, however, a loamy earth layer sufficed, as for exam-

ple in the floor excavated on the Hamburg site and also in the present one from the Bir Massouda site. The hexagonal and partly also the lozenge-shaped terracotta floor tiles show a very sophisticated dowelled tongue system, by which a very neat, and especially mortar-free seam became possible (fig. 56).<sup>252</sup> It is very likely that this particular technique, which is unknown in Greek and Roman architecture, is a Punic invention.<sup>253</sup> Although the tiles of the new terracotta floor in Trench 2 of the Bir Massouda site lack such sophisticated joints, the principle of laying a tile floor itself is a novelty that finds only rare contemporary parallels in the ancient world.

## 6 PROSPECTS

### 6.1 Site consolidation and 'mise-en-valeur'

F. Chelbi & R.F. Docter

The Bir Massouda terrain measures roughly 80 by 170 metres, so about 1.4 hectares (fig. 1). In the grid system of Roman Carthage it covers at least two complete insulae (S110 and S111), as well as part of two insulae to the south of *Decumanus* 1-South. In the far north of the terrain, it is bordered by the principle Roman east-west-road, the *Decumanus Maximus*. Three Roman cardines run from north to south over the site: *Cardo* IX-East, partially overlapping with the TGM-railroad, *Cardo* X-East, and *Cardo* XI-East, which runs exactly to the side of the Avenue Habib Bourguiba.

The archaeological investigations on this terrain had been governed since 1998 by the prospect of future building plans. The various teams working on the site had, thus, been putting all efforts in documenting the relevant remains, either in getting a coherent plan as in the case of the ecclesiastical complex excavated by the University of Cambridge, including the lifting of most of the mosaics (see elsewhere in this volume), or in grasping the site's development over a long period of Carthage's history as in the case of the excavations of the University of Amsterdam (2000 and 2001).<sup>254</sup> The Tuniso-Belgian investigations since 2002 have successfully tried to focus on the site's development in the Punic period, more than had been possible in the fieldwork of the University of Amsterdam.

In 2004, it has been officially decided to cancel the initially foreseen building plans on the Bir Massouda site. Although this decision is to be welcomed from an archaeological perspective, it places some unexpected pressures on the management of the Conservation du Site de Carthage

and some moral obligations on the excavators. Every site within the confines of the Archaeological Park of Carthage has to be given some protective measures and a 'mise-en-valeur'. In close cooperation with the Institut National du Patrimoine, the Agence de Mise en Valeur du Patrimoine et de Promotion Culturelle has now built a permanent fence, closing off the site in the west towards the Avenue Habib Bourguiba (fig. 1). The former southern fence had already been built in the course of the construction of the new Cultural Center of Carthage (former 'Cinéma de Carthage'). At the same time, a start has been made with carrying off the immense spoil heaps of six years' continuous excavation on the site. It is foreseen that the terrain will be brought back to its level at which it had been preserved till around 1970. Of all archaeological features encountered on the site, three come to the fore as particularly worthwhile in consolidating and presenting to the public. Apart from the ecclesiastical building excavated by the University of Cambridge (see elsewhere in this volume), especially the Archaic and Middle Punic defensive walls and the cremation pits of Carthage's earliest necropolis deserve a 'mise-en-valeur'.

In the northern part of the Bir Massouda terrain, the former excavation area of the University of Hamburg at the crossroads of *Decumanus Maximus* and *Cardo X-East* (cf. fig. 1) has already been given a 'mise-en-valeur' by the German architect J.M. Klessing (fig. 57).<sup>255</sup> The remains of an Archaic to Late Punic residential quarter, including a completely preserved Middle Punic temple of the 5<sup>th</sup> century BC (now covered by a permanent roof) have been consolidated. Due to several unforeseen circumstances, this archaeological ensemble could still not be made accessible to the public. It is expected that with the consolidation of the ecclesiastical complex, the Archaic city wall and the necropolis it will soon become open to the public. An entrance to this ensemble is already foreseen in the new fence, exactly on the trace of the *Decumanus Maximus*.

## 6.2 Finds processing

L. Fersi & K. Schmidt

The bilateral excavation campaigns of the years 2002-2004 yielded 777 archaeological contexts: soil marks, levelling layers, filling deposits, and architectural elements like floors and walls. About two-thirds of these contexts (some 500) contained finds, mostly pottery in fairly large quantities. During the field campaigns, a find laboratory has been in operation, in which already some 150 of



Fig. 57. Example of 'mise-en-valeur' on Bir Massouda site: excavations by the University of Hamburg below the *Decumanus Maximus* (cf. fig. 1) consolidated by J.M. Klessing (photo by H. Mundt, by kind permission of H.G. Niemeyer).

these 500 contexts could be inventoried. Of the remaining 350 contexts with finds, some 160 come from the two Trenches 3 and 7 (fig. 1); these will be inventoried and analysed by B. Maraoui Telmini in connection with her habilitation project. The other 190 contexts will be inventoried in the study campaign of 2005, which is scheduled for July and August.

The pottery, which makes up for the bulk of the material, has been subject to two different ways of treatment after the regular finds processing procedure (washing, drying and packing up of the finds). Depending on the stratigraphical homogeneity of the context, a distinction has been made between primary and secondary contexts, mostly already in the field. The latter contexts are the ones containing clear recent and sub-recent inclusions, as well as all Late Antique robber trench fills with material dating to the whole chronological range of Carthage's habitation history (8<sup>th</sup> century BC till 7<sup>th</sup> century AD). These secondary contexts have been inventoried and entered in the database, selections of their contents have been kept and registered (given an inventory number), and the bulk of their contents has been discarded in a specially selected place on the Bir Massouda site (a previously excavated Late Roman cistern; fig. 1 'cistern dump'). The primary contexts, on the contrary, have been inventoried, registered, and kept in full. Only after specialists' study of the pottery in such contexts, the majority of the non-diagnostic sherds could be discarded. Part of this close analysis of the contexts has already been done during the campaigns.

In 2003 and 2004, a large-scale sieving programme has been in operation.<sup>256</sup> It had two aims. In the first place, it was hoped to find even the smallest fragments of cremated individuals, whose graves had been cleared out already in Antiquity. In the second place it would enhance the chances of finding more, larger and better samples of animal bones from homogeneous (primary) contexts. Of each context two buckets of earth were collected for sieving. Only in the case of primary contexts, which during excavation showed to be evidently rich in bone and botanical remains, larger samples have been taken; in some cases even the entire context has been sieved, as the septic pit's content BM04/7453 (supra).<sup>257</sup>

In the field, several finds' categories have already been subject to a different processing procedure: coins, metals, plaster, faience, glass, charcoal, worked stone, inscriptions, and bones. From the field to the finds' laboratory, these categories have been kept separately from the pottery (see also infra). The finds of the 2002-2004 campaigns on the Bir Massouda site are stored with the finds of the excavations of the University of Amsterdam (2000-2001).

### 6.3 Publication trajectory

*F. Chelbi, R.F. Docter & B. Maraoui Telmini*

This is the last of two preliminary reports in the English language. All efforts are now directed to the final publication, in which a representative selection of the contexts will be included. The publication team consists of both participants of the field campaigns and external specialists. Here, we mention three large finds' categories, which are studied separately from the contexts' pottery, but of which the results will be included in the final analysis of the excavation.

1 *Archaeozoology and archaeobotany.* Large numbers of animal bones from stratified contexts have been collected by hand. In the campaigns of 2003 and 2004 also very extensive sieving procedures have been undertaken in order to obtain a better picture of the consumption pattern of the Carthaginian town population from the 8<sup>th</sup> century BC till the 7<sup>th</sup> century AD. A strong accent is placed on the contextual analysis of the bone material.<sup>258</sup> The faunal remains found in the 2002 and 2003 campaigns have in the meantime already been analysed and inventoried by A. Alen and W. van Neer (Brussels). The remaining bone fragments of the 2004 campaign will be studied in 2005. S. Roudesli-Chebba studies the human remains that are

found within the bone sample (see also supra). J.-P. Pals of the University of Amsterdam is responsible for the analysis and publication of the botanical remains from the sieving samples.

2 *Metals and metallurgy.* During the field campaigns of 2002 till 2004, 359 metal objects and fragments were found. The inventory of these, the description and partly the conservation are in the hands of H. Koenigs of the University of Amsterdam (see also supra). Prior to any manipulation and further treatment, the metals have been X-rayed by R.J. Jansen, still in their paper envelopes, at the Department of radiology of the Academic Medical Centre of the University of Amsterdam. A selection of these metals has been analysed additionally, partly in co-operation with I. Joosten of the Netherlands Institute for Cultural Heritage (see also supra).

3 *Coins.* The numbers of coins found in the Carthaginian settlement are generally rather low, especially in Punic layers. Moreover, we are only dealing with bronze coins that are generally in a very bad condition. In the small and short campaign of 2002 only 12 coins were found. In the more extensive and longer campaign of 2003 even no more than 14 coins came to light. These have in the meantime been cleaned professionally to allow their determination. These determinations by S. Frey-Kupper have been concluded. The summer campaign of 2004 yielded an unexpectedly high number of 252 coins. This has mainly been caused by a concentration of Byzantine and Vandal coins, found dispersed on top of and partly trodden into a torba floor in Trench 7. Adjacent robber trench fills and disturbed contexts contained relatively high numbers of the same denominations, so that it is very likely that these too originate in the same context. In view of the Punic accent of the bilateral investigations and the restricted budget, the professional cleaning of this wider Byzantine 'coin hoard' (215 pieces) had to be postponed till additional funding has been found.<sup>259</sup> The other 37 coins have already been cleaned by Archeoplan in Delft (The Netherlands). The Punic bronze coins from the excavations are analysed (non destructively: fast Neutron activation by Cyclotron) in the Centre Ernest Babelon of the CNRS Orléans by J.-N. Barrandon in order to determine their metallurgical compositions. The results of the analyses of five coins, which came to light during the 2003 campaign, are already available. These additional investigations are part of a wider

research interest of S. Frey-Kupper, but at the same time these too show that only international co-operation may bring about future advances in the field of (Punic) archaeology.

#### POSTSCRIPT

For the new series of C<sup>14</sup> -dates of Carthage, see now also the article by Nijboer and Van der Plicht on pages 31-36 of this publication.

#### NOTES

- \* The investigations have been made possible from the Belgian side by generous support of the Fund for Scientific Research Flanders (Belgium: FWO-Vlaanderen) - over the years 2003-2005 (research grant references 1.5.033.03, 1.5.168.04, and 1.5.228.05). From Tunisian side, the project has been supported financially and logistically by the Institut National du Patrimoine (INP). Special thanks go to R.T. Miles (Cambridge) and his team for scientific collaboration in the field, to F. Rakob (Rome/Münster) for lending us the field library in Carthage, to H.G. Niemeyer (Hamburg) and J. Rossiter (Alberta) for lending us their respective excavation equipments, and to J. Debergh (Brussels) for his continuous support in bibliographical matters. The rector of Ghent University, Prof. A. De Leenheer, the Director General of the INP in Tunis, Prof. B. Ben Memi, and the Director of the Department of Research and Inventory of the INP, Prof. F. Bejaoui, and their respective staff, have been most supportive in formalising the Tuniso-Belgian collaboration in a bilateral convention. We gratefully acknowledge the great support we received from the Belgian ambassador to Tunisia, Mr. R. Devrieze, as well as from the Belgian consul, Mr. B. Mariën and his wife, Mrs. G. Mariën-Meeuwesen. In 2003, the team profited from the collaboration with the AFS organisation and in particular from the collaboration with B. Malki and A. Zaafrani.
- 1 In the framework of the Tuniso-Belgian investigations, it has been preferred to use the transcription 'Bir Massouda' for the Arab toponym. Earlier publications use the French transcription 'Bir Messaouda' for the same site, for example Cintas 1976, 62-63, fig. 3 (erroneously situating the site farther to the coast, though). See also Docter forthcoming d.
  - 2 Docter et al. 2003. Two further preliminary reports in French, partially highlighting different aspects of the bilateral investigations on the Bir Massouda site, are currently in press: Chelbi/Maraoui Telmini/Docter forthcoming a and b.
  - 3 The project direction has been in the hands of F. Chelbi, R.F. Docter and B. Maraoui Telmini. The field team consisted of the Tunisian participants R. Ben Mabrouk, H. Ben Romdhane, S. Garsallah, B. Labidi, M. Sebai, and M. Zmerli (Paris), and the Belgian participants J. Claes, T. De Schacht, E. Deweirdt, K. Ryckbosch, B. Taverniers, J. Van Kerckhove, E. Van Woutergem, A. Verbeeck and L. Verdonck. Besides, a Palestinian architecture student, M. Othman, joined the team for two weeks. A. Alen (Brussels), S. Roudesli Chebbi (Carthage) and K. Schmidt (Hamburg) were responsible for the finds' laboratory.
  - 4 Apart from F. Chelbi, R.F. Docter, and B. Maraoui Telmini, the field team consisted of the Tunisian participants M.

Azaza, H. Ben Romdhane, N. El Hani (Boulogne sur Mer), S. Garsallah, K. Hamdi, D. Maaoui, J. Mabrouk, F. Majri, and S. Massoudi, and the Belgian participants V. De Clercq, T. De Schacht, L. Donnellan, V. Pauwels, A. Quintelier, K. Ryckbosch, T. Simoens, L. Vandamme, A. Verbeeck, and C. Wysevelde. The team of the finds' laboratory consisted of B. Bechtold (Graz), L. Fersi (Tunis), S. Roudesli Chebbi (Carthage), K. Schmidt (Hamburg), and W.D.J. van de Put (Amsterdam). Three geography students of Ghent University, L. Mortier, T. Neutens, and S. De Seranno, were responsible for the topographical surveying (see also *infra*).

- 5 In this short campaign, B. Maraoui Telmini, T. De Schacht and S. Garsallah finished the work in Trenches 4 and 7 with the aid of some workmen.
- 6 It should be noted that - in view of the system of field-numbering of the contexts (see Docter et al. 2003, 65, note 18), it has been decided to reuse the Trench numbers 3, 4, 5 and 6 of the earlier University of Amsterdam excavations (see Docter et al. 2003, 44, fig. 1), since these trenches would not be continued and had been back-filled in the meantime.
- 7 The team consisted of 7 participants: M. Achour, S. Bcherifia, M. Ben Nejma, H. Ben Romdhane, S. Garsallah, M. Torchani, and Ch. Touibi.
- 8 Magon Quarter: Rakob 1991a, 5. Hamburg site: Niemeyer et al. 1993, 206, note 16; 2002, 51, note 13.
- 9 So, in 2002, at the start of the first bilateral excavations of Ghent University and the Institut National du Patrimoine, K. Blyth and P. Clark of the Cambridge team set up a new point zero and several new grid points with known elevations in Trenches 1 and 8. These served in 2003 as basis for a transfer of the point zero to a more stable position on an ashlar block at the western edge of Trench 3 (elevation 14.08 m above sea level).
- 10 This 1:2000 map, which served as the basis of the first map of the site made by A. Mezzolani (see Docter et al. 2003, 44, fig. 1), shows the contour lines of altitude between 10 and 15 m running over the site.
- 11 This geodetic point is marked by a bronze nail, set in a concrete frame, and is to be found in front of the director's office, close to the lions' spout fountain. The astronomical point (1st order) has the Lambert coordinates latitude 8G 87' 24" East, longitude 40G 94' 64" North, elevation 56.75 m above sea level. It is marked as 'Carthage, Station Astronomique' on the 1/50,000 plan: La Marsa feuille XIV. It was the origin of the calculation of the definitive triangulation of Tunisia. We owe this information to P. Troussset, through S. Stevens.
- 12 The measurements were taken by L. Mortier, T. Neutens, and S. De Seranno, by way of trigonometric levelling using a Leica TC1610 totalstation with 1.5" angle accuracy and 2 mm + 2 ppm (parts per million or mm/km) distance accuracy and using a prism reflector on a pole. Fourteen stationing points were used to encompass the height difference between the Tunisian geodetic point and the Bir Massouda point zero. The average height difference of the double measurement amounts to 42,969 m. The maximum line-of-sight distance used was approximately 35 m. The standard deviation on this height difference, and thus on the recalculated level of 13.781 m, can be estimated to be 5 cm.
- 13 The elevations above sea level in Docter et al. 2003 should be corrected accordingly.
- 14 Niemeyer 2004.
- 15 Docter 2000; forthcoming b; R.F. Docter/B. Maraoui Telmini, in Docter et al. 2003, 48-55, figs. 6c, 7e,8b, d.

- <sup>16</sup> Docter et al. forthcoming b.
- <sup>17</sup> Docter et al. 2003, 46, fig. 5; Docter 2004b, 123-128.
- <sup>18</sup> See especially Docter 2004a and 2004b for full references. Compare also the 10<sup>th</sup>-9<sup>th</sup>-century casemate city walls of Hazor (King/Stager 2001, 190, fig. 92) and the casemate wall of the first half of the 7<sup>th</sup> century BC in Beyrouth (Badre 2000, 945-946, 948 with plan).
- <sup>19</sup> Rakob 1995, 422, fig. 5, pl. 111,1-2E; 2002, 26-27, 41, fig. 7, pl. VI,2; Docter 2004a, 33, fig. 6; 2004b, 124, fig. 6.
- <sup>20</sup> See on this, especially Docter et al. 2003, 45-46. The site of the Hamburg excavations below the *Decumanus Maximus* to the north seems to be situated higher, though, although steeply dropping towards the sea (fig. 3).
- <sup>21</sup> In the two sectors, on either side of the Archaic transversal wall BM00/8032+BM02/8209, the compact dark brown virgin soil was reached at 9.27 and 9.30 m above sea level, respectively.
- <sup>22</sup> Docter et al. 2003, 45, 64-64, fig. 4.
- <sup>23</sup> It should be noted in this connection, that the dating is based on Phoenician pottery only, which implies a rather ample dating, given the highly traditional way of pottery production in Carthage and other Phoenician settlements. On this problem of inaccurate dating, see also Docter et al. forthcoming b.
- <sup>24</sup> F. Chelbi/B. Maraoui Telmini, in Docter et al. 2003, 46-48. The first presentation of the necropolis is in Chelbi/Maraoui Telmini/Docter forthcoming a; see also forthcoming b. On the question of 8<sup>th</sup>-century necropoleis in Carthage, see Bénichou-Safar 1982, 321-325.
- <sup>25</sup> Stager/Wolff 1984, 42-43 (fig.); Stager 1992, 72 (fig.). See now also the colour photograph in King/Stager 2001, 360, pl. 223b-d.
- <sup>26</sup> Chelbi/Maraoui Telmini/Docter forthcoming a.
- <sup>27</sup> See Docter et al. 2003, 47, 51-52, fig. 7a-c; Docter 2004b, 128-130, fig. 9.
- <sup>28</sup> Cf. Benichou-Safar 1982, 265, 275-276, 302; Chelbi 1985, 91-92, nos 17-18 (figs.). It should be noted, however, that also in the Hamburg excavations below the *Decumanus Maximus*, fragments of five ostrich eggs have been found, two of which painted: K. Schmidt, in Niemeyer et al. forthcoming, cat. 6335-6338. This part of the city clearly was *intra muros* (cf. fig. 1, 3). The fact that on three of these eggs traces of red substance have been found on the inside, leads K. Schmidt to suggest that these settlement finds may have been luxurious containers for cosmetics. It should be remembered, though, that also some of the ones found in the necropoleis had been provided with red substances on the interiors (Benichou-Safar 1982, 265, note 199 and reference; see also below on the red ochre found in the foundation deposit).
- <sup>29</sup> Lancel 2002; see also 1995, 221.
- <sup>30</sup> This *terminus post quem* for the installation of the metal working quarter on the southern Byrsa Hill is based on the date of the material in the yellowish sand layer, which prepared the zone for these new activities. It should be noted that S. Lancel gives a different *terminus post quem* of these iron working installations, in the last quarter of the 5<sup>th</sup> to first quarter of the 4<sup>th</sup> century BC (Lancel 1982a, 238) or even only the late 5<sup>th</sup> century BC (Lancel 1995, 138, 140, fig. 72,4-5). See also R.F. Docter/B. Maraoui Telmini, in Docter et al. 2003, 54 with note 33; also note 128, *infra*.
- <sup>31</sup> Bénichou-Safar 1982, 325; Cintas 1976, 250; Lancel 1995, 51-54, 220-221. In the East, see now especially the cremation necropolis of Tyre, which is very comparable in respect to the pozzi found on the Bir Massouda site, Aubet/Nuñez/Trelliso 1998-1999; Aubet 2004.
- <sup>32</sup> Lancel 1995, 45-54.
- <sup>33</sup> A second, more hypothetical explanation starts from the possibility that these specific human skull fragments are the remains of prisoners sentenced to death (decapitated), whose heads would have been put up on stakes on the city walls or just in front of these. After some time, these skulls may either have fallen off the stakes or just been thrown over the walls. One is reminded of a later Carthaginian parallel for such a treatment of the human body. When in 202 BC the corpse of Hasdrubal (son of Geskon and father of Sophonisba) was dragged out of his father's tomb, where he had committed suicide, it was decapitated and his head was put up on a pike by the Carthaginian mob (Appian, *Historia romana* 7.38). In any case, hypothetical as it may be, this explanation would perfectly fit the topographical situation of the Bir Massouda site at this period, outside the inhabited city area.
- <sup>34</sup> We owe this kind information to the excavator, A. González Prats (Adra, December 2003 and by letter of March 2005).
- <sup>35</sup> Finds of human skulls in settlement contexts in East Spain, in Puig de Sant Andreu d'Ullastret (Baix Empordà) and Illa d'en Reixac, and in South France, in Entremont (Aix-en-Provence, Bouches-du Rhône), have been interpreted as remains of either ancestor cults or war trophies, see Martín i Ortega 2000, 116-120.
- <sup>36</sup> It is half of a left cheek bone, of which the upper junction is missing. One notes the presence of the chin hole situated between premolars PM1 and PM2 as well as of the lateral incisor, two premolars (PM1, PM2), and three molars (M1, M2, M3). M2 has been completely devastated by caries; only the form of the molar is preserved. M1 and PM2 each show a post-mortem crack.
- <sup>37</sup> It is an extremely remarkable coincidence that the reconstruction drawings (artist's impressions) of the French draughtsman J.-C. Golvin show an internal city wall - running north-south - to be at more or less exactly the same place as the Bir Massouda terrain: Fantar 1998b, 36, 43, plans I-II and cover; Niemeyer 2004, 39 (fig.); Amelung 2004, 89 (fig.).
- <sup>38</sup> King/Stager 2001, 190, fig. 92, with references.
- <sup>39</sup> These stones seem to be comparable to the ones used in the Middle Punic seaside city wall entrance of the Magon Quarter, Rakob 1991a, 165-174, 128-138, figs. 32-34, Beilagen 3 and 34; 2002, 18-19, 21, 36, fig. 3, pl. I,1; Docter 2004b, 12-13, fig. 7.
- <sup>40</sup> Detailed study of the pottery is foreseen in the study campaign of summer 2005.
- <sup>41</sup> To the southwest of the city wall angle (bastion) BM04/4406+4428 and BM03/4345+BM04/4474, the bedrock has partly been cut away to a considerable depth. Initially we thought that here an earlier tomb had been cut into the bedrock/virgin soil, but upon reaching the undisturbed virgin soil at the base, which consisted here of a sterile sandy layer, this option had to be discarded. It may perhaps have been a pit where lime stone rubble for the first constructions on the site has been extracted. The extension of this pit to the west and north could not be established. Its fill has a perfect multi-layered horizontal stratigraphy, showing that the pit has been filled up over a longer period of time. We probably have here the earliest stratigraphical sequence of Carthage (see also on the C<sup>14</sup> programme, *supra*).
- <sup>42</sup> Limited excavation and close investigation of the walls and foundations scheduled for summer 2005 may clarify this problem.

- <sup>43</sup> It had been foreseen that the present preliminary report on this important find would include a report on the animal bones by W. Van Neer and A. Alen as well. Unfortunately, the move of the archaeozoological laboratory from Tervuren to Brussels in the winter of 2004/2005 prevented the realisation of this intent.
- <sup>44</sup> Of the first 48 cm of the fill only two buckets of 9 litres were collected for sieving; the rest was sieved completely.
- <sup>45</sup> Docter et al. 2003, 45.
- <sup>46</sup> A third, later phase may be seen in the construction of a small bench-like structure to the northern side of the basin (BM04/7445; fig. 19).
- <sup>47</sup> The excavation of the pit gave nice clues as to the way in which it must have been emptied in Antiquity. The pit is too narrow to allow for a person (even a child) to enter. One can only reach the bottom of the pit by using one's full arm length and a special scoop of about 1 m with an off-set blade. These special scoops had been in use for the same purposes in Tunisia and northwestern Europe (Belgium and the Netherlands) till well into the 20<sup>th</sup> century.
- <sup>48</sup> For additional observations on and references to the Red Figure pottery in this context, I thank A. Vondra, W.D.J. van de Put (both Amsterdam) and R.F. Docter.
- <sup>49</sup> We have taken all fragments into consideration that were found in the excavation as well as those recuperated during the sieving procedures. The majority of the latter category is extremely small, though.
- <sup>50</sup> On these tabouna furnaces see B. Bechtold, in Docter et al. 2003, 56-57, 59-60, figs. 9l, 10.
- <sup>51</sup> Since both fragments are identical in shape, we only illustrate one.
- <sup>52</sup> Although the clay properties are identical to those of the CdE 1 amphorae of the Archaic period (cf. Docter et al. 2003, 53, cat. 11, fig. 8c, with references), Carthage has yielded some examples of the later types of the 5<sup>th</sup> and 4<sup>th</sup> centuries BC, cf. Bechtold forthcoming c, cat. 5545; forthcoming e, cat. 2378, both with references.
- <sup>53</sup> B. Bechtold, in Docter et al. 2003, 55, 66, note 38.
- <sup>54</sup> Chelbi 1992, 20.
- <sup>55</sup> LaMotta/Schiffer 1999. It is remarkable in this connection that the only traces to be perhaps connected with an accident are the traces of fire on the first torba floor, which is however to be related to the first phase of the ensemble.
- <sup>56</sup> Morel 2000, 260.
- <sup>57</sup> Morel 2000, 260; Bechtold forthcoming b; forthcoming e, and below.
- <sup>58</sup> Madau 2000, 103. The author observes the weakening of the Phoenician culture on Sardinia around the middle of the 4<sup>th</sup> century BC, reflecting the monolithic state of Carthaginian politics, imposing its power upon the old and new centres during the second half of the 4<sup>th</sup> century BC.
- <sup>59</sup> Di Stefano 1993, 43-47; Bechtold 1999, 279-283.
- <sup>60</sup> Chelbi 1992, 18.
- <sup>61</sup> Chelbi 1992, 18-19.
- <sup>62</sup> Chelbi 1992, 20.
- <sup>63</sup> Morel 2000, 259-260; see also B. Bechtold, *infra*, with references.
- <sup>64</sup> Morel 2000, 262.
- <sup>65</sup> Beazley 1963, 1485-1495, 1695-1696.
- <sup>66</sup> Niemeyer et al. 1996, 52, cat. 24; Bechtold forthcoming b, cat. 4408, with further references. It has not been considered a building deposit earlier and, hence, not so by Mansel in her study of such finds in the Hamburg excavation, Mansel 2003; forthcoming; cf. fig. 1.
- <sup>67</sup> Chelbi 1992, 55-56, 171.
- <sup>68</sup> The Beazley Archive database lists 233 Attic Red Figure skyphoi for the time period 450-300, none with a subject comparable to the new Carthage fragment. Only once the subject matter 'lion and horse' yields an example on an oinochoe in the Cabinet des Médailles in Paris (ca 450-400 BC), other combinations of feline/lion and cow/bull, deer or horse yield no or no comparable results.
- <sup>69</sup> Trias 1999, 281-285, figs. 9,80-85, 10,86-88, pl. 31,80-88.
- <sup>70</sup> Robinson 1950, 162, pls. 107-108.
- <sup>71</sup> Barnett/Mendleson 1987, 60, pl. 25,7/5, 13/4.
- <sup>72</sup> Chelbi 1992, 203-204, nos 472-474, 476.
- <sup>73</sup> Chelbi 1992, 61.
- <sup>74</sup> Rudolph 1971, 102-104, 111.
- <sup>75</sup> Rudolph 1971, 57-58, pl. XXVII.4: London E684.
- <sup>76</sup> Chelbi 1992, 60.
- <sup>77</sup> Chelbi 1992, 62, 208-209, nos 493-494.
- <sup>78</sup> Chelbi 1992, 60.
- <sup>79</sup> Lullies 1944, 31, pl. 102.2.
- <sup>80</sup> Massoul 1935, 70, pl. 32,10, 12, 23.
- <sup>81</sup> Bonomi 2000, 96, fig. 9; see also Massei 1978.
- <sup>82</sup> Beazley 1963, 1504-1505. On the name piece of the 'Group of the Cambridge Askos' (Cambridge X 34), see Boardman 1989, 193-194, pl. 426.
- <sup>83</sup> The Beazley Archive database shows examples from Berkeley (Phoebe Apperson Hearst Museum of Anthropology), Ferrara (Museo Nazionale di Spina), and Vienna (Kunsthistorisches Museum).
- <sup>84</sup> The earliest occurrence seems to be with the work of the Dirce Painter early in the 4<sup>th</sup> century BC, for example on two bell-kraters from the Fusco necropolis in Syracuse (Arias 1941, IV E, 5-6, pls. 8-9 = Trendall 1967, 202-204, pl. 80,2 = 1987, 24-25, pl. 2a-b) and a calyx-krater (name-piece: Trendall 1989, 29-30, pl. 61). Ivy bands in combination with added white dot-clusters (rosettes) around the rim also occur in other South Italian productions, as for example in Paestan and Campanian Red Figure (probably inspired by Siciliote productions of the Dirce Painter, see Trendall 1987, 22-23; 1989, 29-30), but the rendering seems to be different from the present piece. See for example, a bell-krater from Paestum attributed to the Caivano Painter of around 350 BC (Trendall 1989, 160, 178, pl. 282), the calyx-krater of the Scoglitti Group (Trendall 1967, 216-218, pl. 86,3-4), and the bell-krater of the Whiteface Painter (Trendall 1967, 378-380, pl. 146,1-2). For the occurrence of ivy bands on bell- and calyx-kraters in the Paestan repertoire, see Trendall 1987, pls. 46, 50, 90, 150, 160a.
- <sup>85</sup> Trendall 1967, 584-587, pl. 226,8 = 1989, 235, 243, pl. 421.
- <sup>86</sup> Trendall 1989, 236, 245, pls. 427-428.
- <sup>87</sup> Trendall 1967, 600-602, pls. 235,2-3, 236,3-4.
- <sup>88</sup> Sparkes/Talcott 1970, 134-135, pl. 33, fig. 9. Small bowls have been divided into many categories that began in the early 5<sup>th</sup> century BC and developed during the 4<sup>th</sup> century till well into the Hellenistic period. Our fragment is very similar in shape to two categories: 863-876 and 882-889, both of the Classical period. The shape is closer to Lamboglia shape (21-25), considered to be earlier than the 4<sup>th</sup>-century BC shapes Lamboglia 21, 22, 23, and 26, occurring during the whole century (Lamboglia 1952, 174-175). Such small bowls were mainly used for salt, sauce and other foodstuffs during the Classical period; see Sparkes/Talcott 1970, 132.
- <sup>89</sup> The authors emphasize the similarities in shape between the two examples, though. See Sparkes/Talcott 1970, 135.

- <sup>90</sup> Type 2714.d.1: Morel 1981, 209, pl. 67.
- <sup>91</sup> Barnett/Mendleson 1987, 64, pls. 81,5/11, 83,6/5, 94,11/6.
- <sup>92</sup> Chelbi 1992, 43, 130-131, variant 21/25A, especially nos 165-166.
- <sup>93</sup> Robinson 1950, 386, especially nos. 390-391, pl. 232.
- <sup>94</sup> For this placement of the palmettes, connected by a circle, see for example a bowl with incurving rim in the Zénon Piéridès collection, dating to the second quarter of the 4<sup>th</sup> century BC (Maffre 1971, 688-689, fig. 41a-b).
- <sup>95</sup> Used as guiding lines to indicate the point where the potter would impress a particular motif, see Sparkes/Talcott 1970, 23.
- <sup>96</sup> Jehasse 1978, 5, fig. 4.
- <sup>97</sup> This arrangement of alternating painted circles and reserved areas is characteristic of some Attic Black Glaze pieces datable to the end of the 5<sup>th</sup> century BC, Sparkes/Talcott 1970, 17-18.
- <sup>98</sup> Chelbi 1992, 239, no 619.
- <sup>99</sup> Sparkes/Talcott 1970, 29. Towards 380/370 BC, the ovules are replaced by rouletted bands (Jehasse 1978, 5).
- <sup>100</sup> Morel 1981, 442-443, pl. 221,11.
- <sup>101</sup> M. Achour, who currently prepares a dissertation on the lamps of Carthage, has made the drawings of the two lamp fragments.
- <sup>102</sup> Howland 1958.
- <sup>103</sup> Howland 1958, 67-69; Bussière 2000, 18, 55, AIII-1 (P 90-92).
- <sup>104</sup> Blondé 1983, 99-113, pls. 12-14, especially pl. 14,161.
- <sup>105</sup> Sparkes/Talcott 1970, 128.
- <sup>106</sup> Sparkes/Talcott 1970, 128-129; Chelbi 1992, 38.
- <sup>107</sup> See for example Sparkes/Talcott 1970, 129, fig. 8, no 803.
- <sup>108</sup> Lamboglia 1952, 171-172.
- <sup>109</sup> Morel 1981, 205, pl. 65.
- <sup>110</sup> Chelbi 1992, 38-39, 111-115, pls. 82-96.
- <sup>111</sup> A stamped fragment of an Attic bowl with out-turned rim has been found in the DAI excavations and is dated to the second quarter of the 4<sup>th</sup> century BC, see Trias 1999, 283, 285, fig. 10,92, pl. 31,92.
- <sup>112</sup> Sparkes/Talcott 1970, 129, nos 807-808, fig. 8.
- <sup>113</sup> B. Bechtold is thanked for her observation that the clay evidences a production of Lilybaeum (Carthage, summer 2004).
- <sup>114</sup> Di Stefano 1993, 43, pl. XXXIV,1.
- <sup>115</sup> See Docter 2003, 121-123, 125-130, especially cat. 1234, pl. 73,1234, with references.
- <sup>116</sup> Gassner 2000, 127, fig. 2.
- <sup>117</sup> Wolff 1986, 137-141: Corinthian B type amphorae are represented with 14 rims, 11 handles, 5 bases, and about 200 wall fragments.
- <sup>118</sup> Vegas 1999, 121-122, fig. 16, 30-33.
- <sup>119</sup> Wolff 1986, 141.
- <sup>120</sup> Ramón 1995, 179, 376, 515, 607, figs. 27, 153, 241, map 27.
- <sup>121</sup> M. Vegas, in Rakob 1991a, 123-124, fig. 126, 110.
- <sup>122</sup> R.F. Docter, in Niemeyer et al. 1993, 233-234, fig. 12g = Niemeyer et al. 2002, 85-86, fig. 20g.
- <sup>123</sup> Ramón 1995, 179.
- <sup>124</sup> Camerata Scovazzo/Castellana 1998, 224, 233 (VG181), 317-319 (R12): graves 28 and 89.
- <sup>125</sup> Vegas 1999, 174, fig. 78.
- <sup>126</sup> Vegas 1999, 161-162, fig. 59.
- <sup>127</sup> Vegas 1999, 182-184, fig. 90a.
- <sup>128</sup> Lancel 1979, 80-81, pl. 29,18 (context A.101, with material dating till the early 2<sup>nd</sup> century BC, see Lancel 1979, 79, 81, fig. 26,2-3); 1982a, 222-223, 228, fig. 289,8 (the preparation levelling layer context A.322, with material dating before the middle or end of the 4<sup>th</sup> century BC). On the date of these metallurgical installations (post quem context A.322), see also the comments in note 30, supra.
- <sup>129</sup> Cintas 1950, 103-104, especially pl. IX,110, 115.
- <sup>130</sup> Bechtold 1999, 130-131, with references, pl. XX, 206-208.
- <sup>131</sup> Bechtold 1999, 140, note 176, with references.
- <sup>132</sup> Fernández 1992, II, 20-21.
- <sup>133</sup> Nos 402 and 509 are dated to the first half of the 5<sup>th</sup> century BC, nos 198 and 209 to the middle of the 4<sup>th</sup> century BC, Bartoloni 1996, 99, 190, 192, 220, 231, figs. 24, 198 and 209, 36,402, 40,509, pls. XVI,4, XVII,6, XXIX,4, XXXV,2.
- <sup>134</sup> Barnett/Mendleson 1987, 53, pl. 7,30,13/2.
- <sup>135</sup> Gallet de Santerre/Slim 1983, 47, pl. XVIII, T1/66, fig. 4 (olpe no 21); pl. XX, T3/66, fig. 1 (olpe no 1); pl. XXIV, T7/66, fig. 3 (olpe no 3).
- <sup>136</sup> Vegas 1999, 166-167, fig. 68.
- <sup>137</sup> Cintas 1950, 117-119, pl. XIII,168-175.
- <sup>138</sup> Cintas 1950, pl. XVII, T1/66, fig. 5 (oinochoe no 12); pl. XXI, T3/66, fig. 8 (trefoil-mouthed jug no 26); pl. XXII, T3/66, figs. 4, 5 and 6; pl. XXXII, T4/66, fig. 4; pl. XXXIV, T10/66, figs. 5 and 6.
- <sup>139</sup> Vegas 1999, 182-184, fig. 90a.
- <sup>140</sup> Cintas 1950, 85, pl. V,58.
- <sup>141</sup> Lancel 1982b, 364.
- <sup>142</sup> Rim diameters vary from 7 cm (A.184.7, A.154.7, Lancel 1982b, 321, 356) to 10 cm (A.192.5, Lancel 1982b, 291).
- <sup>143</sup> Lancel 1982b, 273, 275, 283, 290, 295, 322-323, figs. 354-355, 365, 377-380, 403-404, 422-425, 498, 504, etc.
- <sup>144</sup> Vegas 2002, 157-158, fig. 4,55-56.
- <sup>145</sup> M. Vegas, in Rakob 1991a, 140-151.
- <sup>146</sup> Vegas 1984, 223, 225, fig. 3,57 = 1986, 126, 128, fig. 3,9.
- <sup>147</sup> Vegas 1999, 189-1892, figs. 96-97.
- <sup>148</sup> Vegas 1999, 195-199.
- <sup>149</sup> Cintas 1950, 77, pl. III,43.
- <sup>150</sup> Bechtold 1999, 144, pl. XXVII,241, with further references.
- <sup>151</sup> Sparkes/Talcott 1970, 226, pl. 94.
- <sup>152</sup> Vegas 1999, 195-196, fig. 103.
- <sup>153</sup> Bechtold 1999, 144-145, pl. XXVII,242, with references.
- <sup>154</sup> Cintas 1950, 99, pl. VIII,99-100.
- <sup>155</sup> Vegas 1999, 196-197, fig. 104,3.
- <sup>156</sup> B. Bechtold, in Docter et al. 2003, 55-58, cat. 20, figs. 9i, 10.
- <sup>157</sup> Bechtold forthcoming a.
- <sup>158</sup> Vegas 1999, 198-199, fig. 108,1.
- <sup>159</sup> I would like to thank R.J. Jansen for his continuous support to this project. Also the Allard Pierson Foundation and its secretary H.A.G. Brijder are thanked for giving me generous support in these investigations.
- <sup>160</sup> R.F. Docter, in Niemeyer et al. forthcoming, cat. 6333.
- <sup>161</sup> On top of it, a tiny rectangular plate has been observed microscopically, which seems to be composed of completely corroded regularly spaced silver grains. Its size is no more than 0.3 mm (!), which is puzzling and needs further research.
- <sup>162</sup> Karageorghis 1979, 681, fig. 30.
- <sup>163</sup> Gauckler 1915, 76, pl. LV. The same tomb has also yielded two stone pendants in the shape of wolves provided with silver suspension rings.
- <sup>164</sup> Johns 1932, 97, pl. XXXIII,876-878.
- <sup>165</sup> Gjerstad et al. 1935, 57, pl. XIV,17, tomb 9.
- <sup>166</sup> Johns 1932, pl. XXIII,556, tomb L21.
- <sup>167</sup> Dayagi-Mendels 2002, 38, fig. 4.1, no 3.
- <sup>168</sup> Barnett/Mendelson 1987, 144, no 5/32 (tomb 5), p. 185, fig. 31b, pl. 105, no 16/20 (tomb 16).

- 169 Seefried 1982.
- 170 The storerooms of the Musée National du Bardo (Tunis) and the Musée National de Carthage contain large numbers of glass paste beads and of beads in quartz-like paste covered with glaze. These need to be studied in the first place from the point of view of their compositions, for which reason chemical laboratory analyses are necessary before confronting them with other data from elsewhere in the Mediterranean world, where several production centres must have existed. It is absolutely necessary to undertake such a comparative study and a typo-chronological analysis of these objects, which for so long have unjustly been considered as 'trinkets' or examples of 'minor art'.
- 171 Ruano Ruiz 1996, 43, 46, table 3.
- 172 Dayagi-Mendels 2002, 38, fig. 4.1, nos 14-18, 21-24; p. 40, fig. 4.2, nos 11-13; p. 54, fig. 4.8, nos 15-16.
- 173 Moorey 1980, 118, 120, fig. 20, no 503,e,k; no 505,d,f,i.
- 174 Popa 1978, 87, pl. 11, grave 14, nos 3-4; pl. 15, grave 33, no 4.
- 175 Johns 1932, 63, pl. XV, no 329 (g); 80, pl. XXV, no 652; 96, pl. XXXIII, no 880.
- 176 Gauckler 1915, 63, pl. CXLIV (tomb 166); Chelbi 1985, 91 ('collier 5').
- 177 Stager 1982, 159, pl. 18d (second from below, first piece); Stager/Wolff 1984, 45 with fig., in the middle of the tophet cremation urn.
- 178 Lancel/Thuillier 1979, 224, fig. 74, A.151.4. For Carthage, see also the inventory of glass beads in settlement contexts and publication of 4 simple monochrome glass beads from contexts in the University of Amsterdam excavations on the Bir Massouda site, dating to the the Middle and Late Punic periods as well as residually from the Early Roman ('Augustan') period, Sonneveld/Docter forthcoming.
- 179 Gallet de Santerre/Slim 1983, 42, pl. XXXVI, figs. 2-3; Pisano 1988, 375 with fig.
- 180 Padro i Parcerisa 1983, 45, pl. XXXVII,6; 60, pl. XLIII,8.
- 181 Cruz Pérez 1990, 199, fig. 183, no 4.
- 182 Barthelemy 1992, 32-34.
- 183 Barnett/Mendleson 1987, pl. 130, no 29/20.
- 184 Fantar 1972; Grose 1989; Arveiller-Dulong/Nenna 2000.
- 185 Sonneveld/Docter forthcoming.
- 186 Docter forthcoming f.
- 187 Docter forthcoming e, Appendix 3. These counts do not include the material from the Hamburg *Decumanus Maximus* excavations (except for one building offering context, see note 202, infra).
- 188 Vegas 1999, 112-113, fig. 11b, Komplex 9 (context K 78/376). It is context no 90 in Docter forthcoming e, Appendix 3; forthcoming f, table 1.
- 189 M. Vegas, in Rakob 1991a, 146, 148-151, figs. 30,100-117, 31; Vegas 1999, 106-107, fig. 8, Komplex 4 (partly); 2000, 1240-1241, 1246, fig. 6 (partly). It is context no 76 in Docter forthcoming e, Appendix 3; forthcoming f, table 2.
- 190 See Niemeyer et al. 1995, 488-489; Docter et al. forthcoming a.
- 191 Docter forthcoming f, with references. In connection with his finds on the Byrsa hill, S. Lancel already refers to the possibility of *koprologoï* in Carthage (Lancel 1995, 159).
- 192 This had partly already been done in the preceding period, as the Archaic context from the Magon Quarter discussed above clearly shows. Also a good number of the Archaic layers on the *extra muros* part of the Bir Massouda terrain may be explained in this way.
- 193 G. Stanzl, in Rakob 1991a, 20-23 with note 10, fig. 5 (Raum P 32), 23-24, fig. 6 (Raum P 34).
- 194 R.F. Docter et al. forthcoming a.
- 195 Rakob 1995, 433-434, pl. 118,1; 2002, 30, 45, pl. X,1-3. These pebbles had been found in connection with food offerings in two Punic amphorae of the second half of the 3<sup>rd</sup> century BC, apparently buried below the surface.
- 196 Fantar 1986, 186-188, 248-249, pls. LXXIV-LXXV, with further references, also for the tophets mentioned.
- 197 Fantar 1986, 161-162, 251-252, pls. LXXVII-LXXVIII.
- 198 Aranegui Gascó 2001; Mansel 2003, 136, 147-148, figs. 10-12, with references.
- 199 Many thanks go to W.J. van de Put (Amsterdam) who restored the vessels and to K. Mansel (Berlin) who gave valuable advice on the interpretation of the find.
- 200 Mansel 2003; forthcoming; see also note 66, supra.
- 201 Mansel 2003, 133-134.
- 202 Niemeyer et al. 1993, 209, pls. 55,2, 57,1 = 2002, 55, 101, pl. IV,2; 1996, 12-13, 56, fig. 7, cat. 47; Docter 1997, § 3.2.1, Phase III, fig. 10.
- 203 Niemeyer et al. 1993, 208-209, fig. 6, pl. 55,1 = 2002, 53-54, 101, fig. 6, pl. IV,1; 1996, 12, 56, fig. 6, cat. 45-46; Mansel 2003, 130, 133; forthcoming.
- 204 Mansel 2003, 134-135, 143-144, figs. 6-7; forthcoming.
- 205 Mansel 2003, 137: 'In jüngeren Fundzusammenhängen gehören Importe...zu den Deponierungen.'
- 206 See Mansel 2003, 133; forthcoming.
- 207 B. Bechtold, in Docter et al. 2003, 56-57, 59, figs. 9j-k, 10, cat. 23-24.
- 208 Groß 1979, 229; Oppermann 1979, 1535-1536; Ramos Sainz 1990, 109-111.
- 209 Benichou-Safar 1982, 265-266: '...le cinabre se trouve souvent dans les tombes carthagoises, déposé dans une cupule ou un petit coffret...' See also Lancel 1995, 53.
- 210 Mansel 2003, 129.
- 211 Vegas 1999, 138-139, fig. 26.
- 212 Bechtold forthcoming a, cat. 2094.
- 213 Bechtold forthcoming a.
- 214 Bechtold forthcoming a, cat. 2132-2135.
- 215 M. Vegas, in Rakob 1991a, 35-36, fig. 10,22.
- 216 Merlin/Drappier 1909, fig. 61 = Cintas 1950, 137, no 255, pls. XX, LXIX. See also Cintas 1976, 343-352.
- 217 De Vogüé 1889, 7-8, pls. V,1, VI,3-4.
- 218 Cotza 1999, 49-50.
- 219 Harden 1937, 76-78, fig. 5a.
- 220 Docter 1997, § VII.2.1.3.5, fig. 581d, tab. 50 and especially fig. 275 from a deposit attributed to 'stratum VIa1' (ca 480-425 BC), which is a Plain Ware version, though, and has been provided with elliptical handles.
- 221 The most frequent motif is '... the lotus flower, usually with three petals...sometimes with five, ...with rounded or sharp ends, turned upwards or, more rarely, downwards ... Frequently, on each side of the pot there are three lotus flowers, ... The three vegetal patterns may be rendered in isolation or linked up with one another by their stems ... Furthermore, quite frequently, a wavy or linear horizontal stem has ivy or myrtle leaves on either side ... generally situated on the shoulder ... vertical or slanting stripes are often added to the vegetal patterns; horizontal stripes are painted on the handles', Cotza 1999, 51-52, 54, figs. 1-4.
- 222 G. Pisanu (Nuoro), who has seen colour photo's of the piece, kindly informed that he sees Tharros as an extremely likely candidate for the vessel's origin. I like to thank him for his interest and detailed information.
- 223 Docter 1997, § X.1.6-8, figs. 445-450, 453-454; forthcoming a, § XII.A.5, cat. 5457-5464. The import of Nuragic amphorae from Sardinia starts already earlier, in the 8<sup>th</sup>

- century BC; Docter 1997, § IX; 1998; forthcoming a, § XII.A.2, cat. 5362-5394.
- <sup>224</sup> Bechtold forthcoming c, cat. 5004 (= Ramón T-1.4.4.1 from a second or third quarter of the 4<sup>th</sup>-century BC level) and cat. 5005 (= Ramón T-4.1.1.3 from a first half of the 4<sup>th</sup>-century BC context).
- <sup>225</sup> Bechtold forthcoming e, cat. 2382-2383.
- <sup>226</sup> Bechtold forthcoming c.
- <sup>227</sup> B. Bechtold, in Docter et al. 2003, 56-57, 59, figs. 9j-k, 10, cat. 23-24.
- <sup>228</sup> Cotza 1997, 94-95.
- <sup>229</sup> See also Bechtold forthcoming e and B. Maraoui Telmini, *supra*.
- <sup>230</sup> The Tunisian authorities are kindly thanked for their liberal permission to export this important find on a temporary basis for analyses.
- <sup>231</sup> This lump of red material comes from a small levelling layer in Trench 1 (context BM00/1115; cf. fig. 1) and had been given sample number BM00/1063. The finds from the context are dated to the 6<sup>th</sup> and early 5<sup>th</sup> centuries BC; see Bechtold forthcoming d, cat. 570-574.
- <sup>232</sup> In 1978, a study has been published on annealing (tempering of metals, by slowly cooling off) of iron-bearing natural samples of red and yellow ochre (Singh/Jain/Chandra 1978). The amounts of iron, silicium and aluminium in these samples have been determined by chemical analysis. The authors concluded that red ochre contains iron mainly in the form of alpha - Fe<sub>2</sub>O<sub>3</sub> and in alumina-type octahedra, while yellow ochre has iron chiefly in the form of alpha - FeOOH. The transformation of alpha - FeOOH to alpha - Fe<sub>2</sub>O<sub>3</sub> was found to take place at a temperature of about 400 degrees C. Red ochre was shown to exhibit superparamagnetism. Infra-red and differential thermal analyses were also carried out to supplement the results obtained through Mössbauer spectrometry.
- <sup>233</sup> Red ochre has been published from other Phoenician settlements too, but always without relevant analyses. See for example Spanò Giammellaro 2004, 194, cat. 9, from the Casa dei Mosaici in 4<sup>th</sup> or 3<sup>rd</sup>-century BC Motya. There, one may be certain that it had to be imported.
- <sup>234</sup> Dumble Report 1890. This report, as the Charlette Report s.d. (*infra*), could be studied in the Department of Geology of the Free University, Amsterdam.
- <sup>235</sup> Charlette Report s.d. (probably dating to the nineteen-sixties; see also last note).
- <sup>236</sup> Fantar 1998a, 115, with references.
- <sup>237</sup> J.A. Greene, who surveyed the Carthaginian hinterland, mentions few earlier 7<sup>th</sup>-century BC sites (Greene 1986 107-113, figs. 19-20; 1992, 196), but the material from these sites seen by Docter and Bechtold does not necessarily date before the late 6<sup>th</sup> century BC at the earliest. J.A. Greene (Harvard) is thanked for his kind permission to study these finds.
- <sup>238</sup> Hovers et al. 2003.
- <sup>239</sup> Red Slip Ware has, to the best of our knowledge, only once been subject to a thorough compositional analysis. H.-G. Bachmann published in 1982 the results of the XRF (X Ray Fluorescence) and EDX analyses on some Red Slip Ware fragments in the Phoenician settlement of Toscanos in the South of Spain (Bachmann 1982). These local products were shown to contain apart from the characteristic clay elements also high amounts of iron (Fe), but Bachmann did not lay any connection with red ochre, though.
- <sup>240</sup> Lancel 1995, 57.
- <sup>241</sup> Peserico 2002, 21-27, fig. 4, pl. 3.
- <sup>242</sup> Peserico 2002, 24, fig. 4.
- <sup>243</sup> Peserico 2002, 22, pl. 4.
- <sup>244</sup> Grierson 1968, 349-350, no 234 (5.15 gr., 18.8-19.1 mm, 120°). The other coin is a *nummus* from AD 539-540 of the type Justinian I (AD 527-565), also issued at Carthage, Bellinger 1966, no 302 (0.67 gr, 9.4-10.0 mm, 180°). S. Frey-Kupper (Lausanne/Prahins), who is responsible for the analysis of the coin finds, provided these preliminary readings.
- <sup>245</sup> The literature on the *pavimenta punica* is extensive but dispersedly published: Dunbabin 1978, 16-17; Bruneau 1982; Fantar 1984, 493-514; 1985, 127-8 (table); Lancel 1985; Gaggiotti 1988; Rakob 1991b; Schmidt 1997; Dunbabin 1999, 101-103. A coherent study on the occurrence and development of these pavements in the Punic world is being prepared in cooperation with A. Mezzolani (Pesaro). The new tile floor and other examples of the *pavimenta punica* from the Bir Massouda site have also been depicted in Chelbi/Maraoui Telmini/Docter forthcoming b, figs. 9-12.
- <sup>246</sup> This early date for the first use of mortar pavements in Carthage is based on the stratigraphical finds of University of Hamburg below the *Decumanus Maximus* (cf. fig. 1), where the oldest pavement of grey mortar is dated to around 480 BC (so-called Tanit-Paviment I), see Niemeyer et al. 1995, 477, fig. 5,4, pl. 126,2; 2002, 58-59, 103, fig. 10,4, pl. VI,2; Schmidt 1997, 53; forthcoming.
- <sup>247</sup> Lancel 1985, 157-170, figs. 12-13. In this residential quarter, some tiles have been found that were not in situ (Lancel 1979, 83-84 figs. 39-40; Morel 1982, 196, 211, fig. 269). It is unlikely that these had been floor tiles, also since at least one was of blue schist. Perhaps some of these are related to the previous metallurgical activities in this zone, since one of the contexts in which they were found contained also other residual metallurgical waste.
- <sup>248</sup> Rakob 1991b.
- <sup>249</sup> On the basis of the photograph published by Cintas (1976, 93-94, pl. 56,1), I would suggest that the tiles are not lozenge-shaped, as he states, but rather more or less rectangular; they have only been set in a lozenge-shaped pattern. The sizes of the tiles are given by Cintas as 22/23 x 12 x 5 cm and as 24 x 12 cm by G.Ch. Picard (1946-1949, 676). See also A. Mezzolani on this problem (1999, 159 with note 15). On the finds from the Terrain Clariond, see also Fantar 1985, 24-25.
- <sup>250</sup> Niemeyer et al. 1995, 489, pl. 128,6 = 2002, 67, 105, pl. VIII,6; 1996, 24, fig. 25; forthcoming; Mezzolani 1999, 159-160, figs. 1-2.
- <sup>251</sup> On these and other finds from North-Africa, see Fantar 1984, 278-282, 387-388, 501, pls. 3-6; Mezzolani 1999, 159-162, figs. 3-6. On the hexagonal terracotta tiles in Mineo (Sicily), found in a corridor (?) of a Hellenistic nymphaeum, see Gentili 1965, 193, 195, fig. 4.
- <sup>252</sup> Cintas 1976, 94: 'L'assemblage à rainures et languettes'; Fantar 1984, 280. Group 2 in the classification of A. Mezzolani (1999, 159-164, with notes 17 and 30).
- <sup>253</sup> Mezzolani 1999, 162.
- <sup>254</sup> Docter 2004a; 2004b; forthcoming c.
- <sup>255</sup> See Niemeyer et al. 1996, 11-12, fig. 5.
- <sup>256</sup> In 2002, the limited scale of the excavation did not justify the installation of a sieving team. In excavations of the University of Amsterdam in 2000 and 2001, though, all contexts had been sieved in the way described here, see Docter 2004b; forthcoming c.
- <sup>257</sup> In 2003 we used plain excavation buckets, containing 8.5 litres, in 2004 we had to rely on different buckets,

containing 9 litres each. Sieving has been done with three mesh sizes: 10, 4, and 2 mm.

<sup>258</sup> See W. Van Neer, in Docter et al. 2003, 60.

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