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THE TOPOGRAPHY OF ARCHAIC CARTHAGE
Preliminary results of recent excavations and some prospects[1]

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Four times a metropolis

Carthage may rightly be reckoned among the metropoleis of antiquity, on a level with Athens, Rome, Alexandria and Constantinople/Byzantium. From its legendary foundation by princess Elissa/Dido in 814-813 BC onwards, Carthage developed to be the most important Punic city in the West. After its destruction by the Romans in 146 BC, at the end of the Third Punic War, the urban area remained barren for about 100 years. The Roman re-foundation from 44 or 29 BC, the *Colonia Iulia Concordia Carthago*, became the capital of the province of *Africa Nova*. Especially during the Late Antonine period and under the 'African' Severian emperors, Roman Carthage witnessed an unprecedented prosperity. Its conquest by the Vandal king Geisericus in AD 439 at once made Carthage the capital of the Vandal kingdom, from which Sicily and Rome were looted in AD 440 and 455 respectively. The re-conquest of the city by the Byzantine general Belisarios in AD 534 brought prosperity and growth back again. Under the name of *Carthago Iustiniana*, emperor Iustinianus I made the city the seat of public and military administration of the Prefecture Africa. Carthage played a prominent part also religiously, inspiring recently a researcher to apply the epithet 'Christian metropolis' to it (Ennabli 1997). In AD 695, the Arabs, led by Hassen Ibn Noôman, conquered Carthage, to destroy it three years later in retaliation of a rebellion. From then till when the French converted the site into a luxurious suburb of Tunis at the end of the 19th century AD, it only knew dispersed habitation. In consequence of its particular history, archaeologists wishing to excavate in Carthage will face the unusual task of examining the remains of four subsequent centres of power, religion, economy and culture. Crying for the moon?

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[1] A shorter version of the present text has been published in Dutch: Docter 2001. J.J.M. Schepers made the first English version; see also Docter 2000; Docter 2002a; Docter 2002b; Docter forthcoming a.

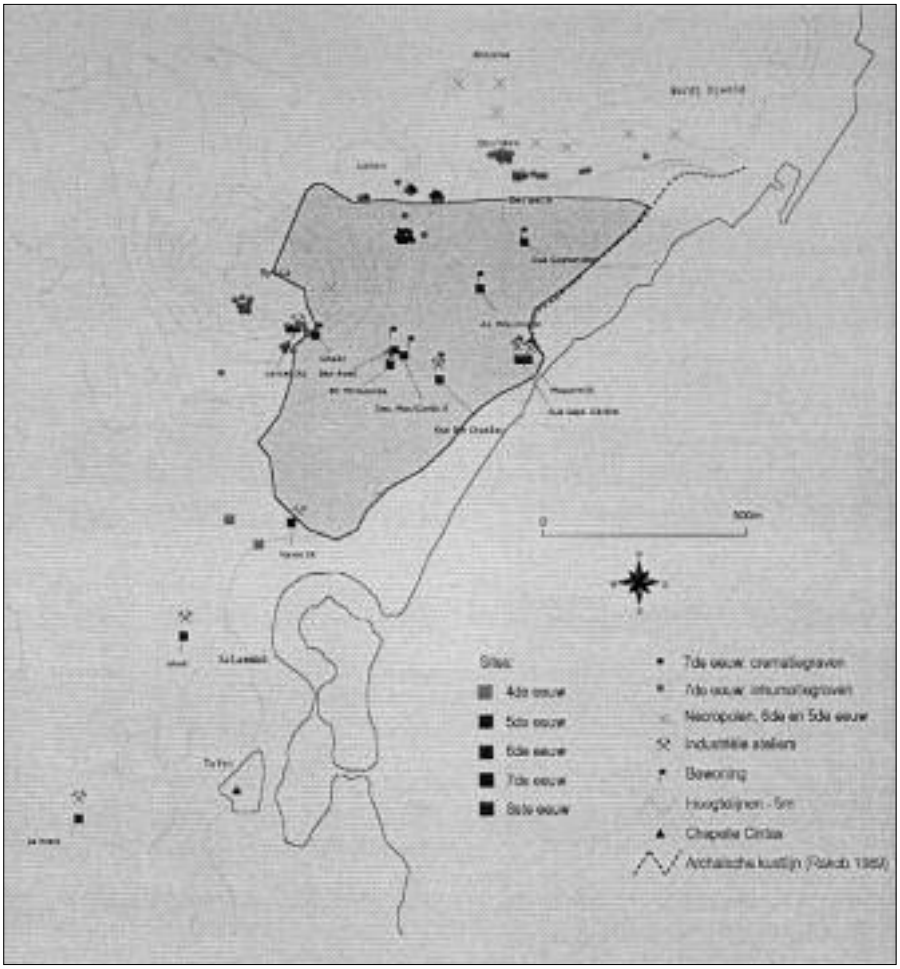

Fig. 1. Plan of archaic Carthage, showing position of excavation by the UvA (Bir Massouda) and spread of archaeological finds (situation 1992, drawing B. Taverniers)

Urban research on the Bir Massouda site

In the centre of modern Carthage, there is a large and barren plot appropriated since 1998 for the construction of the National Court of Cassation (figs. 2-4)[2]. It is enclosed between the railway TGM (train La Goulette – La Marsa) with the station Carthage Dermech, the supermarket and the Cinema Carthage, the Avenue du Président Habib Bourguiba, and modern villa buildings. The plot, locally known as Bir Massouda, measures roughly 80 by 170 meter, about 1.4 hectare. On its Northwest section, more precisely on the crossroads of the Roman *decumanus maximus* and *cardo* X, H.G. Niemeyer of the Universität Hamburg carried out a large deep sounding between 1986 and 1995, partly in co-operation with the Universiteit van Amsterdam (UvA)[3]. This fieldwork has brought to light a more or less uninterrupted habitation history of about 1460 years (from about 760 BC to about AD 700). The Hamburg research was prompted by the first discoveries of archaic finds *in situ* during rescue excavations of the Deutsches Archäologisches Institut (Rome) just West of this particular area. Here, in the so-called Ben-Ayed property, F. Rakob and O. Teschauer excavated settlement levels and architectural remains dating back to the 8th or 7th century BC[4].

To the Southwest of the section, on the Roman *insula* S110, there is a Byzantine baptistery, known since the early 20th century AD. Due North to it, an English team under the guidance of R. Miles of the Cambridge Open University is excavating the basilica belonging to it (Bir Massouda site 1: Miles 1999; Miles 2000). In 1988, an excavation by the Institut National du Patrimoine (INP), guided by F. Chelbi, exposed Roman foundations, Late Punic buildings, and levels with archaic find material to the South of the baptistery. In 2000 and 2001, the UvA-team cleaned, and enlarged this deep sounding as trench 8. As will be clear from an aerial photo from the mid-seventies (fig. 4), earlier unpublished excavations by Amar Medfey of the Carthage Museum primarily aimed at determining the places of Punic, Roman and Byzantine cisterns. To the Northeast of the terrain, on the Roman *insula* S111, H. Dolenz (Magdalensberg, Austria) and C. Flügel (prähistorisches Museum München) excavated the remnants of a large Roman building of imperial date on the *decumanus maximus* (Dolenz/Flügel 1995; Flügel/Dolenz 1996). The southern section of the plot, however, was never

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[2] The site is marked on the 'Plan général d'aménagement du parc de Carthage-Sidi Bou Saïd' as "Vestiges de la Carthage archaïque" (Lesage 1993, 31-3), a very justified epithet, as will be clear from the following.

[3] Niemeyer/Docter *et alii* 1993; Niemeyer/Docter/Rindelaub 1995; Niemeyer/Rindelaub/Schmidt 1996; Niemeyer *et alii* forthcoming.

[4] The upper layers of the site had already been investigated by Rakob in 1979, when he searched for the Roman *decumanus maximus* and established its width; Rakob 1984, 2-5, pls. 18-20; Vegas 1984, 219, note 10; Rakob 1991, 3-4, fig. 4, B-D. The Punic architectural remains will be integrated in the overall plans of the different phases found in the Hamburg excavations, see Niemeyer *et alii* forthcoming.

Fig. 2. Aerial photo of Carthage, showing the Bir Massouda site in the centre, about 1950. The agricultural use of the area and the 'gourbis' of the Abdel Khader family are visible.

Fig. 3.
Aerial photo of Carthage, showing the Bir Massouda site in the centre, 1962. The 'gourbis' of the Abdel Khader family is demolished.

Fig. 4.
Aerial photo of Carthage, showing the Bir Massouda site in the centre, about 1970. The first excavations are visible.

before examined *in extenso*[5]. There, the focal point of interest of the UvA research is in the part between the Roman East *cardines* IX and XI and the *decumanus maximus* and *decumanus* 1–South. In distinction to the Cambridge part of the terrain, it was decided to label the southern part 'Bir Massouda site 2'[6].

The new UvA research

Proceeding from the stratigraphical information of the Hamburg excavation, the Amsterdam research aimed at exposing the entire habitation history of this central part of Carthage. In contrast, the Hamburg research aimed at docu-

[5] See, however, the small test trench made in 1990 by P.C. McCulloch of the Winchester Museums and the University of Southampton at the crossroads of *cardo* X and *decumanus* 1-South; McCulloch 1996.

[6] The first results of these excavations were presented on the website of the UvA (Docter 2000), which has recently been moved to the website of Ghent University

menting the traces of habitation and the settlement development from the Phoenician-Punic period (*c*. 760-146 BC) on a coherent surface of about 500 square meters. Apart from this, it emphasised the stratigraphical ordering of the find material, while the typo-chronological studies of the various groups of material play a prominent part in the publication. In short, the find material is grouped according to kinds of material. In contrast, the UvA research emphasises the integrated study of find assemblages, and, thus, one of the major problems of multiperiod-sites, the residuality of find material. Special attention was paid to the find assemblages and habitation traces from the second half of the 6th and 5th centuries BC, a period of which other excavations have left us rather poorly informed (cf. Lancel 1995, 134-42). The special attention has not damaged the aim of equally documenting the traces of all periods of use. The procedure, notably when applied to the often ill examined (read: bulldozed away) topsoil, has yielded remarkable results with regard to another hardly known period of Carthage: the time between AD 700 and *c*. 1950. Until about 1962, the Abdel Khader family lived there in a stone house ('gourbis'; compare fig. 2 with fig. 3).

Institutional basis of the project and its organisation

The Amsterdam field research in Carthage sprung from the present author's research project 'Carthage in the 6th century BC', started in mid-1999 and financed by the Royal Netherlands Academy of Arts and Sciences (KNAW). The latter project had been part of the research of the Department Amsterdam Archaeological Centre of the UvA till October 1, 2001, and closely corresponded with the research focus 'Cities and Central Places', meant by the recently merged archaeological departments of the UvA (Mediterranean and European Archaeology) to anchor their research. At present, the research project 'Carthage in the 6th century BC' has been taken over by Ghent University (Belgium).

Under the limited term of a KNAW-fellowship (3 years), a fieldwork campaign and the ensuing obligation to publish are risky business. The UTOPA Foundation's liberal external financing of the project[7], however, made it possible for professional field archaeologists to carry out the fieldwork, for other specialists to analyse the finds and publish the results. Moreover, the dedication of equally professional volunteers secured many extra goals. The explicit budgeting for the costs of analysing the material and of publication taught that unpublished excavations make no sense. This definitely holds for fieldwork projects to be finished within three years. No more than excavations are goals in themselves is storing away the find materials of archaeological sites the goal of excavations. Experience teaches that uncoupling the finances of

[7] The financial administration of the field project had been in the hands of the Dutch Archaeological and Historical Society, for which I thank my co-members of the Board.

excavation and publication will be at the expense of the latter. If it so happens, the ultimate purpose of an excavation will soon be lost. The fieldwork carried out under the *aegis* of the Institut National du Patrimoine (INP) solely comprised a large campaign in the autumn of 2000, concerning nine trenches averaging 10 by 10 meter, and a limited short campaign involving a single trench in the spring of 2001[8]. In 2000, the research project, highly international from the start, counted 25 team members from eight countries: The Netherlands (10), Tunisia (3), Germany (5), United States (2), Italy (2), Spain (1), Great Britain (1), and Switzerland (1). The publishing team, part of which studied find material during the spring campaign of 2001, is even more numerous (31 students and researchers from ten countries). The project's international character fits in with the philosophy of the new international campaign 'Carthage: Recherche, Sauvegarde et Valorisation', launched under the auspices of UNESCO in November 2000.

The two campaigns were in close co-operation with the Cambridge team, applying a common master grid to the site, while sharing the excavation house, the processing of finds and other facilities. Also publications of the results – both in print and digitally on the web – are attuned to each other. The use of the same documentation technique renders all data easily exchangeable. For documentation in the field, there was jointly procured software, *e.g.* a MSR 3.0 package of Rollei (Germany) rectifying digital photographic material by combining it with the actual co-ordinates of the grid. This allows of making photo mosaics and maps on any required scale, to be remodelled to workable drawings by means of a CAD-program. In the summer of 2000, this documentation technique could be seen practised in North Italian Montale near Modena[9]. It is especially helpful with detailed or strongly fragmented traces and finds, *e.g.* tessellated mosaics.

The results

The UvA excavations have yielded new results for nearly all periods. Skipping details, five results can briefly be mentioned.

First, the spread of excavation trenches over the site gave a clear picture of the Late Punic levels of habitation. From West to East, the levels of the floors used in 146 BC differ by more than five meters. The drop is rather gradual, except between trenches 1 and 2, where there is a difference of more than two

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[8] The excavations were executed under the *aegis* of the INP, in the person of Dr. A. Ennabli, the then Conservateur en chef du site et du Musée de Carthage. The spring campaign of 2001 was made possible by the financing of the UTOPA Foundation and additional support of the National Tourist Office of Tunisia in the Netherlands. The latter's director, Mr. M. Fersi, is warmly thanked for his interest and support.

[9] Dr. M. Cattani of the Museo di Modena, responsible for the Bronze-Age excavations in Montale, provided good advise and instructed some of our team members how to use the new software. On these excavations, see Cardarelli 2000.

meters. In between these trenches, therefore, there may well have been a terrace wall, possibly in juncture with a road running North-South.
Secondly, on the Roman *insula* S110 (trench 8), a costly floor of sawn marble placed to pattern was found. This *opus-sectile* floor was in a square room in the Northwest corner of a *domus*. E.M. Moormann, in charge of its publication, thinks it is a *biclinium*, opening to the East and South by means of two doors. To the best of my knowledge, this is only the fourth *opus-sectile* floor found in Carthage.
Thirdly, upon abandonment of this Roman *domus* in the 5th or 6th century AD, a mosaic workshop took its place. Much of its raw material has come to light: coloured limestone chunks, figurative and architectonic marble sculptures to be processed to *tesserae*, and black glass cores. This may well have been the workshop that made the tessellated mosaics of the Byzantine basilica excavated by the team from Cambridge.
Fourthly, in trench 1, a waste pit was found containing the remnants of a bone-worker's shop dating to the Late Roman or Vandal period[10]. Since this dump could be excavated to its complete extensions and because high care was taken in its full recovery, including intensive wet-sieving operations, the context constitutes one of the most homogeneous remains of a bone-working atelier known to date[11].
Finally, in a Roman *nymphaeum* stripped of its marble lining, there is a common grave of at least a youth and a child (trench 4). Its dating by an Islamic lamp fragment to or after the 13th century AD indicates that the site was used in the Middle Ages too. The grave probably belongs to a house of which the many-coloured mosaic of the mediaeval period was found nearby in trench 3[12].
In view of the chronological emphasis of the Amsterdam research on the 6th and 5th centuries BC, the below results may be considered the most important. Accordingly, within the scope of this contribution to *TALANTA*, they are deserving a more comprehensive discussion.

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[10] Its publication is in the hands of P.J. Nukoop (forthcoming). The pottery, glass, metals and the coins of this dump will be published by K. Ryckbosch, J. Sonneveld, J.F.W. Koens, and L. Rachmouni, respectively.

[11] Two other assemblages of bone-working refuse have been found in Carthage, hinting at two different stages in the manufacturing process: at the Circular Harbour and the Circus, see Hutchinson/Reese 1988; Hurst 1994, 105-7; Hurst/Henig 1994, 277-9, figs. 14,18-19. See also Nukoop forthcoming. For a comparable dump of a bone workshop from Thysdrus (El Djem), dating to the 3rd century AD, see Slim 1986.

[12] Initially, we thought that this mosaic, found only a few centimetres below the present surface, dated to the Byzantine period. I like to thank L. Ennabli for her observation that the large size of the *tesserae* and the pattern are rather uncommon for the Byzantine era. L. Smits will publish the human remains from the grave.

An 'industrial area'

Spread over a surface of about 1500 square meters, traces of metalworking were found: furnaces, slag and bellows' pipes. A closer metallurgical research carried out by J.F.W. Koens in Amsterdam has shown that only iron working hearths (forges) are concerned here. Also a great amount of crushed murex shells was found, indicating that purple must have been won from their shells on a large scale, probably elsewhere in Carthage. This vast 'industrial area' almost certainly was situated outside the inhabited city area (*extra muros*). Farther East, on the far side of the Avenue du Président Habib Bourguiba, F. Rakob found evidence of contemporary metallurgical activities on the Rue Ibn Chabâat as well (cf. below)[13]. On the coast, Rakob had earlier discovered large amounts of metallurgical waste of archaic date, indicating the zone to have been outside the walls[14]. The date of other metallurgical installations excavated farther South near the harbour area remains problematic, but may not be earlier than the late 5th century BC (Lancel 1995, 140).

'The Carthage smiths' secret knack'

Analysing the 'iron waste' from the 6th and 5th centuries BC metal working hearths, collected during the excavation, the Amsterdam metallurgist J.F.W. Koens found all samples to contain large amounts of organic chalk (calcium)[15]. The analytical data of otherwise similar 'waste' from the same period found in Syria and Etruria and on Elba and Ischia, only incidentally show no more than small amounts of calcium. The same pattern, still reigning in the mediaeval Netherlands, persisted in England even into the early 19th century AD. These small amounts are accounted for by natural pollution of the ores, the tools or the material(s) of which the hearths were made.

In their natural states, many kinds of ore contain sulphur, an element of which even small amounts will cause brittle finished articles, suffering from fractures to weaken them already under moderate pressures. Until the mid-19th century AD, to separate the sulphur from the iron, the ores were roasted in so-called roasting-furnaces; a process not melting the ores (rich in sulphur), but heating them to be red-hot while air was being added.

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[13] These metallurgical remains will be published by F. Essaadi (Tunis); see Essaadi 1995a; Essaadi 1995b; Rakob 2002, 46, pl. 11,4. On the excavations, see Rakob 1995; Rakob 2002.

[14] Rakob 1987, 348-9, fig. 2,T1, pl. 146,1 [Ia, Ib, Ic, II]; Rakob 1991, 229.

[15] In earlier preliminary reports the date of these metallurgical installations had been suggested to be in the 7th and 6th centuries BC. After the completion of the pottery study of the relevant contexts, esp. of trenches 1 and 8, it became clear that the abandonment of these installations must be dated to a period (just?) prior to the last quarter of the 5th century BC. See particularly the contributions of B. Bechtold (forthcoming) and R.F. Docter (forthcoming b). The date of first metallurgical activity of these installations remains to be investigated, but does not have to be in the 7th century BC. The new bilateral excavations of the INP and the Archaeological Department of Ghent University of

October 17, 1855, Bessemer was the first to patent the production of eminent steel from raw iron in a single process. The patent was extended to include a method to neutralise sulphur during production by adding calcium. This all at once made the time- and fuel-consuming roasting redundant. The recent Amsterdam research shows the Carthage smiths already to have known this 'secret'. Moreover, it confirms Koens' earlier analytical data of iron artefacts from Punic Carthage (Hamburg excavation), in which high percentages of calcium were found, too[16]. All the evidence is for the Carthaginians already at an early age to have known how to produce eminent or even superior iron on a large scale.

Topography of the archaic city

Until recently, little was known of the topography of the archaic city (the city from the 8th to the 6th century BC). In 1997, from a map by F. Rakob showing the archaic find spots of Carthage (fig. 1), the present author could deduce that, in the 7th and 6th centuries BC, the city must have covered some 60 hectare[17]. The organisation of the city in this early period, however, remained quite unclear: where were the market places, the industries, and the political and religious centres[18]? At present, due to the recent excavations by the UvA, the topography of archaic Carthage can be reconstructed more accurately (fig. 5).

On the East slope of the present Byrsa-hill, there was the densely built upper town, squeezed between the necropoleis in the North and West (and partly on the South slope of the Byrsa hill; fig. 1), the sea or 'industrial' seaside area in the East, and the newly-found 'industrial area' in the South. The latter area lies, remarkably, in the East continuation of the necropolis on the South slope of the Byrsa. Modelled on other Phoenician and Punic cities from the 8th, 7th and 6th centuries BC, the upper town will have been walled-in. This probably is where the most important temples, public buildings and the dwellings of the Punic well-to-do were situated[19]. The newly found 'industrial area' of the archaic period marked the transition from upper town to a harbour area in the South, where the economic activities took place. In this lower town, there will have been shipyards, storehouses and the houses of lower class Carthaginians. It should be stressed that this reconstruction of a lower town is hypothetical. The area has not yielded any trace of archaic occupation, probably due to lack of excavation in combination with the considerable depth of the relevant stra-

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[16] See J.F.W. Koens, in Niemeyer *et alii* forthcoming.

[17] This map has still been used to illustrate Carthage's archaic extension in a quite recent article: Rakob 2002, 16, fig. 1.

[18] In his recent critique of my calculation of the city's archaic inhabited surface and population density, F. Rakob rightly stressed this problem (Rakob 1999, 1-2, esp. note 11).

[19] This concise description of a Phoenician city's characteristics is an adaptation of

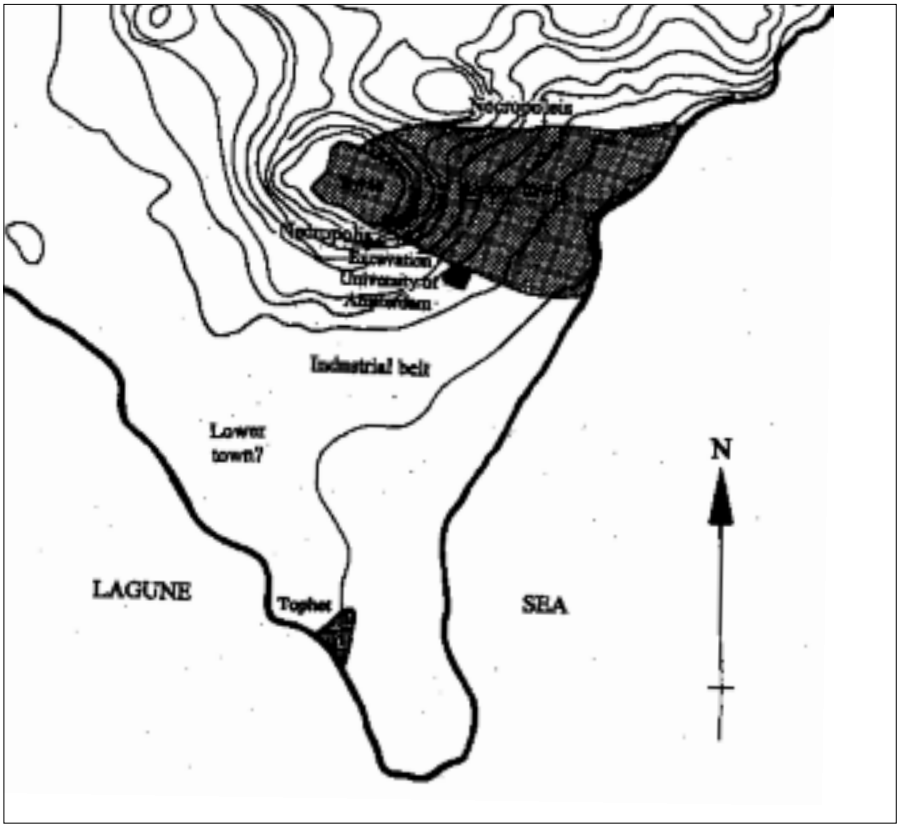

Fig. 5. New reconstruction of the topography of archaic Carthage (drawing by O.E. Borgers)

ta and a heavy modern overbuilding of this zone[20]. To the very southeastern border of the postulated lower city area, there is the tophet, the sanctuary where the cremated remains of tens of thousands of children were buried.

The southern city wall and the topography of Carthage

The inferred city wall bordering the (upper) city in the South must have been between trench 8 of the Amsterdam excavations ('industrial area') and the excavation site of the Universität Hamburg to the North of it (densely built-upon residential area). The presence of the above-mentioned Byzantine basilica on this very part of the plot rules out any extensive further research of the

[20] S. Lancel implicitly excludes an inhabited zone in this area, considering the marshy lagoon-like character of the area; Lancel 1995, 139.

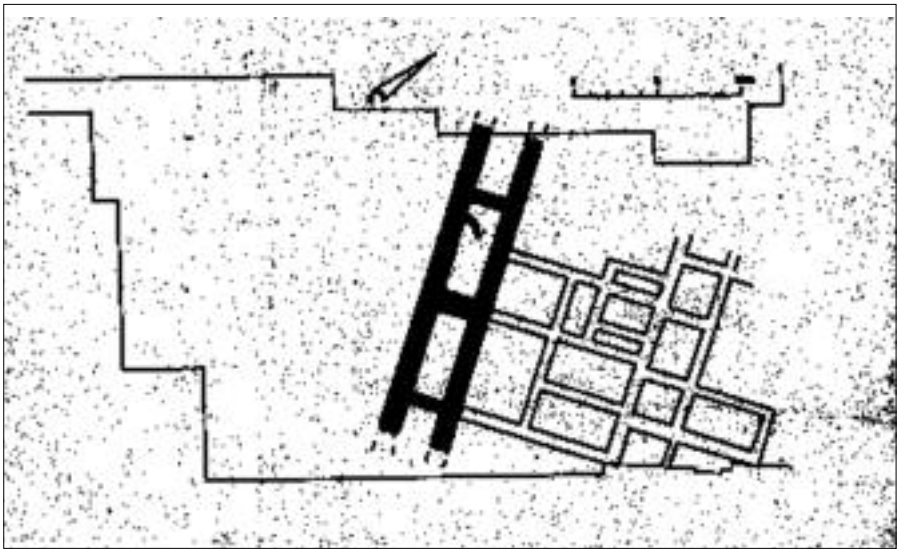

Fig. 6. Plan of the excavations on the Rue Ibn Chabâat (based on Rakob 1995, 422, fig. 5; drawing by J. Angenon): archaic residential quarters in the North and archaic or Middle Punic city wall (?) in the South are indicated in dark).

exact position and nature of the wall. Such deep sounding would only be possible on the East side of the Bir Massouda area, under the Roman *insula* S112 and below the Roman *cardines* X and XI.

During the above-mentioned excavation by the Deutsches Archäologisches Institut on the Rue Ibn Chabâat, guided by F. Rakob, the city wall is likely to have been documented without being recognised for what it was (fig. 6). Here, a densely built-upon residential area dating to the 7th century BC was found in the northern part. In the southern part, the afore-mentioned metallurgical evidence of the archaic period came to light. Thus, the natural place for a city wall would have been between these two parts. Actually, in this very position, two parallel thick walls with stone cross-connections have been documented. These can very well be part of a typically Levantine casemate-wall (on definitions, see below)[21]. Rakob initially published the walls as two different walls, the southern one of which being the southern terrace wall of the Middle Punic Sanctuary, paralleled to the North of the Sanctuary by another terrace wall, which had not been preserved[22]. Since the Southeast corner of the Sanctuary

[21] See Braemer 1982. A fine example comes from Beer-Sheba dating to the 9th and 8th centuries BC, Schoor 1986, 24-5, figs. 3, 7.

[22] Rakob 1995, 426, 440, fig. 5, pl. 117,1-2[D,E,F].

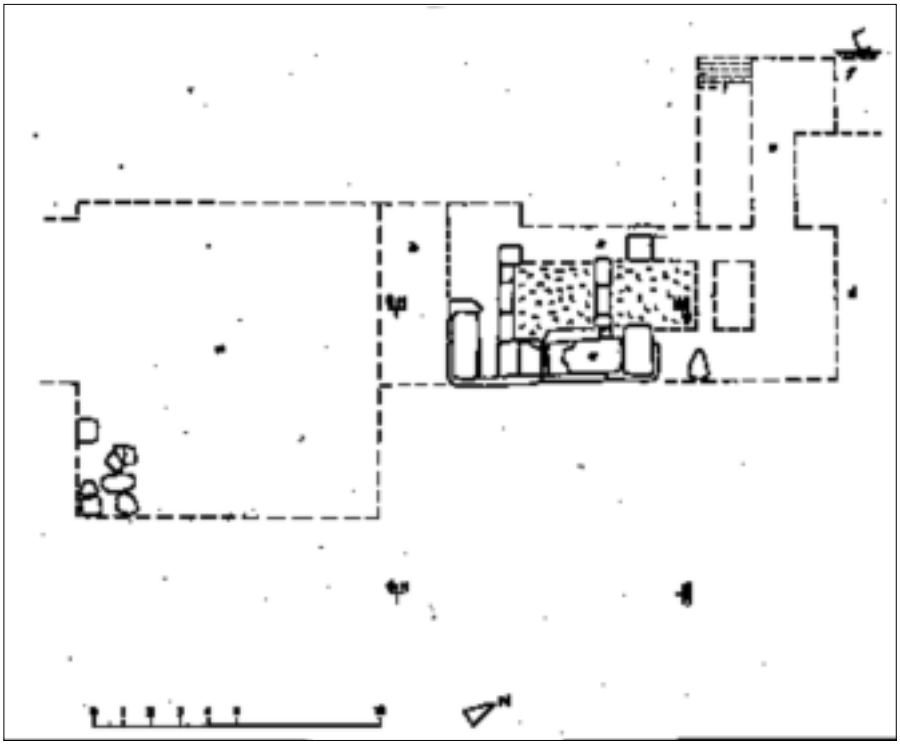

Fig. 7. Plan of the 5th century BC city wall at the seaside of Carthage, phase 1a (after Rakob 1991, 167, fig. 32).

rested on the northernmost part of the double wall, he must have considered one implicitly to be the earlier of the two. Only quite recently, however, he suggested the walls to form one single wall with double facing of the Punic Sanctuary's Temenos ("Muro sur de doble paramento del Temenos del santuario púnico"; Rakob 2002, 32, 41, pl. VI,3)[23]. In particular his recent remark that the construction technique is similar to that of the 5th century BC city wall facing the seafront, is of importance in the present context. In the eastern part of the city, Rakob had excavated earlier an important city wall (fig. 7). It enclosed part of the former open seashore area, previously used for industrial activities, and even had been provided with a gateway offering entrance from

[23] Rakob apparently has changed his mind since we discussed my re-interpretation of the Ibn Chabâat walls in Rome, in October 2001. He has consented to co-operate in further investigating this highly important urbanistic problem, which certainly will have some bearing on the dating of the Punic Sanctuary positioned partly on top of this double wall (see Rakob 1995, pl. 111,2A, on top of C).

the shore into the city[24]. This city wall dates to the last quarter of the 5th century BC and must have continued as far to the South as the later Circular Harbour, as is suggested by a Middle Punic (?) city wall or part of a tower documented here by Rakob[25]. The construction technique of the seaside city wall is described by Rakob as consisting of "Vorder- und Rückschale und 'Kastenmauern'" (Rakob 1991, 167, fig. 32). The wall itself had been executed in large sandstone blocks in its lower two courses, bonded in red clay 'mortar' (see below). The foundation had been bonded by yellow clay 'mortar'. The compartments ("Kasten") were filled with sandstone rubble in yellowish clay 'mortar'. The seaside city wall may have been slightly over 4.5 meters in strength (upper part above foundations), a measure it shares rather exactly with the foundations of the 'Ibn Chabâat city wall'.

This type of wall may also be defined as the typical Greek *emplekton*: a style of wall construction having two faces bound together by means of cross-members or partition walls and filled with rubble[26]. It is also known as 'Schalenmauer', wall with double facings, drawer walls, compartment walls, or modular walls, and is a common construction technique for city walls. When using the Near-Eastern term 'casemate-wall', the implication would be that the spaces between the two faces (the compartments) were left open and could be used, *e.g.* as barracks. Given the fact that we are mainly dealing with the topped-off foundations of such walls, it is often difficult to establish whether the compartments in-between in the upper parts had been filled in with earth and rubble – as is likely in most cases – or had remained accessible. Casemate- or *emplekton*-walls are known in the East at least from the 9th century BC onwards and had been built by both West-Phoenicians (see below) and Greeks in the archaic period (*e.g.* Corinth: Winter 1971, 65, fig. 49).

In the Phoenician town of Málaga, an almost identical city wall has been excavated already in the nineteen eighties; only recently could its continuation and date be studied in fuller detail (fig. 8). It dates from the first 30 years of the 6th century BC or even earlier and has been preserved over a length of more than 11 meters; towers stood at regular intervals (Recio Ruiz 1988; Cisneros *et alii* 2000, 192-3, fig. 2). An even earlier example of this type of wall is found in the Phoenician settlement Castillo de Doña Blanca near Cádiz, and also in this case it is provided with towers (Ruíz Mata/Pérez 1995, 45, 99-105, fig. 12; see also below). A city wall of the type with double facings had surrounded the island of Mozia off Sicily since the middle of the 6th century BC. At regular intervals small rectangular towers were built in, consisting of two rooms (Ciasca 2000). Especially the Iberian Peninsula has

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[24] Rakob 1987, esp. fig. 3, K, pl. 146,2; Rakob 1991, 165-74, 228-38, figs. 32-4, Beilage 3 and 34; Rakob 2002, 18-9, 21, 36, fig. 3, pl. I,1.

[25] Rakob 1987, 135-6, Abb. 3,KA, pl. 149,1; Rakob 1991, pl. 56a.

[26] I follow the definition of McNicoll 1997, 228. Differently: Winter 1971, 80-1, 88, 135-6, note 33 (following R.A. Tomlinson).

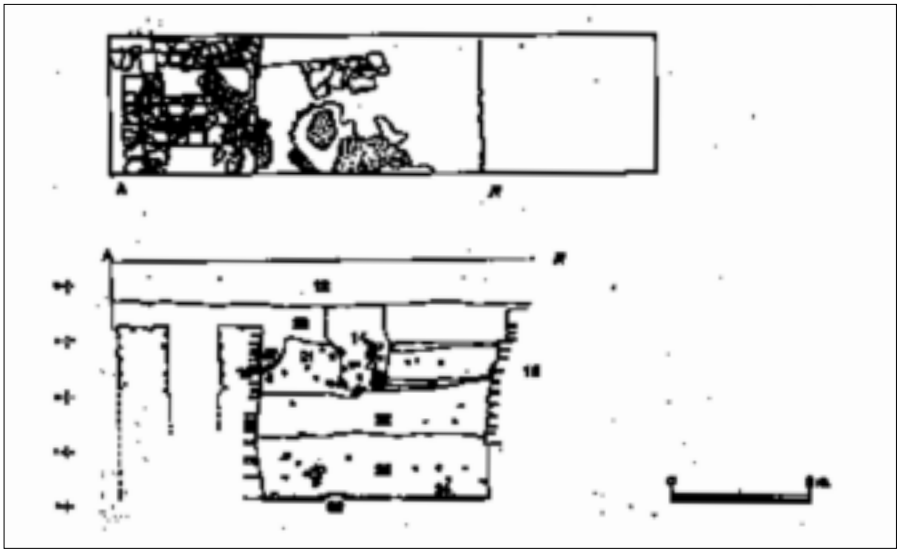

Fig. 8. Málaga, Palacio de Buenavista, trench 21: part of city wall in plan and section (after Cisneros *et alii* 2000, 193, fig. 2).

given considerable evidence for walls with double facings, mainly however from the 4th century BC onwards (Camino 2000). This dating corresponds with the greatest popularity of the *emplekton* wall in the Greek world, *e.g.* in Sunion, Paestum, and Naples[27].

The date of the southern city wall in the Rue Ibn Chabâat plot (fig. 6) is still to be established with precision. Apparently, the southern one of the two parallel walls cuts an earlier archaic mud-brick construction (Rakob 1995, pl. 111,1-2; Rakob 2002, 41, pl. VI,2). Rakob dates this southern of the two parallel walls to the Middle Punic period on the basis of a layer of red clay 'mortar' typical of the Middle Punic period and more particularly of the 5th century BC[28]. In view of the southern continuation of the coastal city wall of the last quarter of the 5th century BC, it seems probable that both the Rue Ibn Chabâat walls and the postulated one(s) on the Bir Massouda plot are earlier than the last quarter of the 5th century BC. They must have run parallel to each other in an East-West direction, probably linking up by means of one or more stretches of North-South walls. At least, if one would theoretically prolong the course of the reconstructed Rue Ibn Chabâat city wall, one would

[27] Winter 1971, 88, 135-6; Lawrence 1979, 215-6; McNicoll 1997.

[28] Rakob 1995, 426, pl. 117,2F. This dating of this type of red clay 'mortar' is confirmed by the stratigraphical information yielded in the Hamburg excavations, see Niemeyer *et alii* forthcoming.

arrive at a point to the North of the Hamburg excavation, which can reasonably be excluded.
If one would bring in technical aspects of defensive systems from the Phoenician settlements on the Iberian Peninsula, it is not even to be excluded that a triangular ditch lay in front of the postulated southern city walls of Carthage (cf. Toscanos and La Fonteta/Alicante)[29]. In the Phoenician settlement Castillo de Doña Blanca near Cádiz there is even a double triangular ditch, one of 3 meters width and 2 meters depth and one of 10-12 meters width and 4-5 meters depth (Ruíz Mata/Pérez 1995, 105)! This double line of defences dates back to the 8th century BC and is, remarkably, connected with 'casemate-walls'.
Finally, one last element may be connected with this reconstructed line of southern city walls in Carthage. On the Bir Massouda site there are strong indications for a steep North-South marking of the terrain in the Late Punic period somewhere between trench 1 and 2 (see above). In explanation of this difference in height of more than 2 meters a terrace wall has been suggested, probably in relation with a road running parallel to its eastern facing. If this feature takes over an earlier break in the terrain, which is not impossible, one could even predict where the postulated terrace wall annex road will meet the line of the southern city wall farther North. This point would be of some importance, since it would either mark a point where the city wall could have turned North, or where it would have formed an arch or a gate in order to allow the road to enter the city. This is yet another hypothesis to be checked.

Postulating an 8th century BC necropolis
The earliest graves of Carthage, dating to the 8th century BC, remain to be found. Only very few graves may be connected on the basis of their inventories to the second half of the 8th century BC. The known graves date to the 7th and 6th centuries BC. They are situated in a row of necropoleis in the hills to the North of the city, running in an arc around the Byrsa hill where they seem to end on its southern slopes. Still in 1985, S. Lancel could write that the earliest necropoleis "might lie in the internal fringe of these burial zones, nearest to the settlement to which they are related" (Lancel 1995, 27). The only exception to this northern and western alignment of archaic graves is the so-called 'Chapelle Cintas', which would date to the period 750-715 BC, if one follows the date of the Corinthian originals for the Carthaginian miniature versions found in the context (Briese 1998). This context is probably composed of the remains of two cremation graves of the earliest period and may

[29] Toscanos (last quarter of the 8th and beginning of the 7th century BC): Niemeyer 1982, 194-7; see also Docter 1997, § III.1.2 with further references. La Fonteta (dating to the middle of the 7th century BC): González Prats 1998, 57; for other parts of the defensive system of this settlement, which is also known as 'La Rábita', see Azuar *et alii*

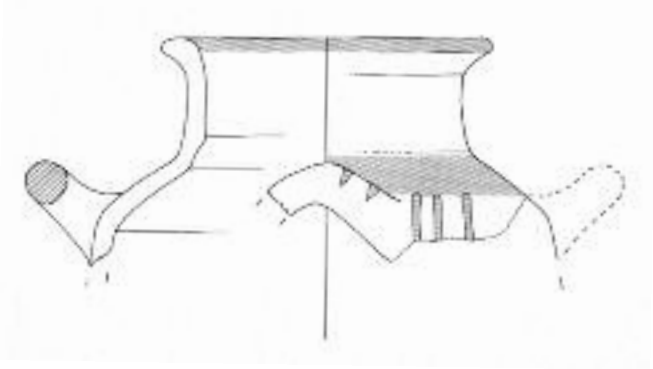

Fig. 9. Carthage Bir Massouda: secondarily deposited cremation urn (?) BM00/17216 from context BM00/8092 (drawing by A. Ben Aïssa/J. Angenon).

well be unrelated to the tophet set on top of it (part of an older necropolis belonging to the lower town?).

Considering the fact that a southern city wall of the archaic period would have run over the Bir Massouda and over the Ibn Chabâat terrains, it is not at all impossible that a necropolis would have been situated directly South of this urban boundary. A necropolis of the 8th and early 7th centuries BC would, then, be the most likely candidate in view of the still ill represented funerary remains of this period. With the creation of an industrial area in this part of the city probably already in the 7th century BC, one may suppose that the necropolis by then had lost its ancestral ties with the existing community and could be given up without causing much emotional distress. A similar procedure is seen later on with the transformation of a burial plot into a metalworking quarter on the southern slopes of the Byrsa hill (see below).

Also another indication may be brought up in support of this necropolis hypothesis (Docter forthcoming b). During the excavations of the year 2000, a considerable number of contexts have been excavated which contained mainly – if not exclusively – archaic finds of the 8th to 6th centuries BC. The date of deposition of these contexts must for the better part be set in the last quarter of the 5th century BC, though, the period of urban expansion in the area (see below). We are dealing with material, which had been taken from older layers. A not inconsiderable number of pots among this material find their best and sometimes sole confrontations in funerary contexts of the 8th and 7th centuries BC, both in the tophet and the necropoleis. Also in the true archaic levelling layers, connected with the metalworking installations of the 6th and 5th centuries BC, pottery shapes were found that would be best at home in a funerary context. A good example comes from the construction of the iron-working hearth BM00/8092 (fig. 9). The vessel has been recently defined as amphora class 'Karthago 4B1', which is characterised by an ovoid

or rounded shape in combination with a Bichrome or Red Slip decoration and geometric patterns in the handle zone[30]. Not surprisingly, this particular shape is missing in archaic settlement excavations elsewhere in Carthage. Are we, consequently, facing a combination of re-worked necropolis material and garbage deposits, as one would normally expect to find outside city walls? The suggestion is highly attractive.
Still one should pose the question, how such a necropolis would have looked like. If it was to be found South of the postulated city wall on the Bir Massouda terrain, then possible graves would have had been dug in the virgin soil. These need not to have been built or dug inhumation tombs like the well known ones found in the hills to the North and West of the settlement. They may have consisted of cremation graves like the early ones of the 10th to 7th centuries BC recently found in Tyre by M.E. Aubet (cf. Markoe 2000, 198, fig. 73)[31]. Where exactly on the Bir Massouda site would one be able to encounter such a necropolis? In theory everywhere, but in view of the postulated road running over the terrain in a North-South direction somewhere between trench 1 and 2 (see above), one could think of the lower area to the East of it. To the West a terrace wall of at least 2 meters height may be reconstructed, leaving little room for a graveyard. But again, all these hypotheses remain to be checked.

Urban expansion
The city did not expand until the last quarter of the 5th century BC, when smithies and purple workshops had to give way to houses. People undoubtedly not having cleared off the severely polluted soil at the time, is a lucky circumstance for present-day scientists. The prestigious new city walls at the seafront, excavated by F. Rakob, date to the very same period and can be traced as far South as the later Circular Harbour (see above). They give some rough idea as to the extension of the new layout. During the same urban restructuring operations, which by necessity must have been all-encompassing, part of the metal working quarters in the South of the city may have been given a new place, *e.g.* in the West of the city. Here, on the South slopes of the Byrsa hill, where an earlier archaic necropolis must have been given up, the French mission excavated several metal working installations dating to the late 5th century BC (Lancel 1995, 138, 140, fig. 72,4-5). These remained in use till the late 3rd century BC[32].

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[30] Docter 1997, § VIII.2 with references, Table 61.E. For a good parallel from the tophet, see e.g. Lancel 1995, 31, fig. 18, upper-right.

[31] Among the bone material recovered from the relevant layers of the Bir Massouda site no human skeletal remains in any significant numbers were recorded, however (see L. Smits, in: Docter forthcoming a). This could either mean that the necropolis hypothesis is incorrect or that the bone sample, which was for the better part hand picked, did not contain the small bone remains of the re-worked cremation burials.

[32] It is significant in this respect that at the end of the 3rd century BC the situation repeats itself: the 'industrial' area gives way to new residential quarters ('Quartier

It is not surprising for Carthage to have expanded its residential quarters within its territory at the very time when it expanded in the West Mediterranean area. A comparison with 17th century AD Amsterdam thrusts itself forward.

Further research

Only further excavations can test the many hypotheses on the urban layout just mentioned. This supplementary research has already started in bilateral co-operation of Tunisia (INP) and Belgium (Archaeological Department of Ghent University). In spring 2002, a small Tuniso-Belgian team, directed by Fethi Chelbi and the present author, continued the excavations on the Bir Massouda site 2. Its first results will be published in *CEDAC Carthage*. The recent allotment of a Research Grant of the Fund for Scientific Research - Flanders (Belgium; F.W.O.-Vlaanderen) ensures this new cooperation for the next three years.

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