
Some remarks on the chronological position of the Predynastic settlement at Maadi (Egypt) and its relations to the Southern Levant

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Abstract

The Predynastic settlement of Maadi— after which the Chalcolithic Lower Egyptian Culture of the first half of the 4th millennium is named— is a key site for the understanding of the interconnections between Lower and Upper Egypt, as well as between the Nile valley and the Southern Levant. Although at first glance it was a rural village with agriculture as subsistence basis, the settlement— on the one hand— yielded Upper Egyptian imports which point to trade relations within the Nile valley and which enable to place the settlement into the frame of the Naqada culture chronology. On the other hand, there is evidence for different phases of connections to the southern Levant : Unusual semi-subterranean cave-like structures which— although much less sophisticated— resemble the subterranean installations of the Chalcolithic Beersheva Culture. Later still Maadi must have operated trade connections with several EB IA settlements in southern Palestine to acquire copper and other commodities. This chronologically diverging evidence is discussed here and complemented by a series of radiocarbon dates retrieved from renewed excavations at Maadi by the German Archaeological Institute, Cairo. The dates confirm that the chronological position of the settlement is contemporaneous with the transition from the Late Chalcolithic to the Early Bronze Age in the Southern Levant.

Résumé

L'établissement Prédynastique de Maadi, qui a donné son nom à la culture chalcolithique de Basse-Égypte de la première moitié du 4e millénaire, est un site clé pour la compréhension des interconnexions entre la Haute et la Basse-Égypte, et entre la Vallée du Nil et le sud du Levant. Si l'établissement évoque à première vue un village rural fondé sur l'agriculture, le site a révélé des importations venant de Haute-Égypte, suggérant des relations commerciales dans la Vallée du Nil et permettant de situer cet établissement dans la chronologie de la culture de Naqada. En outre, le site a révélé l'existence de différentes phases de relations avec le sud du Levant : des structures inhabituelles, semi-souterraines, ressemblent aux installations souterraines de la culture chalcolithique de Beersheva, bien que moins sophistiquées que ces dernières. Plus tard, Maadi semble avoir établi des relations commerciales avec des sites du Bronze ancien IA dans le sud de la Palestine, afin d'obtenir du cuivre et d'autres marchandises. Ces données, divergentes chronologiquement, sont commentées et complétées par une série de datations radiocarbones issues des nouvelles fouilles menées à Maadi par l'Institut archéologique allemand au Caire (DAI). Ces dates confirment que l'établissement est contemporain de la transition entre le Chalcolithique récent et le Bronze ancien dans le sud du Levant.

SOME REMARKS ON THE CHRONOLOGICAL POSITION OF THE PREDYNASTIC SETTLEMENT AT MAADI (EGYPT) AND ITS RELATIONS TO THE SOUTHERN LEVANT

U. HARTUNG

Abstract: *The Predynastic settlement of Maadi—after which the Chalcolithic Lower Egyptian Culture of the first half of the 4th millennium is named—is a key site for the understanding of the interconnections between Lower and Upper Egypt, as well as between the Nile valley and the Southern Levant. Although at first glance it was a rural village with agriculture as subsistence basis, the settlement—on the one hand—yielded Upper Egyptian imports which point to trade relations within the Nile valley and which enable to place the settlement into the frame of the Naqada culture chronology. On the other hand, there is evidence for different phases of connections to the southern Levant: Unusual semi-subterranean cave-like structures which—although much less sophisticated—resemble the subterranean installations of the Chalcolithic Beersheva Culture. Later still Maadi must have operated trade connections with several EB IA settlements in southern Palestine to acquire copper and other commodities. This chronologically diverging evidence is discussed here and complemented by a series of radiocarbon dates retrieved from renewed excavations at Maadi by the German Archaeological Institute, Cairo. The dates confirm that the chronological position of the settlement is contemporaneous with the transition from the Late Chalcolithic to the Early Bronze Age in the Southern Levant.*

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Keywords: *Predynastic Egypt; Maadi culture; Naqada culture; Lower and Upper Egypt; Southern Levant; Chalcolithic; Early Bronze Age.*

Mots-clés : *Égypte Prédynastique; Culture de Maadi; Culture de Naqada; Basse et Haute-Égypte; Levant sud; Chalcolithique; Bronze ancien.*

INTRODUCTION

The settlement of Maadi is the eponymous site of the Chalcolithic Lower Egyptian culture, which was initially only known from the Greater Cairo region (*e.g.*, Rizkana, 1952; Rizkana and Seeher, 1987: 58-63) but now is attested at numerous other sites in the Nile Delta and towards the south as far as the Fayum Oasis (*e.g.*, Kaiser, 1985: 61-71; von der Way, 1993: 11-16; Midant-Reynes, 2000: 210-220; Levy and van den Brink, 2002: 11-14; Hendrickx and van den Brink, 2002: 348-351, 370-373). Maadi plays not only an important role in our understanding of the cultural and socio-economic development within the Nile valley and the relations between the Lower Egyptian Maadi Culture and the Upper Egyptian Naqada Culture (*e.g.*, Kaiser, 1985 and 1990; Köhler, 1995 and 1996; Buchez and Midant-Reynes, 2007; Ciałowicz, 2008; Köhler, 2008; Buchez and Midant-Reynes, 2011; Mączyńska, 2011), but also for comprehending Egypt's interconnections with the Southern Levant in the first half of the 4th millennium (*e.g.*, Hartung, 1994; 2001: 336-341, 383-385; 2002: 445-447; Levy and van den Brink, 2002: 10-14, 18-20; Miroschedji, 2002: 39-41, Fig. 2.2; Commenge and Alon, 2002; Braun and van den Brink, 2008: 644-659; Guyot, 2008).

The remains of the settlement of Maadi are situated on an east-west oriented desert ridge covering a strip about 1 km long, but only 100–200 m wide, now in the southern outskirts of modern Cairo. The site is known from large-scale excavations by the University of Cairo between 1930 and 1948, which uncovered *ca* 40,000 m² in the central and eastern parts of the settlement (figs. 1 and 3; Menghin and Amer, 1932 and 1936). It remains the largest area ever exposed in a predynastic settlement in Egypt. In the 1950s, two contemporary cemeteries situated nearby were also partially examined (Amer and Rizkana, 1953a and b). However, a more detailed report of the Maadi excavation results was not published until the late 1980s (Rizkana and Seeher, 1987; 1988; 1989 and 1990; for a summary see: Seeher, 1990). The University "La Sapienza" of Rome conducted further excavations there between 1977 and 1984, but so far only preliminary reports have been published (Caneva *et al.*, 1987 and 1989). Excavations in the western part of the settlement, which was previously a military zone and inaccessible, were carried out for the first time by F.A. Badawi (Badawi, 1987 and 2003) for Al Azhar-University, Cairo in the 1980s and revealed an unusual semi-subterranean stone house. Today large parts of the ancient settlement have been destroyed, and those remaining are exposed to the steady encroachment of the surrounding city (fig. 2). Because of this



Fig. 1 – Part of the excavation area at Maadi during the 1930s; the skyline of Cairo is visible in the background (from Rizkana and Seeher, 1989: Pl. XIII, 4).



Fig. 2 – The area of Maadi-West in 1999, approximately the same view as fig. 1 (© Hartung, DAI).

threat, between 1999 and 2002, the German Archaeological Institute Cairo continued to examine the western part of the settlement in cooperation with the Egyptian Supreme Council of Antiquities (SCA) and the University of Cairo, in order to document the preserved archaeological features (Hartung *et al.*, 2003; Hartung, 2004 and 2006).

THE SETTLEMENT OF MAADI AND ITS RELATIVE CHRONOLOGICAL POSITION

The investigations of the German Institute revealed a picture very similar to that known from earlier excavations:

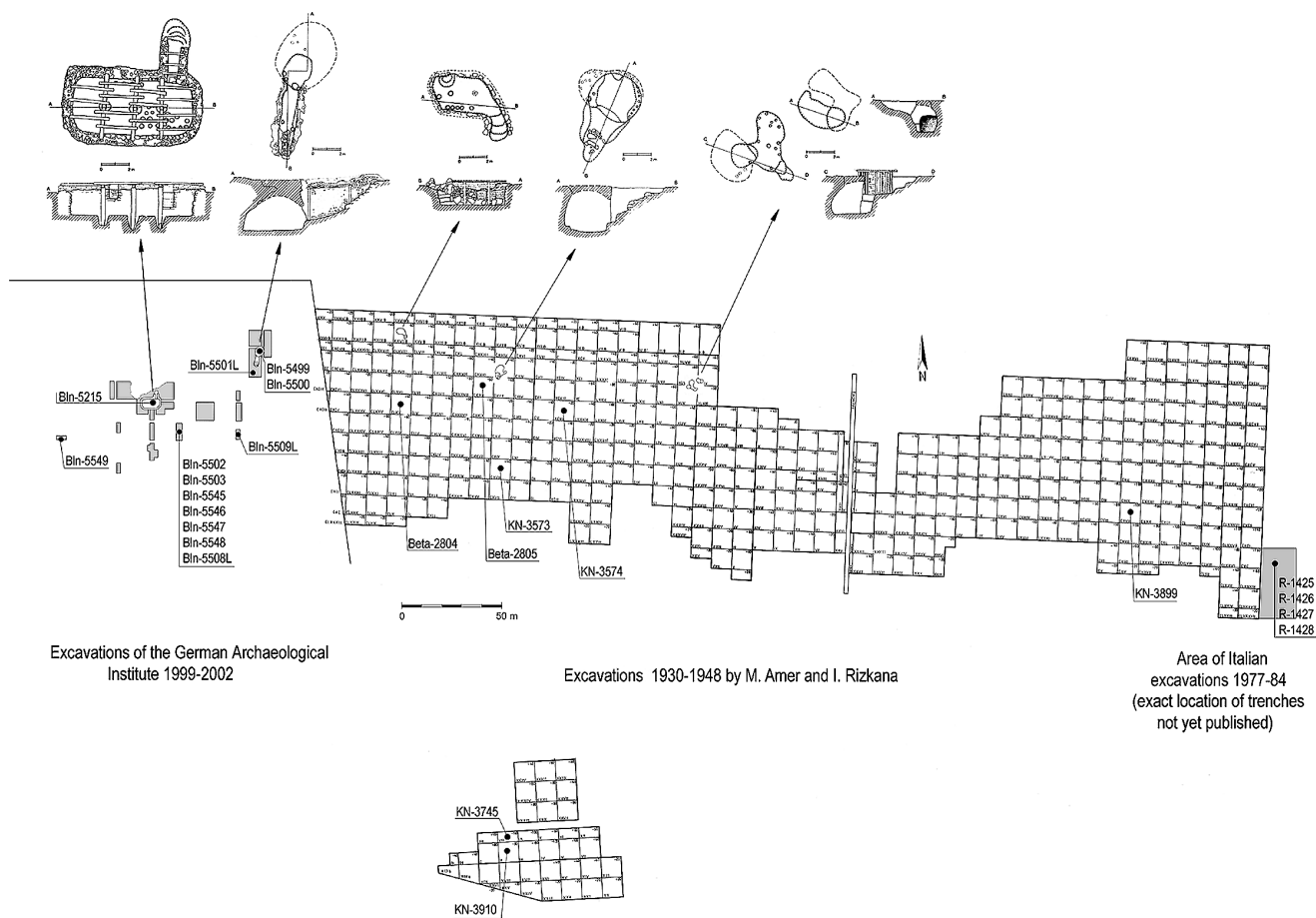


Fig. 3 – Plan of the excavations in Maadi specifying the location of the radiocarbon-dates and of the unusual buildings (after Hartung, 2006: Abb. 2 and 3).

The settlement had a simple village character and seems to have consisted principally of light huts with wattle and daub walls, wind screens, fenced corrals, fire places and storage pits of different sizes and shapes (Rizkana and Seeher, 1989: 39-49, 56-64). Despite the considerable size of the exposed area during the old excavations, it was not possible to distinguish any architectural organisation of the settlement. There are no indications of larger or central buildings, or of any fortification. However, a striking feature otherwise unknown in Predynastic Egypt are several “cave rooms” and the above-mentioned stone house (see fig. 3; Rizkana and Seeher, 1989: 49-56; Badawi, 2003: 1-7; Hartung *et al.*, 2003: 155-160) which were most probably used as climate-controlled storage-rooms.

Evidently the settlement was primarily based on agriculture (emmer, barley, pulse, flax), livestock breeding (goat, sheep,

pig and cattle) and fishing. A great deal of the pottery was most likely made locally. Production of flint tools, bone tools and beads and perhaps also copper working are attested at the site. Basalt and limestone were used as raw materials for the manufacture of stone vessels. Imported objects from Upper Egypt as well as from the Southern Levant point to the fact that trade played a role in the economic life of the community. However, the extent of the exchange of goods is difficult to determine. The large number of imported artefacts that were discovered during the extensive excavations in the 1930s may convey a distorted picture—they come from a very large area of excavation and may have been retained in greater numbers by the excavators due to their exotic appearances. By contrast, in the recent excavations imported objects were very rarely encountered. Nonetheless, this category of finds is important, not only for questions regarding the kind of contacts and mechanisms

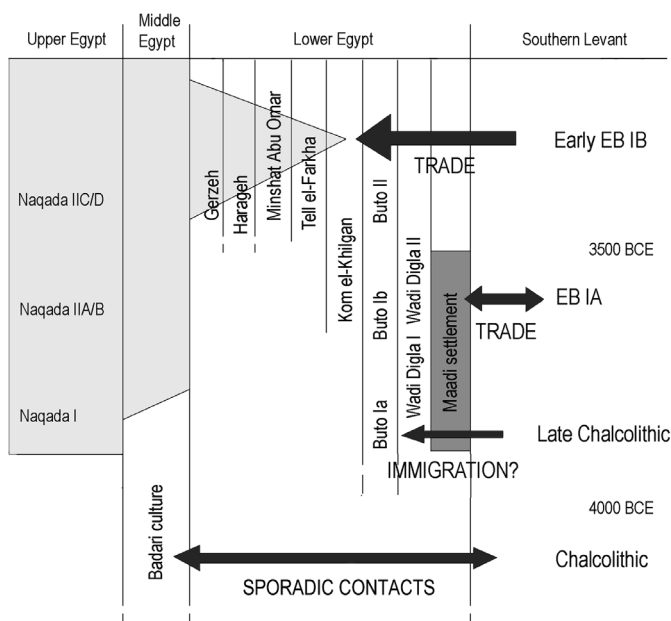


Fig. 4 – Chronological table
(after Buchez and Midant-Reynes, 2007: fig. 9).

of trade, but also for determining the relative chronological position of the settlement in respect to neighbouring regions.

Within the Lower Egyptian culture, the settlement of Maadi represents an early phase of this culture (fig. 4) according to its local ceramic inventory (Rizkana and Seeher, 1989: 80-85; Seeher, 1990: 152-154). Comparisons with pottery from other settlements indicate parallels only in Layer I at Buto in the western Nile Delta (von der Way, 1993: 16-18; 1997: 50; 2006; Faltings, 2002: 168). According to the current state of research, other sites in the delta, *e.g.*, Tell Ibrahim Awad, Tell el-Iswid (S) and Tell el-Farkha (*e.g.*, van den Brink *et al.*, 1989: 78, Table 1; Jucha, 2005: 78, Fig. 14; Mączyńska, 2011: Table 2), seem to have been founded slightly later, *i.e.*, they are approximately contemporaneous with Buto Layer II. Only Kom el-Khilgan seems to be an exception as the beginning of its occupation corresponds to Buto Layer Ib (Buchez and Midant-Reynes, 2007: 45 and Fig. 9). Why several places in the Nile Delta were settled at a different times cannot be determined at present. However, it is striking that the end of Maadi took place only shortly before the first graves with typical Upper Egyptian Naqada equipment (indicating the arrival of the Naqada culture in northern Egypt¹) appeared in Lower

1. The nature of the acculturation process between the Maadi and the Naqada cultures is still under discussion, An important point is to what extent

Egypt, *e.g.*, in the cemeteries of el-Gerzeh (Stevenson, 2008) and Harageh in the Fayum, or a little later at Minshat Abu Omar (Kroeper and Wildung, 1985: 92-93; Kaiser, 1987; Kroeper, 2004) in the eastern Nile Delta.

In comparison with the chronological division of the Naqada culture, and based on the imported Upper Egyptian finds in the settlement or their respective local imitations,² Maadi seems to have been settled during the Naqada I period and abandoned during late Naqada IIB or at the beginning of Naqada IIC (fig. 4; Rizkana and Seeher, 1987: 66-73; 1989: 80-85; Seeher, 1990: 152). However, this time period does not have to correspond to the entire life span of the settlement; the comparison of the finds only shows that Upper Egyptian material reached Maadi during this time—an earlier date for the beginning of the settlement or a slightly later date for its abandonment without external contacts cannot be ruled out.

RADIOCARBON DATING

This drawing of the relative chronological position of the settlement of Maadi, based upon archaeological material, is largely verified by a series of radiocarbon dates. To the present eleven dates are known from older excavations (table 1), seven of which come from material of the 1930's excavations (Rizkana and Seeher, 1989: 82-83; 1990: 104-105; Seeher, 1990: 154-155) and four which derive from the Italian excavations (R-1425, -1426, -1427, -1428; Caneva *et al.*, 1989: 289-290). In each case, the samples seem to have come from contexts directly on bedrock and could thus mark the beginning of settlement activities in the eastern (five samples) and in the central part (six samples) of the wide-stretching settlement area (fig. 3). The dates shown in Table 1 were re-calibrated for better comparison with additional new data (see below).

More recent excavations in the western part of the settlement provide eleven additional dates, which, with one exception, have not been previously published. The samples derive from fire places on bedrock, from supporting posts of the roof

Naqada groups emmigrating to the north were involved in that process (*e.g.*, Kaiser, 1985: 70-71; 1990: 287-290; Köhler, 1995 and 1996; Buchez and Midant-Reynes, 2007 and 2011; Ciałowicz, 2008; Köhler, 2008; Mączyńska, 2011).

2. In addition to vessel fragments, a number of flint knives (Rizkana and Seeher, 1988: 34, pl. 69; Hartung *et al.*, 2003: Abb. 17) and siltstone palettes (Rizkana and Seeher, 1988: 46-47, pl. 83-84) found at Maadi definitely came from Upper Egypt. "Black topped" ware with blackened rims typical of the Naqada culture were also copied locally (Rizkana and Seeher, 1987: 51-52, pl. 68-71).

Table 1 – Thus far published dates from the settlement of Maadi (Rizkana and Seeher, 1989: 82-83; Caneva et al., 1989: 289-290) and calibration with the computer program OxCal v.3.10 while applying the current mean curve IntCal04. The calibration-intervals, which reflect the actual age of the samples with a probability of 68.2%, are rounded off to 10 year-values.

Lab. No	Material	$\delta^{13}\text{C}$ -determination in ‰	^{14}C age with calibration
KN-3899	shell	-4.8	5490 ± 65 BP
KN-3573	charcoal		5050 ± 55 BP 3950 – 3790 cal BC
KN-3574	cereals		4940 ± 60 BP 3780 – 3650 cal BC
Beta-2804	wood		4730 ± 60 BP 3640 – 3560 cal BC 3540 – 3500 cal BC 3430 – 3370 cal BC
Beta-2805	cereals		5010 ± 50 BP 3930 – 3870 cal BC 3810 – 3710 cal BC
KN-3745	bone	-20 (estimated)	4830 ± 90 BP 3710 – 3510 cal BC 3400 – 3380 cal BC
KN-3910	bone	-20 (estimated)	4830 ± 130 BP 3770 – 3490 cal BC 3430 – 3370 cal BC
R-1425	charcoal	-25,0	4860 ± 70 BP 3720 – 3620 cal BC 3590 – 3520 cal BC
R-1426	charcoal	-24,3	4680 ± 70 BP 3630 – 3600 cal BC 3530 – 3360 cal BC
R-1427	charcoal	-26,5	4900 ± 70 BP 3770 – 3630 cal BC
R-1428	charcoal	-25,5	4890 ± 70 BP 3770 – 3630 cal BC

construction of the stone house (Bln-5215), from posts of the underground structure (Bln-5499 and -5500), and from ash layers and fireplaces in a ca 1.5 m thick pack of stratified settlement debris (Bln-5508L [stratigraphically the oldest sample], -5548, -5546, -5545, -5503, -5502) in Trench H 33. These last seem suitable for an exemplary assessment of the entire period of occupation in this area (table 2, fig. 5).³

3. The new dates were provided by J. Görzsdorf, Eurasia Department of the German Archaeological Institute, who conducted the analysis and the re-calibration of the older dates (table 1) in 2004/2005. The ^{14}C -age is indicated in years before the reference-year 1950 in BP (before Present). The $\delta^{13}\text{C}$ -determination was supervised by H. Erlenkeuser at the Leibniz-laboratory of the University of Kiel. The measured $\delta^{13}\text{C}$ -values are based on the PDB-standard and were used to correct the isotope-effect while calculating the conventional ^{14}C -age. The calibration of the dating results was performed with the computer program OxCal v3.10 (Ramsey, 1995; 1998; 2001 and 2005) applying the current mean curve IntCal04 (Reimer et al., 2004). The listed calibration-intervals, which reflect the actual age of the samples with a probability of 68.2%, were rounded off to 10year-values.

Table 2 – New dating results from Maadi.

Lab. No./ Mat.	Provenance	$\delta^{13}\text{C}$ -determination	^{14}C age with calibration
Bln-5549 charcoal	H 27I: 14	-26,0‰	4828 ± 39 BP 3660 – 3620 cal BC 3580 – 3530 cal BC
Bln-5509L charcoal	H 36I: 15	-23,5‰	4738 ± 38 BP 3640 – 3550 cal BC 3540 – 3510 cal BC 3430 – 3380 cal BC
Bln-5508L charcoal	H 33I: 58	-27,9‰	4873 ± 36 BP 3700 – 3630 cal BC
Bln-5548 charcoal	H 33I: 44	-27,0‰	4908 ± 37 BP 3710 – 3650 cal BC
Bln 5547 charcoal	H 33I: 33	-25,2‰	4737 ± 36 BP 3640 – 3560 cal BC 3540 – 3510 cal BC 3430 – 3380 cal BC
Bln-5546 charcoal	H 33I: 12	-25,8‰	4732 ± 37 BP 3630 – 3570 cal BC 3540 – 3510 cal BC 3430 – 3380 cal BC
Bln-5545 charcoal	H 33I: 7	-24,3‰	4847 ± 38 BP 3700 – 3680 cal BC 3670 – 3630 cal BC 3560 – 3530 cal BC
Bln-5503 charcoal	H 33I: 7	-24,3‰	4827 ± 37 BP 3660 – 3630 cal BC 3580 – 3530 cal BC
Bln-550 charcoal	H 33I: 4	-27,0‰	4792 ± 36 BP 3640 – 3620 cal BC 3590 – 3520 cal BC
Bln-5215 wood	G 32I: 4	-27,4	4821 ± 30 BP 3650 – 3630 cal BC 3580 – 3530 cal BC
Bln-5499 charcoal	DE 36/37: 94	-27,2‰	4708 ± 39 BP 3630 – 3590 cal BC 3530 – 3490 cal BC 3460 – 3370 cal BC
Bln-5500 charcoal	DE 36/37: 94	-27,4‰	4672 ± 31 BP 3520 – 3480 cal BC 3470 – 3370 cal BC
Bln-5501L charcoal	DE 36/37: 40	-27,0‰	4649 ± 36 BP 3510 – 3420 cal BC 3390 – 3360 cal BC

Despite the wide calibration intervals, which are caused by the wiggly shape of the calibration curve for the middle of the 4th millennium, the dates give important clues regarding the dating of the contexts from which they derive. There seem to be no essential differences in the first use of different locations in the examined area in the western part of the settlement (Bln-5549, -5508L, -5509L), while the samples from Trench H 33 (Bln-5508L, -5548, -5547, -5546, -5545, -5503 and -5502) in accordance with the archaeological record, reflect the stratigraphic sequence of layers (fig. 5). The correlation becomes even more apparent when recalculating the

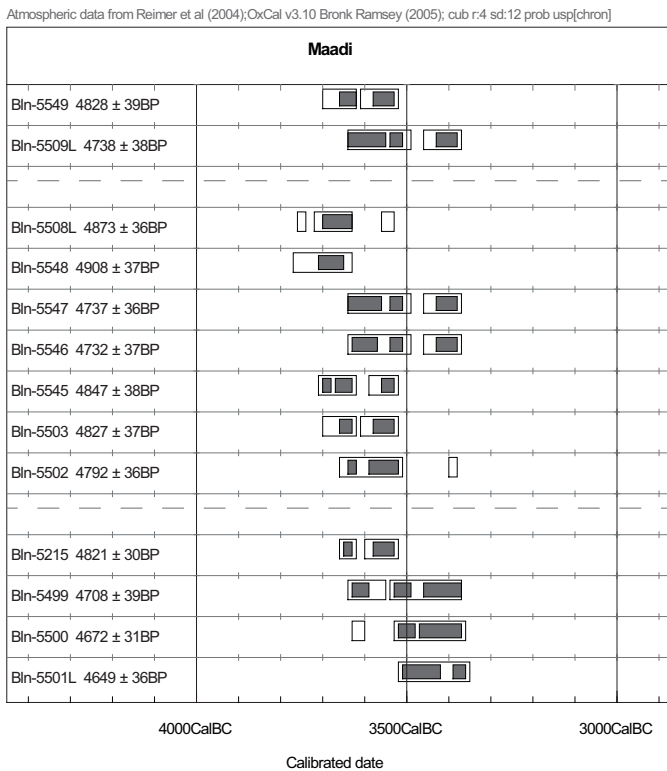


Fig. 5 – Calibration results of the dates organized by origin for the probability of 68.2% (shaded boxes) and 95.4% (wide boxes).

calibration intervals, taking into account the stratigraphy, by means of the Gibbs Sampling Method (Ramsey, 1995). The entire, ca 1.50 m thick, accumulation of settlement material in Trench H 33 seems to represent a period of ca 110–200 years (fig. 6 and 7).

The dating results Bln-5215, -5499 und -5500 show that both of the unusual building structures in the western part of the settlement probably date back to the second half or towards the end of the time period represented by the accumulation in Trench H 33. However, based only on those dates, the chronological sequence of the structures is not conclusive, as the calibration intervals overlap. Additionally it should be noted that the dates, from wood samples, refer to the felling of trees used as roof supports. Several corresponding details in the construction of those houses also indicate the structures were erected within a relatively short span of time. There are also various reasons to assume that cave dwelling is slightly older than the stone house (Hartung, 2006: 36-40). If that interpretation is correct, the calibration intervals could be reduced for the dates Bln-5499 und Bln-5500 (from the cave dwelling) to 3630-3590 cal. BC and for Bln-5215 (from

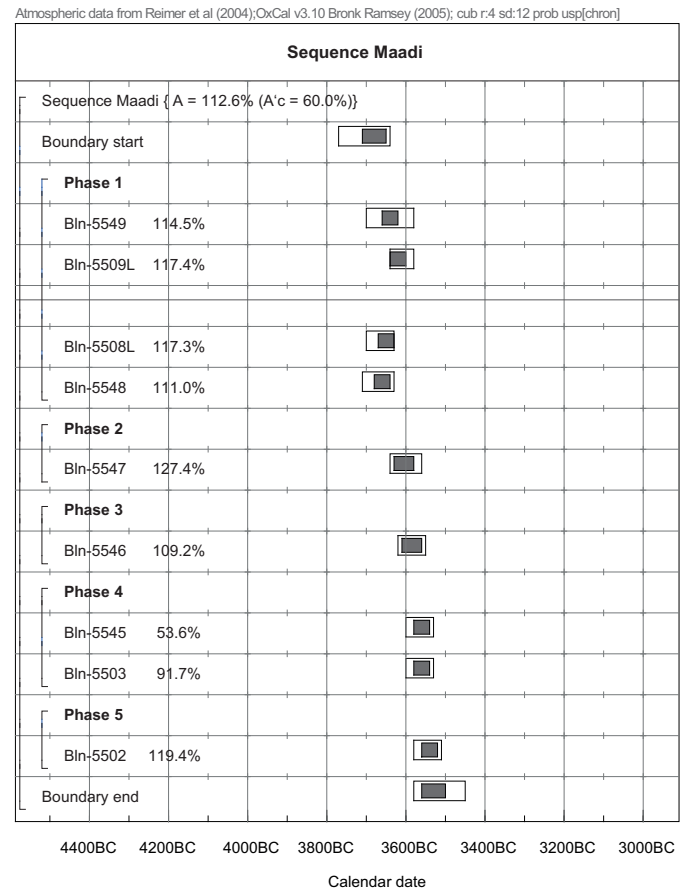


Fig. 6 – Calibration intervals of the dates from Trench H 33 under consideration of the stratigraphic sequence for the probability of 68.2% (shaded boxes) and 95.4% (wide boxes). The dates Bln-5549 and -5509L from trenches H 27 and H 36 are listed in the graph as comparison for the beginning of the settlement at different places in the examined region.

the stone house) possibly to 3580-3530 cal. BC. Thus the western part of the settlement was probably populated from ca 3700/3600 cal. BC to 3500 cal. BC.

That period largely corresponds to the dates from the older excavations (fig. 8), which—despite a wider error range—give similar values for the beginning of the occupation of around 3700 cal. BC in other parts of the settlement. Just two dates from the central part of the settlement (KN-3573 and Beta-2805) could be older. A continuous movement of the settlement from east to west as suggested by Caneva *et al.* (1987: 113) is hardly recognizable from the data. It seems more probable that either the entire area of settlement began to be loosely used simultaneously, or that the settlement expanded to the east and the west from an earlier core area.

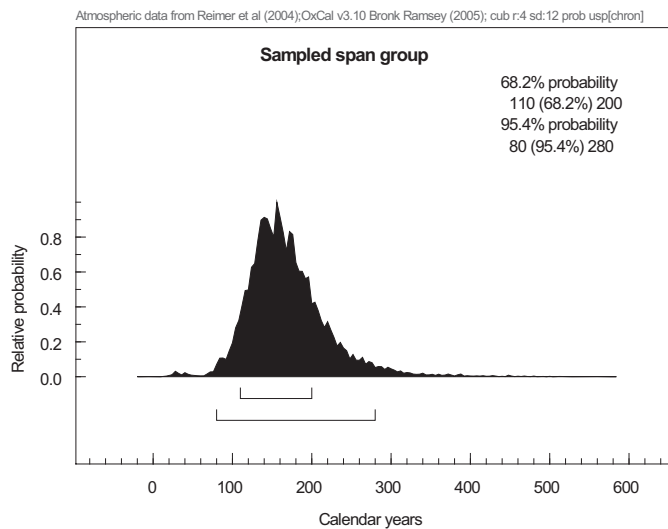


Fig. 7 – Probability distribution of the life span of the settlement in Maadi at Trench H 33.

The dates from Maadi fit well within the framework of the ^{14}C -dates from predynastic Egypt known so far. In comparison with Upper Egypt (*e.g.*, Hassan, 1985; Boehmer *et al.*, 1993; Gördsdorf *et al.*, 1998; Hendrickx, 1999: 25, 33-81; Midant-Reynes and Buchez, 2002: 28-31; Vermeersch *et al.*, 2004: 227-229), the probable beginning of the settlement, based on comparative archaeological finds, is confirmed to have taken place during Naqada I, which is usually set between *ca* 3900 cal. BC to 3650 cal. BC. According to the ^{14}C -dates, however, the settlement was abandoned in Naqada IIC, *i.e.*, slightly later than the imported Naqada material found at Maadi suggests. In the period just prior to the end of the settlement, Upper Egyptian imports apparently did not anymore reach Maadi.

MAADI AND THE SOUTHERN LEVANT

Our ability to interpret nature of interrelations between the settlement of Maadi (and thus of the Lower Egyptian Maadi culture) and the Southern Levant is unfortunately seriously affected by the methods of excavation in the 1930s. The old excavations yielded most of the imported objects and materials—but hardly any stratigraphic observations were made, and even the approximate origin of many finds within the area of the settlement could not be ascertained during the subsequent analysis of the material in the 1980s (Rizkana and Seeher, 1987: 19-20; 1989: 33-37). Thus, important information was

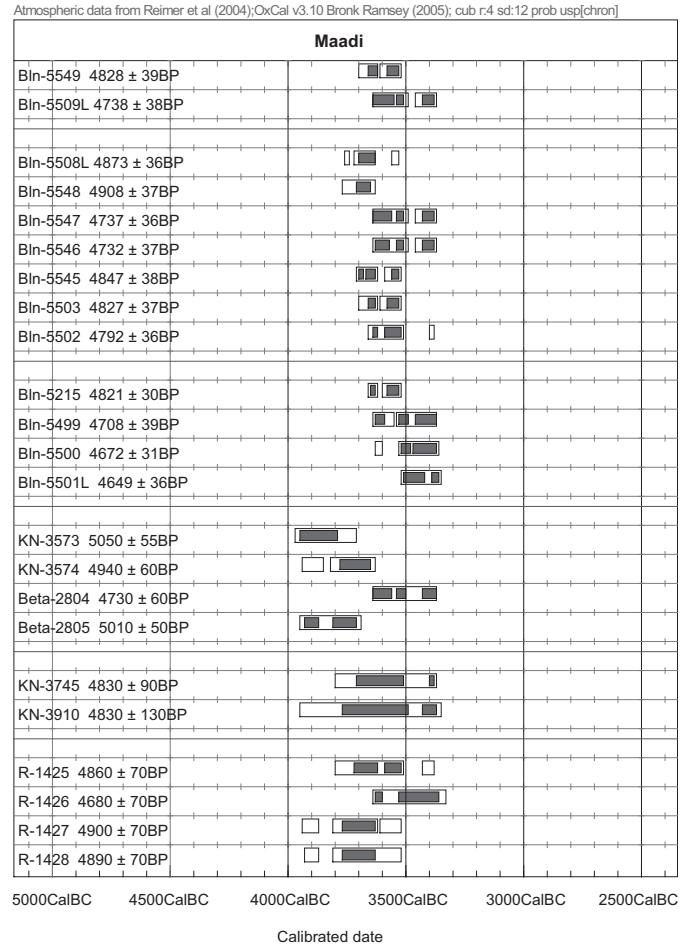


Fig. 8 – Calibration results from all dates known from Maadi, arranged according to find context and excavation area, for the probability of 68.2% (shaded boxes) and 95.4% (wide boxes).

lost, and in many cases it is only possible to make a general assessment of the finds.

Objects and materials suggesting connections with the Southern Levant and Sinai include imported pottery vessels (Rizkana and Seeher, 1987: 52-54, pl. 72-77) used as containers for transporting liquids (wine or oil?), tabular flint scrapers from the Negev or Sinai (Rizkana and Seeher, 1985; 1988: 15-16, 29-31, pl. 49-67; see also Schmidt, 1984), Canaanite blades (Rizkana and Seeher, 1988: 35-36, pl. 76), vessel fragments and spindle whorls made of basalt (probably from Palestine respectively from the Black Desert of Jordan, Rizkana and Seeher, 1988: 53, 57, 64-65, pl. 95.17-22 and pl. 109.1-8; Porat and Seeher, 1988: 217, 227-228), asphalt from the Dead Sea (Rizkana and Seeher, 1989: 71-72, *cf.* also Connan *et al.*, 1992; Milevski *et al.*, 2002), and a lid of a vessel

and tiny pieces of cedar wood probably used as incense which must have come from the mountains of Lebanon (Rizkana and Seeher, 1989: 25, 135, pl. 10.9-10 and 11.8-12; for a summary of imported finds see also Seeher, 1990: 151-152 and Hartung, 2001: 249, 252, 264-267, 314, 321).

The import of copper and copper ore seems to have been particularly significant. To date, the largest number of copper finds from predynastic Egypt have been discovered at Maadi—but here, too, one has to be careful when evaluating the data, as only a few settlements dating to this period are known throughout the entire Nile valley. In addition to large quantities of malachite and various smaller copper objects, such as needles, awls, etc., there were also three or four axes and three copper ingots at Maadi (Rizkana and Seeher, 1989: 13-18, pl. 3-4). The latter are especially interesting, as they resemble moulds that were recently brought to light during excavations in Hujayrat al-Guzlan, near Aqaba (Eichmann *et al.*, 2009: 29-31; Pfeiffer, 2009: 308-310, 321-323). Chemical analysis of the copper ore from Maadi has suggested Feinan and Timna in Wadi Arabah as sources,⁴ but it seems more likely that the axes, which have a high nickel and arsenic content, came from Northern Mesopotamia or Anatolia (Pernicka and Hauptmann, 1989; Hauptmann, 2007: 261-267).

A search for comparanda for artefacts (*e.g.*, Canaanite blades, stone vessels) from Maadi in Southern Levant contexts has yielded only approximate parallels in part because of the uncertainty of whether they date to either the Late Chalcolithic period or to the Early Bronze Age. Only the imported pottery seems to be rather surely dated to the beginning of the Early Bronze Age I (EB IA) (Rizkana and Seeher, 1987: 73-77; 1989: 81-82; Seeher, 1990: 153-154, Abb. 17). However, a few isolated finds are potential evidence for late Chalcolithic contacts such as some bone tools (Rizkana and Seeher, 1989: 22-23, pl. 8.4-15), the head of a small pottery figurine (Rizkana and Seeher, 1989: 11, pl. 1.1; Tutundžić, 1996: 26; Levy and van den Brink, 2002: 18), and perhaps some similarities in the decoration of ceramic objects and vessels (Tutundžić, 2001 and 2002). All in all, this scanty and not entirely convincing evidence is hardly sufficient to prove Late Chalcolithic trade relations were substantial.

However, the entirely un-Egyptian buildings, the subterranean cave rooms as well as the semi-subterranean stone house with rounded corners that was dug into the ground

to a depth of about two metres (Rizkana and Seeher, 1989: 49-56; Badawi, 2003: 1-7; Hartung *et al.*, 2003: 155-160) provide further evidence for Maadi's connections to the Southern Levant. The only parallels for the former can be found in far more complex subterranean dwelling and storage room systems of the Chalcolithic Beersheva culture (Hoffman, 1979: 201-202; Rizkana and Seeher, 1989: 55-56; see also Levy, 1992; Levy and van den Brink, 2002: 18; but also Watrin and Blin, 2003: 562). Although these last date primarily to the 5th millennium, some occasional structures seem to have also existed in the chiefly above ground settlements of the late Beersheva culture in the early 4th millennium (*e.g.*, Gilead, 1987 and 1994; Rosen and Eldar, 1993; *cf.* also Tutundžić, 1997). The idea of cave-like storage structures could therefore might have reached Maadi from Southern Palestine during the Late Chalcolithic period. By contrast, the ground plan of the stone house, which completes the series of unusual structures at Maadi as the most westerly one (see fig. 3) is reminiscent of houses known from northern EB IA settlements such as Sidon-Dakermann, En Shadud, and Yiftahel (see *e.g.*, Saidah, 1979; Braun, 1985: 67-77; 1989; 1997: 29-42; Golani, 1999), though those in the Levant were either sunken only a few centimetres into the ground or not at all. Notably, rectangular buildings with rounded corners were apparently not only restricted to the north of Palestine. There seems to have been a similar building, which, interestingly, yielded quite a lot Egyptian artefacts at Site H in Wadi Ghazze (MacDonald, 1932: pl. IX; Roshwalb, 1981: 332). Other examples of such houses have been revealed in more recent times at the EB IA-settlement at Ashqelon Afridar (Khalaily, 2004: 123-126; Braun and Gophna, 2004: 191-199, 227).

All in all, the imported finds and the alien structures at Maadi consistently point to contacts with the Southern Levant during the Late Chalcolithic period *and* the Early Bronze Age. In comparison with ¹⁴C-dates from the Southern Levant (*e.g.*, Levy, 1992; Gilead, 1994; Joffe and Dessel, 1995; Golani and Segal, 2002; Lovell, 2002; Klimscha, 2009; Regev *et al.*, 2012), the data from Maadi seem to confirm the relative chronological estimate gained from the comparison of the finds. If one considers that the settlement may have evolved prior to 3700 cal. BC (KN-3573 und Beta-2805, see above), the site dates to the transition from the Late Chalcolithic to an early phase of Early Bronze Age I.

4. These areas of origin have been confirmed most recently by lead isotope analysis which revealed the Southern Sinai as a third probable area of provenance for the copper finds from Maadi (Abdel-Motelib *et al.*, 2012: 47-49).

THE SOUTHERN LEVANT AND MAADI

Considering the corresponding evidence from the Southern Levant, it is obvious that the heyday of connections between Maadi (and thus of the Maadi culture) and the Southern Levant was without a doubt during the early phase of the Early Bronze Age (EB IA), and probably the latter part of that phase (EB IA2) (Yekutieli, 2001: 679). That is attested by the evidence and finds from several settlements in Southern Palestine, such as Site H, Taur Ikhbeineh, the Halif Terrace, Lachish (NW-settlement), Nizzanim and others (Macdonald, 1932; Roshwalb, 1981; Gophna, 1992; Oren and Yekutieli, 1992; Dessel, 1991; see also summaries and further references: Hartung, 2001: 354-361; Braun, 2002; Braun and van den Brink, 2008: 651-659), which yielded not only Egyptian imports but also evidence for the presence of Lower Egyptians who manufactured pottery vessels and flint implements in their own tradition using local raw materials. Corresponding evidence for the presence of “Canaanites” can also be found at Maadi (Rizkana and Seeher, 1988: 36; Seeher, 1990: 153). It is obvious that these were not only sporadic contacts but that trade took place with both sides involved and with agents spending at least some time in distant regions to oversee transactions. The most important trade route was probably the route via northern Sinai along the Mediterranean coast, later known as the “Way of Horus”, connecting the eastern Nile Delta with Site H in the east. Several camp-sites along this route indicate its use as early as that time (Oren and Yekutieli, 1992: 380; Oren and Gilead, 1981; see also Oren, 1973 and 1989; Yekutieli, 2002). From Maadi comes early evidence for domesticated donkeys (Bökönyi, 1985: 496-497; Boessneck *et al.*, 1989: 90-92), which may have served as transport animals. In addition it is presumed there was coastal navigation in the Mediterranean Sea (*e.g.*, Gophna and Liphshitz, 1996; Gophna, 2002; Sharvit *et al.*, 2002) that might have connected the Nile Delta with regions situated even farther to the north. In addition to finds of cedar wood, copper axes and the probable influence on the construction of the stone house already mentioned, local imitations of so-called “Esdraelon Ware” (Rizkana and Seeher, 1987: 77, pl. 55.1-3) at Maadi may also indicate such contacts to more northerly regions, although southern Palestine in a middle man role should not be ruled out.

The import of copper ore and copper objects during the Early Bronze Age was apparently also, or at least partially, conducted via northern Sinai. This is attested by lumps of malachite found at Site H and at way stations along that route,

which (as others from Maadi) originated at Feinan (Abdel-Motelib *et al.*, 2012, 47) and were presumably intended for Egypt. To what extent copper production at Afridar (Segal *et al.*, 2004) was linked to trade with Egypt cannot be stated with certainty. Interestingly, and probably not accidentally, some EB IA settlements in Southern Palestine were abandoned or at least the Egyptian evidence from them was considerably diminished at the time of Maadi’s abandonment or shortly thereafter.

The connections between Maadi and Hujayrat al-Ghuzlan near Aqaba are not yet completely clear. The occupation (and copper production) at Hujayrat seems to have begun as early as the Late Chalcolithic period and continued into EB IA. Except for the similarity between moulds from Hujayrat noted above, and copper ingots from Maadi, the evidence for connections with Egypt, especially when compared with the unequivocal data from settlements in Southern Palestine, is confined to a few sparse finds (Eichmann *et al.*, 2009: 26-32; Benecke, 2009: 354). Although artefacts of the Maadi culture are also absent at sites in Sinai, direct connections between Hujayrat and Maadi cannot be ruled out and may have even preceded the trade along the Mediterranean coast. The nomadic Sinai population, those represented in the nawamis burials, may, for example, have acted as trade intermediaries. Shell bracelets from those graves seem to indicate connections with Hujayrat, where that type of jewellery was produced on a large scale (Eichmann *et al.*, 2009: 29; Benecke, 2009: 354; pers. communication K. Schmidt), while other objects from the nawamis are probably of Egyptian origin (*e.g.*, Bar-Yosef Mayer, 2002 and 2011). Such an earlier connection to the south-east could explain evidence how copper/copper ore from Timna (the predominate type used at Hujayrat), southern Sinai (probably mined and provided as additional deliveries by the indigenous population) and Feinan (traded in EB IA via southern Palestine and the Northern Sinai) occurred at Maadi (Abdel-Motelib *et al.*, 2012: 47-49).

Considering the Chalcolithic Southern Levant in general, the evidence for interconnections to Egypt is meagre but it corresponds to a similar picture in the Nile valley. Compared with the EB IA period, objects of Egyptian origin are extremely rare in the Southern Levant and are almost all limited to isolated finds of *Aspatharia* shells from the Nile (Reese *et al.*, 1986; Bar-Yosef Mayer, 2002; as summary see Hartung, 2001: 354; Levy and van den Brink, 2002: 18). Neither the occasionally cited mace heads nor finds of gold objects (*e.g.*, Braun and van den Brink, 2008: 646; Lovell, 2008: 749-753) are convincing indicators for contacts to the Egyptian Nile valley. The few comparable mace heads from Egypt (*e.g.*, Lovell, 2008: fig. 5)

are also more likely to have been Nubian imports to Egypt.⁵ In addition, the export of gold from Predynastic Egypt seems to be rather unlikely if one considers the fact that until the end of the 4th millennium only some few objects are known from Egypt covered with sheets of gold; none was made of solid masses of it that suggests extensive extraction of the metal. For *Aspatharia* shells, the Middle Egyptian Badari culture seems to be the foremost source: The only goods imported from the Levant and found in Egypt of the 5th and early 4th millennia are one or two individual vessels from graves of the Badari culture (Kaplan, 1959: Fig. 1A-D; Friedman, 1999) which, through its connections with the Red Sea and Sinai, may have had sporadic contacts, possibly via intermediaries further to the east. Evidence for such connections is completely missing in the region of the early Naqada Culture in Upper Egypt (Hartung, 2001: 336-337).

CONCLUSIONS

All in all, there is no doubt that Maadi's connections to the Southern Levant reached their climax at the beginning of the Early Bronze Age. However, based on the current state of research it is not possible to say to what extent and how widely that trade affected the economy of Maadi, nor who organised the trade and who profited from it, or if Maadi played a special role or was just one of many other thus far undiscovered settlements with such contacts. After the abandonment of Maadi, Lower Egyptian trade seems to have continued for a while until it was taken over by a Naqadian administration as seems to be evidenced at Tell el-Farkha (*e.g.*, Chłodnicki, 2008; Czarnowicz, 2012: 261-265).

So far it is unclear whether goods imported were destined only for the needs of the Maadi culture, or were also traded with Upper Egypt. This does not seem to have been the case with copper (Seeher, 1990: 150-151, 153). In the region of the contemporaneous Naqada culture copper finds are rather rare and usually limited to small objects such as needles, fish hooks, beads, etc. Quite noticeably, larger amounts of imported goods were not found in Upper Egyptian contexts until after Maadi was abandoned (*e.g.*, Hartung, 2001: 341-342), which suggests that Lower Egyptian contacts with the Southern Levant were a particular incentive to the Naqada culture to establish its own

trading posts during the following period, especially in the eastern Nile Delta.

Information from Maadi has yielded a picture of a Lower Egyptian settlement whose local material culture hardly changed during its *ca* 200–300 years of existence, but which was in contact with the EB IA settlements in the Southern Levant during the later phase, presumably until it was abandoned (fig. 8). It is not possible to say more precisely for how long those connections lasted. However, radiocarbon dates and Upper Egyptian Naqada I imports found there indicate the settlement must have already existed for a longer period of time. For that period the lack of significant evidence for trade connections is contrasted with the unusual cave structures, probably inspired by the Chalcolithic culture of Beersheva. The four structures excavated previously are spaced at considerable distances from each other (see fig. 3) and give the impression that a number of attempts were made (from east to west) to improve them. The virgin soil at Maadi consists of loose sand and gravel, which is quite unsuitable for creation of such structures as it required additional reinforcement with stones and/or plaster coatings to increase stability. Excavations in the western part of the settlement revealed the most carefully built structure of that type. Perhaps initiated by new (EB IA) ideas arriving from the east, some little time later, while maintaining the principle of semi-subterranean constructions, the stone house with a roof of beams and matting instead of vaulted ceilings as in the caves was built (Hartung, 2006: 38-40).

Strikingly, comparable evidence came to light in Buto Layer I(a) located in the western Nile Delta, to date the only other known settlement of the early phase of the Maadi culture. As at Maadi, there are no finds to verify direct trade connections with the Chalcolithic Southern Levant. However, a rather large quantity of unusual sand-tempered vessels was found; locally manufactured of Nile clay produced on a turning device. Included among others are “V-shaped” bowls, which are characteristic of the south Levantine Chalcolithic culture, as well as vessels with so-called pie-crust rims, more typical of the EB IA (Faltings and Köhler, 1996: 104-106; Faltings *et al.*, 2000: 135-137; Faltings, 2002). Apparently potters from the Southern Levant lived at Buto and produced those vessels according to their own traditions. At the same time, Egyptian potters in the settlement were still working without a wheel. By the time of the subsequent settlement of Layer Ib the number of such finds was considerably diminished with Egyptian production methods prevailing as indicated by such types as holemouth-jars with organic temper and burnished surfaces. In the following Buto Layer II (postdating the settlement of Maadi) such finds are completely missing; the idea of a turning

5. The common disc-shaped mace heads of the Naqada I culture are indeed similar in appearance, but they mostly have a concave, and only seldom a flat top (see Petrie, 1920: 22, pl. XXV; Ciałowicz, 1989).

device apparently not having an influence on Egyptian potters. At least until the end of the 4th millennium, most of the vessels continued to be hand made in Egypt.

Who these foreign potters were can only be assumed. Since there is no evidence for intensive trade contacts during this time, they cannot have belonged to a group of traders, who, as later in the EB IA period, resided abroad to conduct their business. More probably, they belonged to late Chalcolithic population groups who emigrated after the collapse of the Beersheva culture to Lower Egypt and settled in villages of the early Maadi culture, as at Buto (Faltings *et al.*, 2000: 142-143; Faltings, 2002; see also Levy and van den Brink, 2002: 18; Commenge and Alon, 2002: 145-146; Tutundžić, 2005; Hartung, 2006; Guyot, 2008: 709-710). Buto may not have been the only such example as the cave structures at Maadi suggest. They may have been an attempt by another group of immigrants to maintain their traditions. However, in that case the familiar building methods, well suited to the solid loess soil of the Beersheva region, failed to be successfully applied to the sandy ground of Maadi. The absence of corresponding ceramics in Maadi is not a strong counter argument since potters did not necessarily accompany each group of immigrants, some of which might have been just individual families.

Assuming there was a late Chalcolithic immigration from the Southern Levant, the emergence of Lower Egypt's extensive trade connections during the EB IA period would be more understandable, especially considering that the early Maadi culture—according to the current state of research—seems to

have had a society with limited social differentiation. Not only could the immigrants have brought various innovative ideas to Lower Egypt, *e.g.*, processing copper and the potter's wheel, their knowledge of where the natural resources were in the different regions of the Southern Levant and of the routes leading to them, and perhaps even surviving family connections with their homeland, could have benefited the development of trade connections or maybe even initiated them (see Guyot, 2008: 709-714). As a consequence trade would have probably influenced development of social organisation and the emergence of hierarchies that become evident in the later phase of the Lower Egyptian culture as at Tell el-Farkha (Chłodnicki and Geming, 2012; Ciałowicz, 2012).

However, without further information regarding the Maadi culture of the early 4th millennium, *i.e.*, without greater examination of other settlements from that early period, questions on such aspects of the archaeological record can hardly be answered.

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BIBLIOGRAPHY

- ABDEL-MOTELIB A., BODE M., HARTMANN R., HARTUNG U., HAUPTMANN A. and PFEIFFER K.
2012 Archaeometallurgical expeditions to the Sinai Peninsula and the Eastern Desert of Egypt (2006, 2008). *Metalla* 19, 1-2: 3-59.
- AMER M. and RIZKANA I.
1953a Excavations at Wadi Digla, First Session Report (1951-1952). *Bulletin of the Faculty of Arts, Cairo University* XV,1: 97-100.
1953b Excavations at Wadi Digla, Second Season's Report (1953). *Bulletin of the Faculty of Arts, Cairo University* XV,2: 201-205.
- BADAWI F.A.
1987 Kurzbericht über die neuen ägyptischen Ausgrabungen in Ma'adi. *Mitteilungen der Archaeologica Venatoria e.V. (Institut für Urgeschichte der Universität Tübingen)* 12: 58-60.
2003 Preliminary Report on 1984-1986 Excavations at Maadi-West. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 59: 1-10.
- BAR-YOSEF MAYER D.E.
2002 Egyptian Canaanite Interaction during the Fourth and Third Millennia BCE: The Shell Connection. In: VAN DEN BRINCK E.C.M. and LEVY T.E. (eds.): 129-135.
2011 Nawamis, Shells, and Early Bronze Age Pastoralism. In: CHESSON M.S. (ed.), *Daily Life, Materiality, and Complexity in Early Urban Communities of the Southern Levant*: 185-195. Winona Lake: Eisenbauns.
- BENECKE N.
2009 Faunal Remains of Tall Hujayrat al-Ghuzlan (Excavations 2000-2004). In: KHALIL L. and SCHMIDT K. (eds.), *Prehistoric 'Aqaba I*: 339-354. Rahden/ Westf.: Marie Leidorf (*Orient-Archäologie* 23).
- BOEHMER R.M., DREYER G. und KROMER B.
1993 Einige frühzeitliche ¹⁴C-Datierungen aus Abydos und Uruk. *Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo* 49: 63-68.

- BOESSNECK J., VON DEN DRIESCH A. and ZIEGLER R.
1989 Die Tierreste von Maadi und Wadi Digla. In: RIZKANA I. and SEEHER J., *Maadi III*: 87-128.
- BÖKÖNYI S.
1985 The Animal Remains of Maadi, Egypt. In: LIVERANI M., PALMIERI A., FERONI R. (a cura di), *Studi di Paleontologia in onore di Salvatore M. Puglisi*: 495-499. Roma: Università di Roma "La Sapienza".
- BRAUN E.L.
1985 *En Shadud: Salvage Excavation at a Farming Community in the Jezreel Valley, Israel*. Oxford (BAR Int. Ser. 249).
1989 The Problem of the Apsidal House: New Aspects of Early Bronze I Domestic Architecture in Israel, Jordan, and Lebanon. *Palestine Exploration Quarterly* 121: 1-4.
1997 *Yiftah'el – Salvage and Rescue Excavations at a Prehistoric Village in Lower Galilee, Israel*. Jerusalem: Israel Antiquity Authority (IAA Reports 2).
2002 Egypt's First Sojourn in Canaan. In: VAN DEN BRINCK E.C.M. and LEVY T.E. (eds.): 129-135.
- BRAUN E.L. and VAN DEN BRINCK E.C.M.
2008 Appraising South Levantine-Egyptian Interaction: Recent Discoveries from Israel and Egypt. In: MIDANT-REYNES B. and TRISTANT Y. (eds.): 643-688.
- BRAUN E.L. and GOPHNA R.
2004 Excavations at Ashqelon, Afridar – Area G. *Atiqot* 45: 185-241.
- VAN DEN BRINCK E.C.M. and LEVY T.E. (eds.)
2002 *Egypt and the Levant. Interrelations from the 4th through the early 3rd millennium BCE*. London, New York: Leicester University Press.
- VAN DEN BRINCK E.C.M., SCHMIDT K., BOESSNECK J., VON DEN DRIESCH A. and DE ROLLER G.-J.
1989 A Transitional Late Predynastic – Early Dynastic Settlement Site in the Northeastern Nile Delta, Egypt. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 45: 55-108.
- BUCHEZ N. et MIDANT-REYNES B.
2007 Le site prédynastique de Kom el-Khilgan (Delta oriental). Données nouvelles sur les processus d'unification culturelle au IV^e millénaire. *Bulletin de l'Institut français d'archéologie orientale* 107: 43-70.
2011 A tale of two funerary traditions: The Predynastic cemetery at Kom el-Khilgan (eastern Delta). In: FRIEDMAN R.F. and FISKE P.N. (eds.), *Egypt at its Origins 3*: 831-858. Leuven, Paris, Walpole: Peeters (*Orientalia Lovaniensia Analecta* 205).
- CANEVA I., FRANGIPANE M. and PALMIERI A.
1987 Predynastic Egypt: New Data from Maadi. *African Archaeological Review* 5: 105-114.
1989 Recent excavations at Maadi (Egypt). In: KRZYŻANIAK L. and KOBUSIEWICZ M. (eds.), *Late Prehistory of the Nile Basin and the Sahara*: 287-293. Poznań: Archaeological Museum (*Studies in African Archaeology* 2).
- CHŁODNICKI M.
2008 Trade and Exchange in the Predynastic and Early Dynastic Period in the eastern Nile Delta. In: MIDANT-REYNES B. and TRISTANT Y. (eds.): 489-500.
- CHŁODNICKI M. and GEMING M.M.
2012 Lower Egyptian Settlement on the Central Kom. In: CHŁODNICKI M., CIAŁOWICZ K.M. and MAĆZYŃSKA A. (eds.): 89-104.
- CHŁODNICKI M., CIAŁOWICZ K.M. and MAĆZYŃSKA A. (eds.)
2012 *Tell el-Farkha I*: Poznań, Kraków: Poznań Archaeological Museum and Institute of Archaeology, Jagiellonian University.
- CIAŁOWICZ K.M.
1989 Predynastic mace-heads in the Nile valley. In: KRZYŻANIAK L. and KOBUSIEWICZ M. (eds.), *Late Prehistory of the Nile Basin and the Sahara*: 261-266. Poznań: Archaeological Museum (*Studies in African Archaeology* 2).
2008 The nature of the relations between Lower and Upper Egypt in the Protodynastic period. A view from Tell el-Farkha. In: MIDANT-REYNES B. and TRISTANT Y. (eds.): 501-513.
2012 Lower Egyptian settlement on the Western Kom. In: CHŁODNICKI M., CIAŁOWICZ K.M. and MAĆZYŃSKA A. (eds.): 149-162.
- COMMENGE C. and ALON D.
2002 Competitive Involvement and Expanded Horizons: Exploring the Nature of Interaction between Northern Negev and Lower Egypt (c. 4500-3600 BCE). In: VAN DEN BRINCK E.C.M. and LEVY T.E. (eds.): 139-153.
- CONNAN J., NISSENBAUM A. and DESSERT D.
1992 Molecular archaeology: Export of Dead Sea asphalt to Canaan and Egypt in the Chalcolithic – Early Bronze Age (4th-3rd millennium BC). *Geochimica et Cosmochimica Acta* 56: 2743-2759.
- CZARNOWICZ M.
2012 Levantine imports and imitations. In: CHŁODNICKI M., CIAŁOWICZ K.M. and MAĆZYŃSKA A. (eds.): 245-265.
- DESSEL J.P.
1991 *Ceramic production and social complexity in fourth millennium Canaan: A case study from the Halif Terrace*. PhD Thesis, University of Arizona: UMI.
- EICHMANN R., KHALIL L. and SCHMIDT K.
2009 Excavations at Tall Hujayrat al-Ghuzlan ('Aqaba/Jordan). Excavations 1998-2005 and Stratigraphy. In: KHALIL L. and SCHMIDT K. (eds.), *Prehistoric 'Aqaba I*: 17-77. Rahden/Westf.: Marie Leidorf (*Orient-Archäologie* 23).
- FALTINGS D.
2002 The Chronological Frame and Social Structure of Buto in the Fourth Millennium BCE. In: VAN DEN BRINCK E.C.M. and LEVY T.E. (eds.): 165-170.
- FALTINGS D. und KÖHLER E.C.
1996 Vorbericht über die Ausgrabungen des DAI in Tell el-Fara'in/Buto 1993 bis 1995. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 52: 87-114.
- FALTINGS D., BALLEP P., FÖRSTER F., FRENCH P., IHDE C., SAHLMANN H., THOMALSKY J., THUMSHIRN C. und WODZINSKA A.
2000 Zweiter Vorbericht über die Arbeiten in Buto von 1996 bis 1999. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 56: 131-179.
- FRIEDMAN R.
1999 Badari Grave Group 569. In: DAVIES W.V. (ed.), *Studies in Egyptian Antiquities – A Tribute to T.G.H. James*: 1-11. London: The British Museum (*British Museum Occasional Paper* 123).

- GILEAD I.
1987 A New Look at Chalcolithic Beer-Sheba. *Biblical Archaeologist* 48: 134-139.
1994 The History of the Chalcolithic Settlement in the Nahal Beer Sheva Area: The Radiocarbon Aspect. *Bulletin of the American Schools of Oriental Research* 296: 1-13.
- GÖRSDORF J., DREYER G. and HARTUNG U.
1998 ¹⁴C Dating results of the Archaic Royal Necropolis Umm el-Qaab at Abydos. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 54: 169-175.
- GOLANI A.
1999 New Perspectives on Domestic Architecture and the Initial Stage of Urbanization in Canaan. *Levant* 31: 123-133.
- GOLANI A. and SEGAL D.
2002 Redefining the Onset of the Early Bronze Age in Southern Canaan: New Evidence of ¹⁴C Dating from Ashkelon Afridar. In: VAN DEN BRINK E.C.M. and YANNAI E. (eds.), *In Quest of Ancient Settlements and Landscapes. Archaeological Studies in Honour of Ram Gophna*: 135-154. Tel Aviv: Ramot Publishing.
- GOPHNA R.
1992 The Contacts between 'En Besor Oasis, Southern Canaan and Egypt during the Late Predynastic and the Threshold of the First Dynasty: A further Assessment. In: VAN DEN BRINK E.C.M. (ed.), *The Nile Delta in Transition: 4th. – 3rd. Millennium B.C.*: 385-393. Tel Aviv: E.C.M. van den Brink; Israel Exploration Society.
2002 Elusive Anchorage Points along the Israel Littoral and the Egyptian-Canaanite Maritime Route during the Early Bronze Age I. In: VAN DEN BRINCK E.C.M. and LEVY T.E. (eds.): 418-421.
- GOPHNA R. and LIPSHCHITZ N.
1996 The Ashkelon Through settlements in the Early Bronze Age I: new evidence of maritime trade. *Tel Aviv* 23: 143-153.
- GUYOT F.
2008 The Origins of the „Naqadan Expansion“ and the Interregional Exchange Mechanisms between Lower Nubia, Upper and Lower Egypt, the South Levant and North Syria during the First Half of the 4th Millennium B.C. In: MIDANT-REYNES B. and TRISTANT Y. (eds.): 707-740.
- HARTUNG U.
1994 Bemerkungen zur Chronologie der Beziehungen Ägyptens zu Südkanaan in spätprädynastischer Zeit. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 50: 107-113.
2001 *Umm el-Qaab II. Importkeramik aus dem Friedhof U in Abydos (Umm el-Qaab) und die Beziehungen Ägyptens zu Vorderasien im 4. Jahrtausend v. Chr.* Mainz: Philipp von Zabern (*Archäologische Veröffentlichungen des Deutschen Archäologischen Instituts Abteilung Kairo* 92).
2002 Imported Jars from Cemetery U at Abydos and the Relations between Egypt and Canaan in Predynastic Times. In: VAN DEN BRINCK E.C.M. and LEVY T.E. (eds.): 437-449.
2004 Rescue Excavations in the Predynastic Settlement of Maadi. In: HENDRICKX S., FRIEDMAN R.F., CIAŁOWICZ K.M. and CHEŁDNICKI M. (eds.), *Egypt at its Origins. Studies in Memory of Barbara Adams*: 337-356. Leuven, Paris, Dudley: Peeters (*Orientalia Lovaniensia Analecta* 138).
2006 Bemerkungen zur Architektur und Chronologie der unterirdi-
- schen und halbhunterirdischen Bauten in der prädynastischen Siedlung von Maadi. In: CZERNY E., HEIN I., HUNGER H., MELMAN D. and SCHWAB A. (eds.), *Timelines - Studies in Honour of Manfred Bietak, Volume II*: 35-44. Leuven, Paris, Dudley: Peeters (*Orientalia Lovaniensia Analecta* 149).
- HARTUNG U., ABD EL-GELIL M., VON DEN DRIESCH A., FARES G., HARTMANN R., HIKADE T. und IHDE C.
2003 Vorbericht über neue Untersuchungen in der prädynastischen Siedlung von Maadi. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 59: 149-198.
- HASSAN F.A.
1985 Radiocarbon Chronology of Neolithic and Predynastic sites in Upper Egypt and the Delta. *African Archaeological Review* 3: 95-116.
- HAUPTMANN A.
2007 *The Archaeometallurgy of Copper: Evidence from Faynan, Jordan*. Heidelberg, Berlin, New York: Springer.
- HENDRICKX S.
1999 La chronologie de la préhistoire tardive et des débuts de l'histoire de l'Égypte. *Archéo-Nil* 9: 13-81.
- HENDRICKX S. and VAN DEN BRINK E.C.M.
2002 Inventory of Predynastic and Early Dynastic Cemetery and Settlement Sites in the Egyptian Nile Valley. In: VAN DEN BRINCK E.C.M. and LEVY T.E. (eds.): 346-399.
- HOFFMAN M.A.
1979 *Egypt before the Pharaohs. The Prehistoric Foundations of Egyptian Civilization*. New York: Dorset Press.
- JOFFE A.H. and DESSEL J.P.
1995 Redefining Chronology and Terminology for the Chalcolithic of the Southern Levant. *Current Anthropology* 36: 507-517.
- JUCHA M.A.
2005 *Tell el-Farkha II. The Pottery of the Predynastic Settlement (Phases 2 to 5)*. Kraków/Poznań: Institute of Archaeology, Jagiellonian University Kraków/Poznań Archaeological Museum.
- KAISER W.
1985 Zur Südausbreitung der vorgeschichtlichen Deltakulturen und zur frühen Entwicklung Oberägyptens. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 41: 61-87.
1987 Zum Friedhof der Naqadkultur von Minshat Abu Omar. *Annales du Service des Antiquités de l'Égypte* 71: 119-125.
1990 Zur Entstehung des gesamtägyptischen Staates. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 46: 287-299.
- KAPLAN J.
1959 The connections of the Palestinian Chalcolithic Culture with Predynastic Egypt. *Israel Exploration Journal* 9: 134-136.
- KHALAILY H.
2004 An Early Bronze Age Site at Ashqelon, Afridar—Area F. *Atiqot* 45: 121-159.
- KLIMSCHA F.
2009 Radiocarbon Dates from Prehistoric 'Aqaba and Other Related Sites from the Chalcolithic Period. In: KHALIL L. and SCHMIDT K. (eds.), *Prehistoric 'Aqaba I*: 363-401. Rahden/Westf.: Marie Leidorf (*Orient-Archäologie* 23).

- KÖHLER E.C.
 1995 The state of research on Late Predynastic Egypt: New evidence for the development of the Pharaonic state? *Göttinger Miszellen* 147: 79-92.
 1996 Evidence for interregional contacts between Late Prehistoric Lower and Upper Egypt. In: KRZYŻANIAK L., KROEPER K. and KOBUSIEWICZ M. (eds.), *Interregional contacts in the Later Prehistory of Northeastern Africa*: 215-226. Poznań: Archaeological Museum.
 2008 The interaction between and the roles of Upper and Lower Egypt in the formation of the Egyptian state. Another review. In: MIDANT-REYNES B. and TRISTANT Y. (eds.): 515-543.
- KROEPER K.
 2004 Minshat Abu Omar. Aspects of the analysis of a cemetery. In: HENDRICKX S., FRIEDMAN R.F., CIAŁOWICZ K.M. and CHŁODNICKI M. (eds.), *Egypt at its Origins. Studies in Memory of Barbara Adams*: 859-880. Leuven, Paris, Dudley: Peeters (*Orientalia Lovaniensia Analecta* 138).
- KROEPER K. und WILDUNG D.
 1985 *Minshat Abu Omar. Münchner Ostdelta-Expedition, Vorbericht 1978-1994*. München: Staatliche Sammlung Ägyptischer Kunst (*Schriften aus der Ägyptischen Sammlung* 3).
- LEVY T.E.
 1992 Radiocarbon Chronology of the Beersheva Culture and Predynastic Egypt. In: VAN DEN BRINK E.C.M. (ed.), *The Nile Delta in Transition: 4th. – 3rd. Millennium B.C.*: 345-356. Tel Aviv: E.C.M. van den Brink; Israel Exploration Society.
- LEVY T.E. and VAN DEN BRINK E.C.M.
 2002 Interaction Models, Egypt and the Levantine Periphery. In: VAN DEN BRINCK E.C.M. and LEVY T.E. (eds.): 3-38.
- LOVELL J.
 2002 Shifting Subsistence Patterns: Some Ideas about the End of the Chalcolithic in the Southern Levant. *Paléorient* 28,1: 89-102.
 2008 Horticulture, Status and Long-range Trade in Chalcolithic Levant: Early Connections with Egypt. In: MIDANT-REYNES B. and TRISTANT Y. (eds.): 515-543.
- MACDONALD E.
 1932 *Prehistoric Fara*. In: STARKEY J.L. and HARDING L., *Beth-Pelet II. Beth-Pelet Cemetery*: 1-21. London: Bernard Quaritch (*British School of Archaeology in Egypt* 52).
- MAĆZYŃSKA A.
 2011 The Lower Egyptian-Naqada transition: A view from Tell el-Farkha. In: FRIEDMAN R. and FISKE P.N. (eds.), *Egypt at its Origins* 3: 879-908. Leuven, Paris, Walpole: Peeters (*Orientalia Lovaniensia Analecta* 205).
- MENGHIN O. and AMER M.
 1932 *The Excavations of the Egyptian University in the Neolithic Site at Maadi, First Preliminary Report*. Cairo: Misr-Sokkar Press (*Egyptian University, Faculty of Arts, Publication* 19).
 1936 *The Excavations of the Egyptian University in the Neolithic Site at Maadi, Second Preliminary Report*. Cairo: Government Press (*Egyptian University, Faculty of Arts*).
- MIDANT-REYNES B.
 2000 *The Prehistory of Egypt. From the First Egyptians to the First Pharaohs*. Oxford: Blackwell Publishers.
- MIDANT-REYNES B. et BUCHEZ N.
 2002 *Adaïma – I. Économie et habitat*. Le Caire : IFAO (*Fouilles de l'Institut français d'archéologie orientale* 45).
- MIDANT-REYNES B. and TRISTANT Y. (eds.)
 2008 *Egypt at its Origins* 2: 643-688. Leuven, Paris, Dudley: Peeters (*Orientalia Lovaniensia Analecta* 172).
- MILEVSKI I., MARDER O. and GORING MORRIS A.N.
 2002 The Circulation of Asphalt in Southern Canaan and Egypt during the Early Bronze I. In: VAN DEN BRINK E.C.M. and YANNAI E. (eds.), *In Quest of Ancient Settlements and Landscapes. Archaeological Studies in Honour of Ram Gophna*: 219-236. Tel Aviv: Ramot Publishing.
- DE MIROSCHEJ P.
 2002 The socio-political Dynamics of Egyptian-Canaanite Interaction in the Early Bronze Age. In: VAN DEN BRINCK E.C.M. and LEVY T.E. (eds.): 39-57.
- OREN E.D.
 1973 The overland route between Egypt and Canaan in the Early Bronze Age: preliminary report. *Israel Exploration Journal* 23: 198-205.
 1989 Early Bronze Age settlement in Northern Sinai: a model for Egypto-Canaanite interconnections. In: DE MIROSCHEJ P. (éd.), *L'Urbanisation de la Palestine à l'âge du Bronze ancien*: 389-405. Oxford (*BAR Int. Ser.* 527(i)).
- OREN E.D. and GILEAD I.
 1981 Chalcolithic sites in Northeastern Sinai. *Tel Aviv* 8: 25-44.
- OREN E.D. and YEKUTIELI Y.
 1992 Taur Ikhbeineh: Earliest Evidence for Egyptian Interconnections. In: VAN DEN BRINK E.C.M. (ed.), *The Nile Delta in Transition: 4th. – 3rd. Millennium B.C.*: 361-384. Jerusalem: Israel Exploration Society.
- PERNICKA E. and HAUPTMANN A.
 1989 Chemische und mineralogische Analyse einiger Erz- und Kupferfunde von Maadi. In: RIZKANA I. and SEEHER J.: 137-141.
- PETRIE W.M.F.
 1920 *Prehistoric Egypt*. London: Bernard Quaritch (*British School of Archaeology in Egypt* 31).
- PFEIFFER K.
 2009 The Technical Ceramic for Metallurgical Activities in Tall Hujayrat al-Ghuzlan and Comparable Sites in the southern Levant. In: KHALIL L. and SCHMIDT K. (eds.), *Prehistoric 'Aqaba I*: 305-338. Rahden/Westf.: Marie Leidorf (*Orient-Archäologie* 23).
- PORAT N. and SEEHER J.
 1988 Petrographic Analyses of Pottery and Basalt from Predynastic Maadi. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 44: 215-228.
- RAMSEY C.B.
 1995 Radiocarbon calibration and analysis of stratigraphy; the OxCal program. *Radiocarbon* 37,2: 425-430.
 1998 Probability and dating. *Radiocarbon* 40,1: 461-474.
 2001 Development of the radiocarbon calibration program. *Radiocarbon* 43,2A: 355-363.
 2005 Internet version of the OxCal program v. 3.10.

- REGEV J., DE MIROSCHEDE P., GREENBERG R., BRAUN E., GREENHUT Z. and BOARETTO E.
2012 Chronology of the Early Bronze Age in the Southern Levant: New Analysis for a High Chronology. In: BOARETTO E. and REBOLLO FRANCO N.R. (eds.), *Proceedings of the 6th International Radiocarbon and Archaeology Symposium*, *Radiocarbon* 54,3-4: 525-566.
- REIMER P.J., BAILLIE M.G.L., BARD E., BAYLISS A., BECK J.W. *et al.*
2004 IntCal04 terrestrial radiocarbon age calibration, 0-26 cal kyr BP. *Radiocarbon* 46,3: 1029-1058.
- RIZKANA I.
1952 Centres of Settlement in Prehistoric Egypt in the Area between Helwan and Heliopolis. *Bulletin de l'Institut Fouad I du Désert* II, 2 : 117-130.
- RIZKANA I. and SEEHER J.
1987 *Maadi I. The Pottery of the Predynastic Settlement*. Mainz: Philipp von Zabern (*Archäologische Veröffentlichungen des Deutschen Archäologischen Instituts Abteilung Kairo* 64).
1988 *Maadi II. The Lithic Industries of the Predynastic Settlement*. Mainz: Philipp von Zabern (*Archäologische Veröffentlichungen des Deutschen Archäologischen Instituts Abteilung Kairo* 65).
1989 *Maadi III. The Non-lithic Small Finds and the Structural Remains of the Predynastic Settlement*. Mainz: Philipp von Zabern (*Archäologische Veröffentlichungen des Deutschen Archäologischen Instituts Abteilung Kairo* 80).
1990 *Maadi IV. The Predynastic Cemeteries of Maadi and Wadi Digla*. Mainz: Philipp von Zabern (*Archäologische Veröffentlichungen des Deutschen Archäologischen Instituts Abteilung Kairo* 81).
- ROSEN S.A. and EL DAR I.
1993 Horvat Beter Revisited: The 1982 Salvage Excavation. *'Atiqot (ES)* 22: 13-27.
- ROSHWALB A.
1981 *Protohistory in the Wadi Ghazze: A Typological and Technological Study based on the Macdonald Excavations*. PhD dissertation, London: University of London.
- SAIDAH R.
1979 Fouilles de Sidon-Dakerman : l'agglomération Chalcolithique. *Berytus* 27 : 29-55.
- SCHMIDT K.
1984 Zur Frage der ökonomischen Grundlagen frühbronzezeitlicher Siedlungen im Südsinai. Herstellung und Verhandlung von Plattensilexabschlaggeräten. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 40: 261-264.
- SEEHER J.
1990 Maadi – eine prädynastische Kulturgruppe zwischen Oberägypten und Palästina. *Prähistorische Zeitschrift* 65: 123-156.
- SEGAL I., HALICZ L. and KAMENSKI A.
2004 The Metallurgical Remains from Ashqelon, Afridar—Areas E, G and H. *'Atiqot* 45: 311-330.
- SHARVIT J., GALILI E., ROSEN B. and VAN DEN BRINK E.C.M.
2002 Predynastic Maritime Traffic along the Carmel Coast of Israel: A Submerged Find from North Atlit Bay. In: VAN DEN BRINK E.C.M. and YANNAI E. (eds.), *In Quest of Ancient Settlements and Landscapes. Archaeological Studies in Honour of Ram Gophna*: 159-166. Tel Aviv: Ramot Publishing.
- STEVENSON A.
2008 Ethnicity and Migration? The Cemetery of El-Gerzeh. In: MIDANT-REYNES B. and TRISTANT Y. (eds.): 545-562.
- TUTUNDŽIĆ S.P.
1996 Chalcolithic Canaan and Egypt: Reinvestigations and Considerations. *Journal of the Serbian Archaeological Society* 12: 25-33.
1997 Remarks on the Origin and Date of Subterranean Constructions at Maadi. *Discussions in Egyptology* 38: 102-107.
2001 The Ghassulian Traits of Domestic Animal Figurines at Maadi. *Journal of the Serbian Archaeological Society* 17: 77-88.
2002 Painted Pottery at Maadi and the Ghassulian Tradition. *Journal of the Serbian Archaeological Society* 18: 63-86.
2005 A Preliminary View on the Appearance of Canaanites at Chalcolithic Buto I, Lower Egypt. *Journal of the Serbian Archaeological Society* 21: 113-123.
- VERMEERSCH P.M., VAN NEER W. and HENDRICKX S.
2004 El Abadiya 2, a Naqada I site near Danfiq, Upper Egypt. In: HENDRICKX S., FRIEDMAN R.F., CIAŁOWICZ K.M. and CHŁODNICKI M. (eds.), *Egypt at its Origins. Studies in Memory of Barbara Adams*: 213-276. Leuven, Paris, Dudley: Peeters (*Orientalia Lovaniensia Analecta* 138).
- WATRIN L. and BLIN O.
2003 The Nile's Early Stone Architecture: New Data from Ma'adi West. In: HAWASS Z. and PINCH BROCK L. (eds.), *Egyptology at the Dawn of the Twenty-first Century. Proceedings of the Eighth International Congress of Egyptologists, Cairo 2000, Volume I: Archaeology*: 557-567. Cairo, New York: American University in Cairo Press.
- VON DER WAY T.
1993 *Untersuchungen zur Spätvor- und Frühgeschichte Unterägyptens*. Heidelberg: Orientverlag (*Studien zur Archäologie und Geschichte Altägyptens* 8).
1997 *Tell el-Fara'in – Buto I, Ergebnisse zum frühen Kontext, Kampagnen der Jahre 1983-1989*. Mainz: Philipp von Zabern (*Archäologische Veröffentlichungen des Deutschen Archäologischen Instituts Abteilung Kairo* 83).
2006 Zur zeitlichen Korrelierung der Buto-Ma'adi-Kultur mit dem kanaanäischen Raum. In: CZERNY E., HEIN I., HUNGER H., MELMAN D. and SCHWAB A. (eds.), *Timelines – Studies in Honour of Manfred Bietak, Volume II*: 59-64. Leuven, Paris, Dudley: Peeters (*Orientalia Lovaniensia Analecta* 149).
- YEKUTIELI Y.
2001 The Early Bronze Age IA of Southwestern Canaan. In: WOLFF S.R. (ed.), *Studies in the Archaeology of Israel and Neighboring Lands in Memory of Douglas L. Esse*: 659-688. Chicago: The Oriental Institute of the University of Chicago, and Atlanta: The American Schools of Oriental Research (*Studies in Ancient Oriental Civilization* 59; *ASOR* 5).
2002 Settlement and Subsistence Patterns in North Sinai during the Fifth to Third Millennia BCE. In: VAN DEN BRINK E.C.M. and LEVY T.E. (eds.): 422-433.