

LEVANTINE IMPORTS AND THEIR IMITATIONS FROM HELWAN

By *Christiana E. Köhler** and *Mary Ownby***

PART I – ARCHAEOLOGY

INTRODUCTION

Since the end of the 19th century C.E. archaeological sites near the modern city of Helwan in Egypt have been known to produce significant archaeological data pertaining to possible early contacts between Egypt and the Levant. At that time a number of surface collections of prehistoric lithic industries were made that resulted in the naming of the so-called Helwan Point, an index fossil of the Levantine Pre-Pottery Neolithic that assists in drawing connections between the earliest Neolithic cultures of the Levant and Egypt.¹

Later, and especially through the intensive archaeological investigation by Z. Saad of a vast Early Dynastic cemetery near the river, more material came to light that was believed to be evidence for Egyptian-Levantine relations during the Early Bronze Age. Saad published several ceramic vessels of a shape and quality that could be compared with Early Bronze II so-called Red-Polished and Metallic Ware ceramic juglets.² These complemented similar finds made in the other Early Dynastic cemeteries in the Memphite region as well as in the royal cemetery at Abydos. Although their status as actual imports had up until recently never been validated, their precise chronological position has been the subject of consideration as the Levantine production of such jars extends from EB II to III, but imports in Egypt have rarely been observed in contexts after Naqada IIIC or the 1st

Dynasty, thus apparently limiting their trade to a shorter period.³ One of the Helwan jars from tomb 419.H.8 has been acknowledged to be the only 2nd Dynasty find of such pottery, but it was later found to be of Egyptian manufacture (see below).

After a long hiatus in systematic archaeological activities at Helwan, excavation work was resumed in 1997 initially focusing on re-excavating certain tombs previously uncovered by Saad and on re-examining the artifacts found therein, and later expanding to previously unexplored areas of the cemetery.⁴ This work soon resulted in the discovery of new ceramic imports, their imitations as well as the fortunate reassessment of that one 2nd Dynasty juglet from Helwan. This paper will present the results gathered to-date.

THE JUGLET FROM SAAD TOMB 419.H.8. AND OTHER IMITATIONS

In early 2003 the Australian mission again had permission to study artifacts from Saad's excavations then stored in the basement of the Egyptian Museum in Cairo.⁵ Among other ceramic objects was the juglet from Saad Tomb 419.H.8. (Fig. 1:1). The excavator initially identified it as of Aegean origin, possibly in accordance with Petrie's earlier observation of such red-polished jars in the royal tombs at Abydos.⁶ The piece was examined, drawn, photographed and its clay fabric was described with the help of a simple 10× magnification hand lens. The vessel has an elongated ovoid body with a slightly flattened handle which spans from the rim

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¹ See summary in DEBONO and MORTENSEN 1990; GOPHER 1998; HIKADE 2001.

² SAAD 1951, pl. XI, b, B, pl. LXXII, 19, 20, 21; SAAD 1957, 69, pl. XXXIV, 3. The current location of most of these jars is unknown.

³ See summary in HENDRICKX and BAVAY 2002.

⁴ For earlier reports cf. KÖHLER 1998, KÖHLER 2000a, KÖHLER 2000b, KÖHLER 2002, KÖHLER 2003a, KÖHLER 2003b, KÖHLER 2004a, KÖHLER 2004b, KÖHLER 2004c, KÖHLER 2004d, KÖHLER 2005, KÖHLER 2008a, KÖHLER 2008b,

KÖHLER and JONES 2009; KÖHLER and SMYTHE 2004; SMYTHE 2004, SMYTHE 2008. The Helwan Project is conducted under the concession of Macquarie University (Sydney) and also funded by the University of Vienna and the Institute for Bio-Archaeology. The on-site petrographic analyses were made possible by funds kindly donated by the Friends of the Petrie Museum.

⁵ We are grateful to the past and present directors of the Cairo Museum, especially M. Saleh, M. el-Shimy, M. el-Damaty and W. el-Saddik for allowing us access to this material.

⁶ PETRIE 1901, pl. LIV.

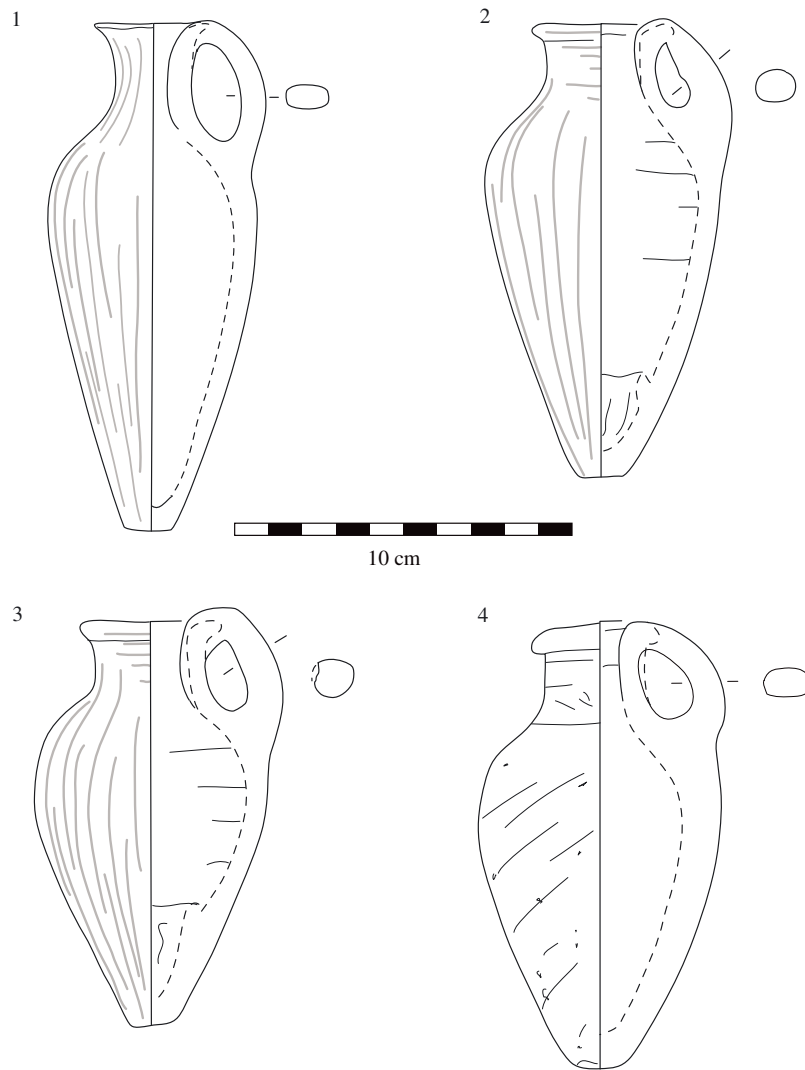


Fig. 1 Line drawings of imitations of Levantine juglets from Helwan

to the shoulder, a small flat base and a slightly flaring rim. The exterior surface is covered in orange-red slip and is vertically polished. It is manufactured from medium fine Nile silt with fine organic inclusions, some fine rounded sand and some gold mica inclusions. Considering this fabric, it would therefore be difficult to support its identification as an import, but rather declare it a local Egyptian imitation of EB II–III Red Polished or Metallic Ware.

Of very similar character and appearance, albeit lesser quality, are three more juglets from the modern excavations (Fig. 1:2–4). They were assessed and recorded with the same methodology as the piece above.

Tomb Op.4/83 produced two intact vessels that were found together in the burial niche of a subterranean chamber tomb near the head of the adult male owner. The tomb was plundered, but the disturbance focused on the body of the deceased and presumably on objects upon his corpse as the rest of the assemblage was very well-preserved in what appears to be largely primary contexts. The juglets are roughly of the same size and quality, made of fine buff silt with red slip and are also vertically polished.

Tomb Op.4/19 was found to be severely plundered on at least two occasions causing the contents, especially the remains of the adult male owner to be highly disarticulated. The juglet was

| Figure | Project No. | Tomb | Short Description |
|--------|-------------|--------------|---|
| 1:1 | EM03-218 | Saad 419.H.8 | Elongated ovoid body with handle from rim to shoulder, small flat base, slightly flaring rim. Exterior surface covered in orange-red slip (10R 4–5/6–8) and vertically polished. Medium fine Nile silt with fine organic inclusions, fine rounded sand (<0.4 mm), gold mica inclusions. Height 15.3 cm, rim diameter 3.5 cm. Preservation intact |
| 1:2 | P04-79 | Op.4/83 | Elongated ovoid body with thick handle from rim to shoulder, small flat base, slightly flaring rim. Exterior surface covered in red slip (2.5 YR 5/6–8) and vertically polished. Fine buff Nile silt with very fine organic inclusions, very fine sub-rounded sand (<0.1 mm), gold mica inclusions. Height 13.5 cm, rim diameter 4.2 cm. Preservation intact, rim chipped |
| 1:3 | P04-80 | Op.4/83 | Elongated ovoid body with thick handle from rim to shoulder, small flat base, slightly flaring rim. Exterior surface covered in red slip (10R 4–5/8) and vertically polished. Fine, soft and buff Nile silt with very fine organic inclusions, fine sub-rounded sand (<0.8 mm), gold mica inclusions. Height 12.5 cm, rim diameter 4.2 cm. Preservation intact, handle chipped |
| 1:4 | P01-23 | Op.4/19 | Elongated ovoid body with thick handle from rim to shoulder, small flat base, slightly rounded rim. Exterior surface covered in red slip (10R 5/6) and well smoothed. Medium fine Nile silt with fine organic inclusions, fine sub-rounded sand (<0.3 mm) and some fine limestone inclusions (<0.8 mm). Height 13.3 cm, rim diameter 3.8 cm. Preservation intact. Publ. KÖHLER, forthcoming |

Table 1 Imitations of Levantine ceramic juglets in Helwan tombs

| Figure | Project No. | Tomb | Short Description* |
|------------|-------------|---------------------|--|
| 2; 3:1; 7 | P06-26 | Op.4/117 | Medium sized ovoid, handmade vessel with lattice burnished surface (2.5 YR 5–6/4–6) of soft, gritty clay. The fabric appears coarse and poorly mixed. There is a pre-firing potmark on the upper body comprised of one horizontal and one vertical line, with a third crossing the latter. Base diameter: c. 5 cm, max. diameter: c. 11 cm. In fragments, neck and rim missing |
| 3:2; 4; 8 | | Op.4/180 | Medium sized handmade vessel with long neck and everted, direct rim, a shoulder-based vertical handle, small rudimentary vertical ‘handle knob’ on the globular body and a horizontal ridge below the neck. The fabric is very fine and very hard. The surface was first ‘combed’, then lattice burnished and is grey-buff in colour (5 YR 6/4 – 7.5 YR 6/3). There is a post-firing, but incomplete, potmark on the upper body consisting of long vertical strokes and smaller crossing lines at the top. The rim diameter is ca. 5.5 cm, max. diameter c. 16.5 cm; in fragments, base and handle missing |
| 3:3; 5; 9 | | Op.4/36 | Fragment of a long, narrow vessel neck with interior rim ledge. The fabric is very fine, dense and medium hard. The fracture is pink-buff with a grey core. The surface has a dark orange red slip (2.5 YR 4/6–3/4) and streaky vertical burnish. Rim diameter 5.4 cm, 20%. Publ. KÖHLER, forthcoming |
| 3:4; 10 | | Saad 40.H.3, Op.1/1 | Jar base of gritty buff clay, exterior surface with orange red slip (2.5YR 4–5/6) and vertically burnished. Base diameter 6 cm, 25%. Publ. KÖHLER 2005, pl. 28:9 |
| 3:5; 6; 11 | P01-10 | Op.4/15 | Large globular, handmade vessel with short cylindrical neck and rounded, slightly angular lip. The fabric is gritty and hard with an orange-buff to grey-buff fracture. The surface is of buff (2.5 YR 6/6–7.5 YR 5/2) colour and very irregularly burnished. The vessel has two potmarks, one pre-firing comprised of two vertical strokes below the neck, the other is post-firing on the shoulder forming two rectangles inside each other. Rim diameter is 12 cm, max. diameter: c. 33 cm. In fragments, lower body and base missing. Publ. KÖHLER, forthcoming |

* For a detailed description of the fabrics see Part III – Macroscopic and Microscopic Descriptions.

Table 2 Imported Levantine ceramic juglets in Helwan tombs

part of a floor deposit of artifacts at the northern end of the burial niche. This juglet is slightly different from the others as its surface is not polished and its appearance is coarser (Table 1).

The precise chronological position of the jar from Saad tomb 419.H.8 is not certain, because the information about the tomb assemblage is insufficient for dating. The tomb’s architecture



Fig. 2 a) P06-26. Levantine import from Op.4/117; b) Potmark on P06-26 from Op.4/117

would support a date in the range of the 2nd and early 3rd Dynasty. On the other hand, the three jars from the more recent excavations allow for a more definite chronological assessment. Tomb Op.4/83 can be dated Naqada IIID1–2, or early to middle 2nd Dynasty, and tomb Op.4/19 probably a little later, being Naqada IIID2, or mid 2nd Dynasty.

Probable imports from Helwan⁷

Apart from the imitations discussed above, a number of ceramic finds came to light in our excavations whose clay fabric looked sufficiently different to suggest an interpretation as Levantine imports. The fabrics were initially examined and described visually with low magnification, but confirmation of their clays being foreign had to wait until on-site petrographic analysis in fall 2010 (Table 2).

The vessel P06-26 from Op. 4/117 (Fig. 2a, b) was found in fragments at the bottom of a lateral robbers tunnel in association with a thick, multi-layered pad of cloth soaked in dark brown liquid that corresponds to remnants of the vessel's content.⁸ One side of the cloth pad had a circular depression suggesting that it may have served to cover and seal the vessel mouth. The tomb comprised of a rectangular pit with horizontal roof ledges. It was severely plundered, both via the robber's tunnels as well as from the top. Its relative date is Naqada IIID1 or early 2nd Dynasty.

The vessel from Op.4/180 (Fig. 4) was recovered in 38 fragments throughout the heavily disturbed fill of a rectangular pit tomb. The relative date of the tomb is late Naqada IIIC or early IIID, corresponding to late 1st to early 2nd Dynasty. Of a comparable date, i.e. Naqada IIID1, is the context of the neck fragment from Op.4/36 (Fig. 5) which

⁷ The authors are especially grateful to Eliot Braun, Jean-Paul Thalmann and Hermann Genz for providing helpful advice on the typology, terminology and distribution of Levantine EB ceramics.

⁸ As it is not permitted to export archaeological samples from Egypt, scientific test results are not available yet.

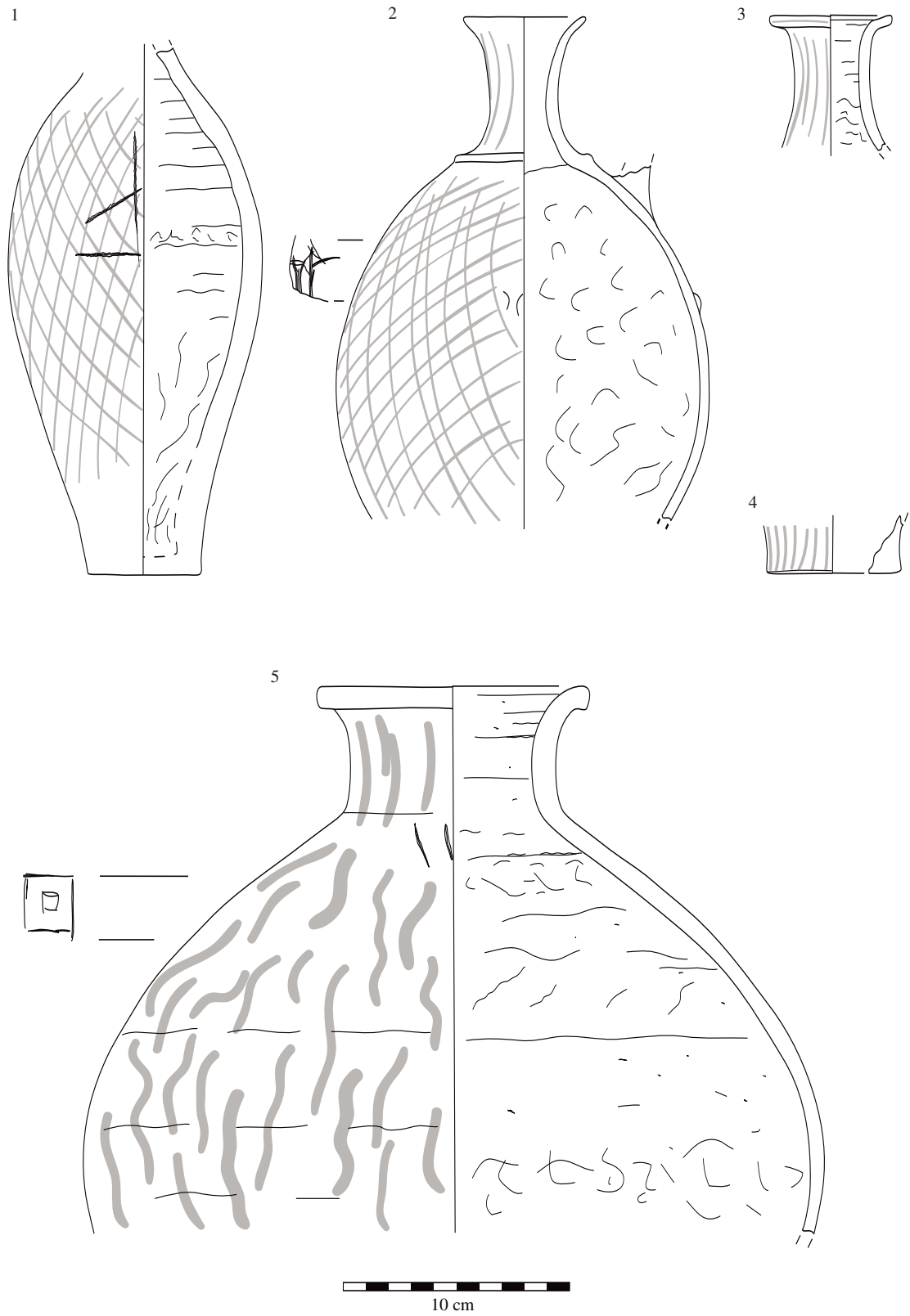


Fig. 3 Line drawings of imported Levantine ceramic juglets from Helwan

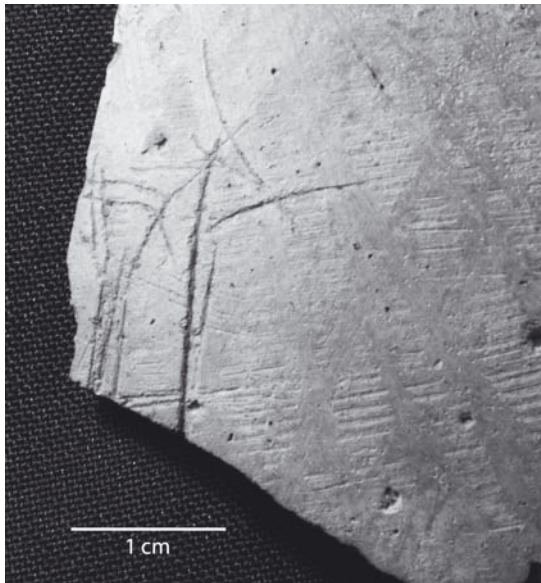


Fig. 4 Potmark on the Levantine import from Op.4/180



Fig. 5 Levantine import from Op.4/36

was found in the disturbed fill of a rectangular pit tomb with lateral access ramp.

The base fragment and several smaller body fragments from Op.1/1,⁹ Saad tomb 40.H.3, were found during re-excavating this very large, stone-lined pit tomb with staircase and two portcullis stones. Considering the fact that the tomb had not only been plundered in antiquity, was excavated last century, but was later also used to dispose of dead farm animals, the integrity of the context for these ceramics is uncertain.

Finally, the fragments of the large vessel P01-10 (Fig. 6a–c) were recorded in the upper fill layers of the substructure of the subterranean chamber tomb Op. 4/15, which was plundered via the entrance in antiquity. The tomb has been dated Naqada IIID2 or mid 2nd Dynasty.

While none of the pieces derives from a sealed or primary context, the evidence does allow for a

date well into the 2nd Dynasty with the large jar possibly being the latest currently attested Levantine ceramic import at Helwan.

Although the fabrics of all five vessels are quite heterogeneous, four of them could be reconstructed as part of one general morphological group of medium sized vessels with burnished ovoid to globular bodies, tall narrow necks and small, flat base, best compared with Levantine Red Polished and Metallic Wares of EB II and III date.¹⁰ The vessel from tomb Op.4/180 stands out as it also has a small rudimentary vertical handle on the body and a horizontal ridge below the neck; its fabric is also remarkably hard echoing the particular description of Metallic Ware.¹¹

Typological parallels for this kind of jar can be found occasionally in the southern Levant and Jordan region, especially at sites such as Beth Yerah,¹² Hazor¹³ and Tell Abu al-Kharaz.¹⁴ But with their

⁹ Cf. KÖHLER 2005.

¹⁰ KANTOR 1992, fig. 11. The writers appreciate the discussions among Levantine archaeologists over the various distinctions and distribution of what is broadly termed Metallic Ware, but we do not feel qualified to add to these and therefore employ the more generic term 'Levantine juglets' where possible.

¹¹ GREENBERG and PORAT 1996, 6.

¹² GREENBERG and EISENBERG 2002, fig. 13.7:1, 13.8:3–4.

¹³ GREENBERG 2000, 191, fig. 11.7, although the excavator at Hazor notes here that the piece is probably imported from the Lebanese coast.

¹⁴ FISCHER 2008, fig. 135:14.



Fig. 6 a) P01-10. Levantine import from Op.4/15; b) Pre-firing potmark on the Levantine import from Op.4/15; c) Post-firing potmark on the Levantine import from Op.4/15

pattern polished surface, they seem particularly typical for the northern Levantine coast in the region of Byblos¹⁵ and beyond, such as at Tell Fadous-Kfarabida,¹⁶ Tell-Arqa,¹⁷ and as far north as Tel el-Judeida.¹⁸

As for the large, pithos-like jar, close parallels are more difficult to locate in the southern and central Levant, although the EB II–III assemblages at Beth Yerah,¹⁹ Tell Yarmuth,²⁰ Tell al-Umeiri²¹ and Kirbet ez-Zayraqun²² do offer possibilities. And again, useful parallels can also be found in the north, which are further supported by the results from the petrographic analyses.²³

PART II – PETROGRAPHY

By Mary F. Ownby

INTRODUCTION/METHODOLOGY

Petrographic analysis of the imported vessels found at Helwan aimed to shed light on their provenance. This would provide valuable information about early trade between Egypt and the Levant. Additionally, the postulated provenance could be examined in relation to the conclusions derived from the above comparative analysis of this material with similar vessels found in the Levant. The Helwan material is particularly significant since some of the jars are well preserved. Therefore, provenance information can be related to vessel form and decoration to examine where specific styles may have been produced. Ultimately, this assists in future analyses of imports found in Egypt by enabling a vessel nearly identical to those at Helwan to have an initial provenance assigned to them.

In order to analyze the Helwan imports, thin sections were produced on site. This generally followed the procedure outlined by this writer.²⁴ However, the project at Helwan lacked a tile cutting saw, so the cross-sectional slices of pottery were taken with a

drimmel tool. This tool was also used to smooth down the slices before gluing to a slide. Araldite resin was employed as the glue to adhere the pottery slices to the slides. For thinning, both the drimmel tool and sand paper was used, with the final reduction in thickness achieved with aluminum oxide powder. These methods produced acceptable thin sections for analysis and further illustrate the potential for in-field thin section production.

RESULTS

Petrographic examination of the thin sections focused on the inclusions and clay that were utilized to produce the vessel and that are indicative of where it was manufactured. Information on geological resources and clay availability in the Levantine region was acquired through several sources.²⁵ These publications identify where certain materials are available, which are then related to those utilized in producing the analyzed vessels. As no comparative material was examined, the provenance determinations are based solely on geological and soil information. Because of this, each vessel was given a “postulated” provenance to indicate that the determinations are made from geological information only. Nevertheless, the identification of the clay and inclusions seen in the thin sections led to the five vessels being assigned a provenance to three areas with a fair amount of confidence.

The sample from Op. 1/1 (Fig. 3:4), was produced with a Neogene marl clay based on the microfossils. The inclusions consisted primarily of hypocrySTALLINE alkali olivine basalt, quartz, limestone, iron oxides and opaques, and some chert, pyroxenes, calcite, and plagioclase. Along with the clay, these inclusions indicate an area where Neogene clay and coarsely-crystalline Pliocene basalts are found along with chert of Cenomanian-Turonian age. This information restricts the provenance to the Akkar Plain of northern Lebanon,²⁶ which is

¹⁵ KANTOR 1992, fig. 11.

¹⁶ BADRESHANY and GENZ 2009, fig. 3: F1. Jars and juglets with lattice burnish seem to be typical here, pers. comm. H. Genz.

¹⁷ THALMANN 2006, pl. 48:20.

¹⁸ ESSE and HOPKE 1986, 334–337.

¹⁹ EISENBERG and GREENBERG 2006, fig. 8:5.

²⁰ MIROSHEDJI 2000, fig. 18.4:4, 18.6:4.

²¹ HARRISON 2000, fig. 19.4:2, 3.

²² GENZ 2001, fig.9: type Kc.

²³ THALMANN 2006, pl. 49; BADRESHANY and GENZ 2009, fig. 3:G.

²⁴ OWNBY 2010b, 24.

²⁵ BARTOV 1994; BEYDOUN 1977; DAN *et al.* 1975; DUBERTRET 1945, 1949, 1962, 1966, 1970, 1974; DUBERTRET and WETZEL 1945; ILAIWI 1985; SNEH *et al.* 1998a, b; WETZEL 1945; WIEDER and ADAN-BAYEWITZ 2002.

²⁶ DUBERTRET 1962; BEYDOUN 1977, 322–335; for a more detailed geological discussion see OWNBY 2010a, 131.

the sample's postulated provenance. At this location, the site of Tell Arqa is notable and was in existence during the Early Bronze Age.²⁷ Other vessels produced in this region have been found in Egypt, mostly from the Middle Bronze Age²⁸ and New Kingdom.²⁹

The sample from Op. 4/36 (Fig. 3:3) was manufactured with a rendzina clay, a soil which is widespread throughout the Levant and results from the weathering of coastal limestone outcrops.³⁰ However, the common presence of fine-sized plagioclase indicates the clay was close to volcanic outcrops. This puts the source of the raw materials in northern Lebanon probably near Tripoli, where several rivers drain the inland Lower Cretaceous and Jurassic basalt deposits.³¹ This would create material where the plagioclase was disassociated from the basalt inclusions and could become a part of the surrounding soil. The sample's postulated provenance is northern Lebanon, possibly in the Tripoli area. A few Middle Bronze Age vessels from Tell el-Dab'a were produced with similar materials.³²

The sample P06–26 from Op. 4/117 (Fig. 3:1) was produced from an iron-rich rendzina with large inclusions of chert, some hypocrySTALLINE alkali olivine basalt, and noticeable iron-rich argillaceous rock fragments.³³ Both the iron-rich argillaceous inclusions and the finely crystalline basalt fragments suggest the Lower Cretaceous shale unit as the source for the raw materials.³⁴ The large iron-stained chert to chalcedony inclusions also support this location where Cenomanian-Turonian deposits can be found in the Mount Lebanon area. Therefore, the postulated provenance is northern Lebanon from Beriut to the area around Tripoli and Tell Arde. Byblos is a possible location of production. Once again, later comparative ceramic material made with analogous clay and inclusions was found at Tell el-Dab'a.³⁵

The sample from Op. 4/180 (Fig. 3:2) was manufactured with material similar to sample Op. 4/117. In this case, the clay was more shale-rich indicating a source closer to the Lower Cretaceous outcrops, rather than farther away where it would have mixed with other soil deposits as in the case of sample Op. 4/117. Sample Op. 4/180 also contained some plagioclase, but more fine-sized quartz, some limestone, and large iron-rich argillaceous inclusions. The postulated provenance is suggested as northern Lebanon and possibly in the Byblos area. Petrographic analysis of Early Bronze Age II–III “Metallic Ware” vessels found at sites in Israel revealed that they were also produced from Lower Cretaceous shale derived clays, which are prevalent throughout Mount Lebanon, but more basalt rich in the north.³⁶

Sample P01-10 from Op. 4/15 (Fig. 3:5) appeared similar to samples Op. 4/117 and Op. 4/180. However, the clay was more calcareous with plentiful quartz and some limestone, along with a few fragments of chert and chalcedony. Argillaceous rock fragments were present, being generally black with quartz inclusions. The plentiful quartz grains probably relate to the sandstone outcrops also present in the Lower Cretaceous unit. The chert and chalcedony also suggest the raw materials derived from near the Lebanese Mountains.³⁷ While argillaceous rock fragments with quartz inclusions are common to this unit, the ones present in this fabric are unusual in being black. The calcareous nature of the clay is also atypical but not unknown for the Lower Cretaceous shale unit.³⁸ Therefore, the general appearance suggests the sample's postulated provenance is likely to be northern Lebanon. The fact that this vessel was burnished as were the two other burnished vessels believed to be from the northern Lebanon Lower Cretaceous shale unit may strengthen the argument.³⁹

²⁷ THALMANN 2006.

²⁸ COHEN-WEINBERGER and GOREN 2004, 76; OWNBY 2009, 177–178.

²⁹ SMITH *et al.* 2004, 61, 64–65.

³⁰ SMITH *et al.* 2004, 61, 64–65.

³¹ ILAIWI 1985.

³² COHEN-WEINBERGER and GOREN 2004, 73–74.

³³ See WHITBREAD 1986 for a discussion of the petrographic identification of argillaceous inclusions.

³⁴ DUBERTRET 1949, 1962.

³⁵ WEINBERGER and GOREN 2004, 75–76.

³⁶ GREENBERG and PORAT 1996.

³⁷ BEYDOUN 1977, 322–35.

³⁸ GOREN 2004, 104–105, WEINBERGER and GOREN 2004, 75–76.

³⁹ BADRESHANY and GENZ (2009, 77) discuss this Lower Cretaceous clay source and also indicate its proximity to Byblos and likely utilization for pottery produced there. However, the northern ‘Metallic ware’ samples they analyzed petrographically from Tell Fadous-Kfarabida were stated to derive from the Upper Galilee based on GREENBERG and PORAT's (1996) suggestion of a Palestinian Metallic ware industry in this region. This highlights the need for further study of the Lower Cretaceous shale outcrops in Northern Lebanon.

Conclusion (Petrography)

Petrographic analysis of five samples of imported pottery found at Helwan was successful in identifying several areas where the vessels were likely to have been produced. The most remarkable discovery was that they predominantly derived from northern Lebanon in the area from Beirut to Tell Arqa. Furthermore, the petrographic analysis was able to show that most of the vessels were made with unrefined materials and little temper addition. The vessels were mostly low fired, and in the case of the iron-rich clay material, the iron assisted in creating a stronger, more sintered fabric by lowering the temperature at which this transformation would occur. The lack of coastal sand temper, so common in Middle and Late Bronze Age transport jars, may suggest the vessels at Helwan were made at local sites where the commodities were produced rather than at port sites on the Mediterranean coast.

Other scientific studies of Early Bronze Age pottery in Egypt have met with variable success and petrographic analysis has been underutilized. The neutron activation analysis (NAA) study by Esse and Hopke⁴⁰ suggested vessels were coming from the Byblos area, as did the recent particle induced X-ray and gamma-ray emission (PIXE-PIGME) study by Grave and Sowada.⁴¹ The latter study also supports the hypothesis that combedware vessels were deriving predominantly from the Byblos area. McGovern,⁴² Pape,⁴³ and Porat and Goren⁴⁴ analyzed the Early Bronze Age jars found in Tomb U-j at Abydos. However, the results of the NAA, X-ray fluorescence analysis, and two petrographic studies were not all in agreement, though it did appear that a variety of sites in the Levant could have produced the vessels. Hopefully the success of the current study will enable other imported vessels found in Predynastic to Old Kingdom sites to be similarly studied in order to better clarify early trade between the Levant and Egypt.

PART III – MACROSCOPIC AND MICROSCOPIC DESCRIPTIONS

Sample from Op. 1/1 (Fig. 3:4; 7)

Inclusions: sand – fine [1], medium [2], coarse [1]; limestone – fine [1], medium [1], coarse [1]; red-brown rock particles – fine [1], medium [1]; black rock particles – fine [1], medium [1]. Poor sorting, medium porosity, medium hard structure. Vessel wall – unable to measure. Break colour: light yellow. Surfaces: exterior light yellow with red slip, interior light yellow.

Microscopic Description:

Colour PPL: light tan

Colour XPL: medium tan

Frequency of Inclusions (estimated): 5%

Sorting: fair

Size Range: very fine to medium (0.625–0.5mm)

Shape Range: subangular to subrounded (quartz); subangular to rounded (limestone)

Main Inclusions: quartz, limestone, microfossils, iron oxides, opaques, hypocrySTALLINE alkali olivine basalt (plagioclase, pyroxenes, opaques) with some altering to iddingsite

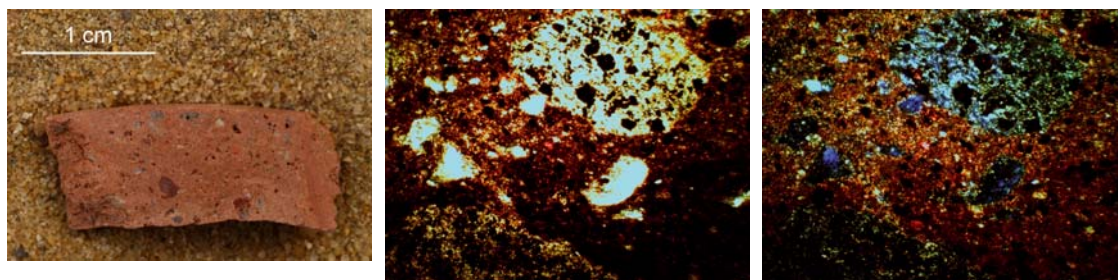


Fig. 7

⁴⁰ ESSE and HOPKE 1986.

⁴¹ SOWADA 2009, 175–179, II.1–II.7.

⁴² MCGOVERN 2001.

⁴³ PAPE 2001.

⁴⁴ PORAT and GOREN 2001.

Additional Inclusions: plagioclase, sparry limestone, calcite, chert, pyroxenes, serpentine, amphibole (?)

Comments: Neogene marl with subrounded basalts possibly natural to clay, chert may have been added since it is angular; low firing temperature

Sample P01-10 from Op. 4/15 (Figs. 3:5; 8)

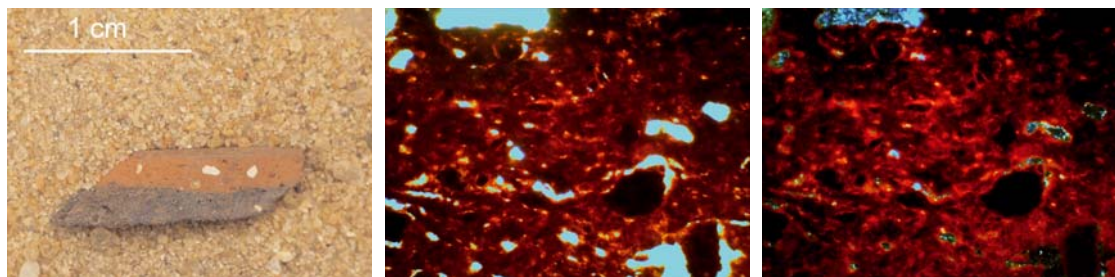


Fig. 8

Inclusions: sand – fine [1], medium [1], coarse [1]; limestone –medium [1]; red-brown rock particles – fine [1], medium [1]; black rock particles – fine [1], medium [1]. Fair sorting, dense porosity, medium hard structure. Vessel wall – 6 mm. Break colour: light grey core with reddish yellow outer zones. Surfaces: exterior reddish brown, interior reddish yellow.

Microscopic Description:

Colour PPL: medium greyish red-brown

Colour XPL: medium greyish red-brown

Frequency of Inclusions (estimated): 20%

Sorting: fair

Size Range: very fine to medium (0.625–0.5mm)

Shape Range: angular to subrounded (quartz); subrounded to rounded (limestone)

Main Inclusions: quartz, limestone, iron oxides, opaques, argillaceous rock fragments (black with very fine quartz)

Additional Inclusions: chert, chalcedony, pyroxenes

Comments: calcareous clay with abundant quartz probably natural to clay, some decomposed limestone; medium firing temperature (800–900°C)

Sample from Op. 4/36 (Figs. 3:3; 9)

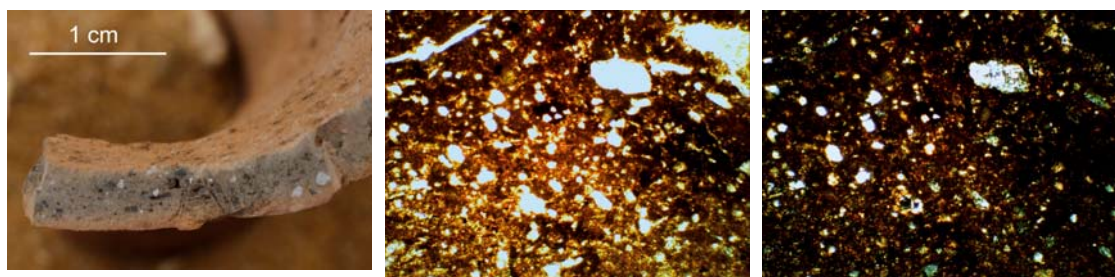


Fig. 9

Inclusions: sand – fine [1], medium [1]; no limestone; red-brown rock particles – coarse [1]; black rock particles – fine [1], medium [1]. Poor sorting, dense porosity, hard structure. Vessel wall – 5 mm. Break colour: light yellow. Surfaces: exterior light orange with red slip, interior light yellow.

Microscopic Description:

Colour PPL: medium brownish tan

Colour XPL: medium brownish tan

Frequency of Inclusions (estimated): 5%

Sorting: poor

Size Range: very fine to coarse (0.625–1mm)

Shape Range: angular to subrounded (quartz); angular to subrounded (limestone)

Main Inclusions: quartz, plagioclase, limestone, calcite, iron oxides, opaques

Additional Inclusions: polycrystalline quartz, muscovite, microfossils (iron-infilled), chert, amphiboles, pyroxenes, serpentine, chalcedony?

Comments: rendzina clay with no temper, possibly added or natural Terra Rossa clay also; low firing temperature

Sample P06-26 from Op. 4/117 (Figs. 3:1; 10)

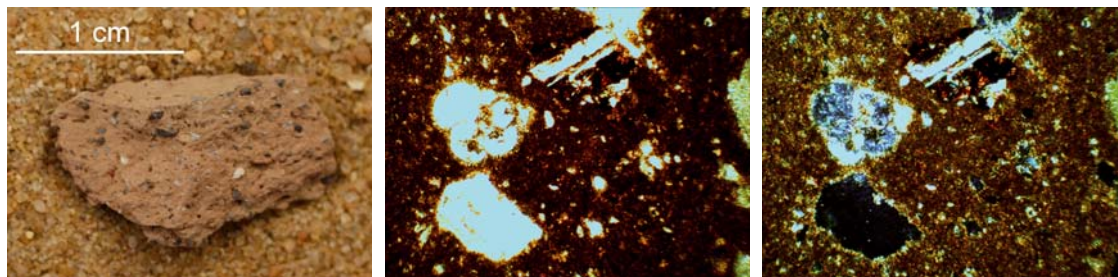


Fig. 10

Inclusions: sand – fine [1], medium [1], coarse [1]; no limestone; red-brown rock particles – fine [1], medium [1], coarse [1]; black rock particles – fine [1], medium [1]. Poor sorting, dense porosity, medium to soft structure. Vessel wall – 7 mm. Break colour: reddish yellow. Surfaces: exterior reddish yellow, interior light red.

Microscopic Description:

Colour PPL: medium reddish tan

Colour XPL: medium reddish tan

Frequency of Inclusions (estimated): 10%

Sorting: poor

Size Range: very fine to coarse (0.625–1mm)

Shape Range: angular to rounded (quartz); subangular to rounded (limestone)

Main Inclusions: quartz, limestone, iron oxides, opaques, chert, argillaceous rock fragments

Additional Inclusions: quartzite, microfossils, serpentine, hypocrySTALLINE alkali olivine basalt (plagioclase, opaques), muscovite?

Comments: rendzina clay but very iron-rich, iron-stained chert/chalcedony with some inclusions (pyroxene?), all inclusions natural to clay; low firing temperature

Sample from Op. 4/180 (Figs. 3:2; 11)

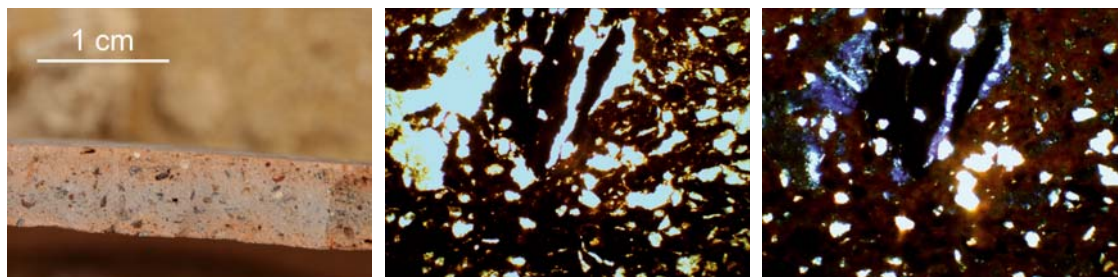


Fig. 11

Inclusions: sand – fine [1], medium [1]; limestone – fine [2]; red-brown rock particles – fine [1]; black rock particles – fine [1]; argillaceous inclusions – coarse [1]. Fair sorting, medium porosity, medium hard structure. Vessel wall – 4 mm. Break colour: black core with red outer zones. Surfaces: exterior reddish brown, interior dark brown.

Microscopic Description:

Colour PPL: dark greyish red

Colour XPL: very dark greyish red

Frequency of Inclusions (estimated): <5%

Sorting: good

Size Range: very fine to medium (0.625–0.5mm)

Shape Range: subrounded (quartz); subangular to rounded (limestone)

Main Inclusions: quartz, limestone, iron oxides, opaques, argillaceous rock fragments

Additional Inclusions: plagioclase

Comments: iron-rich shale derived clay, no temper with some fine to medium-sized decomposed limestone and very fine-sized quartz; medium firing temperature (800–900°C)

PART IV – CONCLUSION

Apart from obvious local imitations, the recent excavations at Helwan have produced five imported vessels, which, although they find morphological parallels in EB II–III contexts along the entire Levantine region between Syria and Palestine, due to petrographic analysis have been proposed to derive most likely from the northern Levantine coast. Their archaeological context in Egypt would support a date within the final stages of what is currently defined as Naqada III, namely IIIC and especially D1–2, corresponding to the late 1st Dynasty at the earliest until the middle of the 2nd Dynasty in the historical chronology, or between c. 2900 and 2750 B.C.E. in absolute terms.

It has been noted previously that Egyptian–Southern Levantine contact seems ‘to have diminished in frequency from EB II onward’ and that ‘from the end of the Second Dynasty onwards, Byblos and its hinterland had become the privileged trading partner of Egypt in the Levant’.⁴⁵ And further, ‘imported pottery is not well-attested in 2nd Dynasty Egypt, which could represent a break in supply or the fact that the period is poorly known to archaeologists. Further 2nd Dynasty data is required to illuminate this shadowy period’.⁴⁶

This is exactly what these five vessels have succeeded in achieving, namely to shed light on Levantine imports during the 2nd Dynasty. They indicate that the northern Levant already played an important role prior to the end of that Dynasty, and that contacts were so well-developed that not only kings and members of the Memphite aristocracy had access to commodities exchanged, as indicated by the imports found in the royal and elite tombs in Abydos and on the west side of Memphis,⁴⁷ but also members of the lesser important elites and middle class society, most of whom were buried at Helwan.⁴⁸

On the other side, the possible involvement of Tell Arqa, a coastal site north of Byblos, is also an important point as the dominance of Byblos, as suggested in the Egyptian sources, may have overshadowed other existing trade partners. Interestingly, trade from just this area with Egypt continues into the Middle Kingdom and New Kingdom.⁴⁹

The four Egyptian ceramic imitations, together with such vessels carved from local stone such as calcite (Egyptian alabaster), together with the contemporary authentic imports, document that at the same time as importation of such juglets occurred they were also being copied locally, which probably further emphasizes the value of their contents.⁵⁰ It is possible that the copies replaced southern Levantine juglets because the latter ceased to be imported after the 1st Dynasty. On the other hand, it is notable that the copies are significantly smaller in size, thus providing lesser volume of content. It would therefore be reasonable to consider the possibility that the actual imports mainly served for the transport and larger volume storage of an imported commodity, and that after arrival in Egypt, some of the contents were divided up and refilled into smaller, Egyptian containers for local distribution. Until a clearer picture of a differentiated content pattern between northern and southern Levantine imports can be established, this question cannot be answered with certainty. However, it is also possible that the Egyptians aimed to imitate a more generic form of Levantine juglet, be it southern or northern, as their originals, at least visually, did not differ greatly.

The success of the petrographic analyses conducted on-site in Egypt now opens up new avenues to test other suspected imports and to investigate if the currently established conclusions about the origins of already known imports are still appropriate or require further adjustments.

⁴⁵ MIROSCHEJJI 2002, 45–47.

⁴⁶ SOWADA 2009, 248.

⁴⁷ HENDRICKX and BAVAY 2002, table 3.7.

⁴⁸ For a summary on society in Early Dynastic Memphis, see KÖHLER 2008a.

⁴⁹ COHEN-WEINBERGER and GOREN 2004, OWNBY 2010, SMITH *et al.* 2004.

⁵⁰ There are no conclusive recent analyses on the contents of such imports in Egypt, but coniferous resins and oils seem very likely, cf. SOWADA 2009, 160–162.

Bibliography

- BARTOV, Y.
1994 *Geological Photomap of Israel and Adjacent Areas, 1:750,000*, 2nd ed., Jerusalem.
- BADRESHANY, K. and GENZ, H.
2009 Pottery Production on the Northern Lebanese Coast during the Early Bronze Age II–III: The Petrographic Analysis of the Ceramics from Tell Fadous-Kfarabida, *BASOR* 355, 51–83.
- BEYDOUN, Z.R.
1977 The Levantine countries: the geology of Syria and Lebanon (maritime regions), 319–353, in: A.E.M. NAIRN, W.H. KANES, and F.G. STEHLI (eds.), *The Ocean Basins and Margins. 4A: The Eastern Mediterranean*, New York and London.
- COHEN-WEINBERGER, A. and GOREN, Y.
2004 Levantine-Egyptian Interactions During the 12th to the 15th Dynasties based on the Petrography of the Canaanite Pottery from Tell el-Dab^a, *A&L* 14, 69–100.
- DAN, Y., RAZ, Z., YAALON, D.H., and KOYUMDJISKY, H.
1975 *Soil Map of Israel, 1:500,000*, Jerusalem.
- DEBONO, F. and MORTENSEN, B.
1990 *El-Omari*, Mainz.
- DUBERTRET, L.
1945 *Carte géologique au 50.000^e Feuille de Beyrouth*, Beyrouth.
1949 *Carte géologique au 50.000^e Feuille de Saida*, Beyrouth.
1962 *Liban, Syrie et bordure des pays voisins*, Paris.
1966 Liban, Syrie, et bordure des pays voisins. *Notes et mémoires sur le Moyen-Orient* 8, 251–358.
1970 Géologie et Peuplement au Liban, 11–20, in: J. BESANCON (ed.), *Hannon: revue libanaise de géographie, vol.V*. Beyrouth.
1974 Introduction a la Carte Géologique a 1/50,000^e du Liban, *Notes et mémoires sur le Moyen-Orient* 13, 345–403.
- DUBERTRET, L. and WETZEL, R.
1945 *Carte géologique au 50.000^e Feuille de Batroun*, Beyrouth.
- EISENBERG, E. and GREENBERG, R.
2006 Chapter 8: Area EY: The Eisenberg-Yogev Excavations, 1981–82, 1985–86, 339–468, in: R. GREENBERG, E. EISENBERG, S. PAZ, and Y. PAZ (eds.), *The Early Bronze Age Mound. Volume I. Excavation Reports, 1933–1986* (IAA Reports 30), Jerusalem.
- ESSE, D. and HOPKE, P.K.
1986 Levantine Trade in the Early Bronze Age: From Pots to People, 327–339, in: J.S. OLIN and M.J. BLACKMAN (eds.), *Proceedings of the 24th International Archaeometry Symposium*, Washington DC.
- FISCHER, P.M.
2008 *Tell Abu a-Kharaz in the Jordan valley. Volume I: The Early Bronze Age*, CChem 16, Vienna.
- HARRISON, T.P.
2000 The Early Bronze Age III Ceramic Horizon for Highland Central Jordan, 347–364, in: G. PHILIP and D. BAIRD (eds.), *Ceramics and Change in the Early Bronze Age of the Southern Levant*, Sheffield.
- HENDRICKX, S. and BAVAY, L.
2002 The Relative Chronological Position of Egyptian Predynastic and Early Dynastic Tombs with Objects Imported from the Near East and the Nature of Inter-regional Contacts, 58–80, in: T.E. LEVY and E.C.M. VAN DEN BRINK (eds.), *Egypt and the Levant*, London - New York.
- HIKADE, TH.
2001 Silex-Pfeilspitzen in Ägypten, *MDAIK* 57, 109–125.
- GENZ, H.
2001 Early Bronze Age Potmarks from Kirbat az-Zayraqun – Some Aspects Concerning their Meaning, *Studies in the History and Archaeology of Jordan VII*, 217–228.
- GOPHER, A.
1998 Diffusion Processes in the Pre-Pottery Neolithic Levant. The Case of the Helwan Point, 91–105, in: I. HERSHKOVITZ (ed.), *People and Culture in Change*, BAR IS 508, Oxford.
- GOREN, Y., FINKELSTEIN, I. and NA'AMAN, N.
2004 *Inscribed in Clay, Provenance Study of the Amarna Tablets*, Tel Aviv.
- GREENBERG, R.
2000 Changes in Ceramic production between Early Bronze Age II and III in Northern Israel, based on the pottery of Tel Hazor and Tel Dan, 183–200, in: G. PHILIP and D. BAIRD (eds.), *Ceramics and Change in the Early Bronze Age of the Southern Levant*, Sheffield.
- GREENBERG, R. and EISENBERG, E.
2002 Egypt, Beth Yerah and Early Canaanite Urbanization, 213–222, in: T.E. LEVY and E.C.M. VAN DEN BRINK (eds.), *Egypt and the Levant*, London - New York.
- GREENBERG, R. and PORAT, N.
1996 A third millennium Levantine pottery production centre: Typology, petrography, and provenance of the Metallic Ware of Northern Israel and adjacent regions, *BASOR* 301, 5–24.
- ILAIWI, M.
1985 *Soil Map of Arab Countries, Soil Map of Syria and Lebanon*, Damascus.
- KANTOR, H.J.
1992 The Relative chronology of Egypt and its foreign correlations before the First Intermediate Period, 3–21, in: R. EHRLICH (ed.), *Chronologies in Old World Archaeology* (3rd ed.), Chicago.

- KÖHLER, E.C.
 1998 Excavations at Helwan: New Insights into Egyptian Early Dynastic Stone Masonry, *BACE* 9, 65–72.
 2000a Excavations at Helwan, *EA* 17, 38–40.
 2000b Excavations in the Early Dynastic Cemetery at Helwan: A Preliminary Report of the 1998/99 and 1999/2000 seasons, *BACE* 11, 83–92.
 2002 Hidden Treasures in the Egyptian Museum in Cairo: The Collection of Objects from Zaki Saad's Excavations at Helwan/Ezbet el-Walda, 679–690, in: M. EL-DAMATY and M. TRAD (eds.), *Egyptian Museum Collections around the World: Studies for the Centennial of the Egyptian Museum, Cairo*, vol. 1, Cairo.
 2003a Preliminary Report on the Fourth Season of Excavations at Helwan/Ezbet el-Walda by the Australian Centre for Egyptology at Macquarie University in Sydney, *ASAE* 127, 83–90.
 2003b The New Excavations in the Early Dynastic Necropolis at Helwan, *Archéo-Nil* 13, 17–27.
 2004a Australian Excavations at Helwan in Egypt, 325–341, in: T. Murray (ed.), *Archaeology from Australia*, Melbourne.
 2004b On the Origins of Memphis – The New Excavations in the Early Dynastic Necropolis at Helwan, 295–315, in: S. HENDRICKX, R.F. FRIEDMAN, K.M. CIALOWICZ and M. CHŁODNICKI (eds.), *Egypt at its Origins. Studies in Memory of Barbara Adams, Proceedings of the International Conference "Origin of the State. Predynastic and Early Dynastic Egypt"*, Krakow, 28th August–1st September 2002, OLA 138, Leuven.
 2004c *The Cairo Museum Collection of Artefacts from Zaki Saad's Excavations at Helwan*, Armidale.
 2004d Seven Years of Excavations at Helwan in Egypt, *BACE* 15, 79–88.
 2005 *Helwan I. Excavations in the Early Dynastic Cemetery. Season 1997/98*. With contributions by M. BIRRELL, I. CASEY, T. HIKADE, J. SMYTHE and B.St. CLAIR, SAGA 24, Heidelberg.
 2008a Early Dynastic Society in Memphis, 381–399, in: E. ENGEL, V. MÜLLER, U. HARTUNG (eds.), *Zeichen aus dem Sand: Streiflichter aus Ägyptens Geschichte zu Ehren von Günter Dreyer*, Göttingen.
 2008b The Helwan Cemetery, *Archéo-Nil* 18, 113–130.
 forthc. *Helwan III. Operation 4, Tombs 1–50*.
- KÖHLER, E.C. and JONES, J.
 2009 *Helwan II – The Early Dynastic and Old Kingdom Funerary Relief Slabs*, SAGA 25 Rahden.
- KÖHLER, E.C. and SMYTHE, J.
 2004 Early Dynastic Pottery from Helwan: Establishing a Ceramic Corpus of the Naqada III Period, *CCE* 7, 123–44.
- MIROSHEDJI, P. DE
 2000 Tel Yarmuth, 315–345, in: G. PHILIP and D. BAIRD (eds.), *Ceramics and Change in the Early Bronze Age of the Southern Levant*, Sheffield.
 2002 The Socio-Political Dynamics of Egyptian-Canaanite Interaction in the Early Bronze Age, 39–57, in: T.E. LEVY and E.C.M. VAN DEN BRINK (eds.), *Egypt and the Levant*. London - New York.
- MCGOVERN, P.E.
 2001 The Origins of the Tomb U-j Syro-Palestinian Type Jars as Determined by Neutron Activation Analysis, 407–416, in: U. HARTUNG (ed.), *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.*, AV 92, Mainz.
- OWNBY, M.F.
 2010a *Canaanite Jars from Memphis as Evidence for Trade and Political Relationships in the Middle Bronze Age*. Unpublished PhD thesis, University of Cambridge.
 2010b Thin-section Analysis, in: B. KEMP (ed.), *Panehsy Church Project 2009–10: settlement survey. Tell el-Amarna, 2010*, *JEA* 96, 24–27.
- OWNBY, M. and BOURRIAU, J.
 2009 The movement of Middle Bronze Age transport jars: a provenance study based on petrographic and chemical analysis of Canaanite jars from Memphis, Egypt, 173–188, in: P. QUINN (ed.), *Interpreting Silent Artefacts: Petrographic Approaches to Archaeological Ceramics*, Oxford.
- PAPE, A.
 2001 Naturwissenschaftliche Untersuchungen zur Importkeramik aus dem Friedhof U in Abydos, 417–465, in: U. HARTUNG (ed.), *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.*, AV 92, Mainz.
- PETRIE, W.M.F.
 1901 *The Royal Tombs of the Earliest Dynasties*, vol. II, London.
- PHILIP, G. and BAIRD, D.
 2000 *Ceramics and Change in the Early Bronze Age of the Southern Levant*, Sheffield.
- PORAT, N. and GOREN, Y.
 2001 Petrography of the Naqada IIIa Canaanite Pottery from Tomb U-j in Abydos, 466–481, in: U. HARTUNG (ed.), *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.*, AV 92, Mainz.
- PRAG, K.
 1986 Byblos and Egypt in the Fourth Millennium BC., *Levant* 18, 59–74.
- SAAD, Z.Y.
 1951 *Royal Excavations at Helwan (1945–1947)*, SASAE 14, Cairo.
 1957 *Ceiling Stelae in Second Dynasty Tombs from the Excavations at Helwan*, SASAE 21, Cairo.
- SMITH, L.M.V., BOURRIAU, J., GOREN, Y., HUGHES, M.J., and SERPICO, M.
 2004 The Provenance of Canaanite Amphorae found at Memphis and Amarna in the New Kingdom: results

- 2000–2002, 55–77, in: J. BOURRIAU and J. PHILLIPS, (eds.), *Invention and Innovation: The Social Context of Technological Change 2, Egypt, the Aegean, and the Near East, 1650–1150 BC*, Oxford.
- SMYTHE, J.
- 2004 The Pottery from Operation 3, Tomb 1, 317–335, in: S. HENDRICKX, R.F. FRIEDMAN, K.M. CIALOWICZ and M. CHŁODNICKI (eds.), *Egypt at its Origins. Studies in Memory of Barbara Adams, Proceedings of the International Conference “Origin of the State. Predynastic and Early Dynastic Egypt”*, Krakow, 28th August–1st September 2002, OLA 138, Leuven.
- 2008 New Results from a Second Storage Tomb at Helwan. Implications for the Naqada III Period in the Memphite Region, 151–186, in: B. MIDANT-REYNES, Y. TRISTANT (eds.), with the collaboration of J. Rowland and S. Hendrickx, *Egypt at Its Origins 2. Proceedings of the International Conference “Origin of the State. Predynastic and Early Dynastic Egypt”*, Toulouse, 5th–8th September 2005, OLA 172, Leuven.
- SNEH, A., BARTOV, Y., and ROSENSAFT, M.
- 1998a *Geological Map of Israel, 1:200,000, Sheet 1*, Jerusalem.
- 1998b *Geological Map of Israel, 1:200,000, Sheet 2*, Jerusalem.
- SOWADA, K.N.
- 2009 *Egypt in the Eastern Mediterranean during the Old Kingdom. An Archaeological Perspective*, OBO 237, Fribourg – Göttingen.
- THALMANN, J.-P.
- 2006 *Tell Arqa-1. Les niveaux de l’âge du Bronze*, Beyrouth.
- WETZEL, R.
- 1945 *Carte géologique au 50.000^e Feuille de Tripoli*, Beyrouth.
- WHITBREAD, I.K.
- 1986 The Characterization of Argillaceous Inclusions in Ceramic Thin-Sections, *Archaeometry* 28, 79–88.
- WIEDER, M., and ADAN-BAYEWITZ, D.
- 2002 Soil Parent Materials and the Pottery of Roman Galilee: A Comparative Study, *Geoarchaeology* 17, 393–415.