



A CORPUS OF NINETEENTH DYNASTY EGYPTIAN POTTERY FROM ZAWIYET UMM EL-RAKHAM

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ABSTRACT

This paper presents the preliminary results of research on the Nineteenth Dynasty Egyptian pottery corpus from the fort of Zawiyet Umm el-Rakham, located 300 km west of Alexandria within ancient Libya (Tjemeh). It focuses on defining typical shapes and characteristics of the assemblage, as well as investigating its possible origins. It presents the results of a portable X-ray fluorescence analysis of the Egyptian pottery and concludes that approximately 44% of the Egyptian-style pottery is of non-Nilotic origin, most likely locally sourced.

The site of Zawiyet Umm el-Rakham is located 300 kilometers west of Alexandria along the Marmarican Coast (Fig. 1). It comprises a fortified settlement constructed during the early reign of Ramesses II and abandoned either immediately before or very early in the reign of Merenptah. It is the westernmost fort (so far located) constructed by Ramesses II, possibly in reaction to increased tensions between Egyptians and local Tjehenu Libyans, or other Libyan tribes such as the Rebu or Meshwesh farther west.¹ The site was identified and briefly explored by Alan Rowe in 1946,² and again by Labib Habachi from 1949 to 1955.³

Habachi discovered a small limestone temple and a series of private chapels located in the northwestern corner of a large mud-brick enclosure. The site has been excavated since 1994 by teams from the University of Liverpool under the direction of Dr. Steven Snape (Fig. 2). In the late 1990s and early 2000s, the Liverpool team uncovered nine magazines north of the temple, as well as a large provisioning area (Area K) in the southeastern corner of the site.⁴ Other discoveries have included a portion of the commander's headquarters (Area N), as well as a possible cultic structure (Area S). A study season was undertaken in 2014 with the aim of examining the Egyptian ceramics from Area K and the imported ceramics from all the excavated sections of the site.⁵

NATURE OF THE ASSEMBLAGE

The Egyptian and Egyptian-style assemblage from Area K (Fig. 3) is typical of the early Ramesside period, consisting of domestic utilitarian wares dominated by open forms (plates, dishes and bowls) and storage jars of various types (funnel-neck jars, beer jars and globular jars). The preservation of the assemblage is generally

good, with several whole vessels and/or profiles. The typology presented in this paper is based on the analysis of 492 diagnostic sherds (primarily rims) and whole vessels recorded during the 2014 season. A further 400–500 diagnostic sherds still require processing, but the preliminary sample is nonetheless thoroughly representative of the material found throughout both Area K and Zawiyet Umm el-Rakham as a whole. Prior to illustration and/or photographic documentation, fresh breaks in all whole vessels and sherds were examined using a hand lens at 20x magnification and categorized following either the Vienna System or one of the three local fabric types (see below). The dating of the material was achieved both via the inscriptional evidence recorded at the site and also by comparison with contemporary corpuses of pottery from settlement sites in the Nile Valley, such as Memphis⁶ and Deir el-Medina,⁷ and in the Delta, such as Qantir⁸ and Kom Firin, the latter in particular being an excellent comparison, as its architectural layout is highly similar to that of Zawiyet Umm el-Rakham.⁹

FABRICS

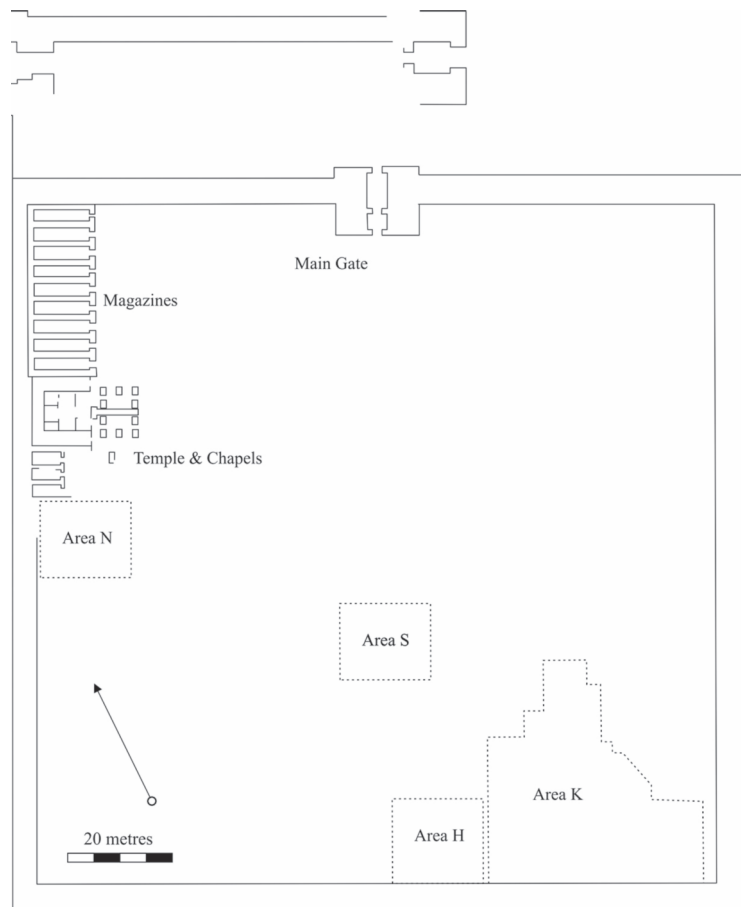
During the excavations in Area K it was suspected that some of the fabric types found at the site did not conform to the groups of the Vienna System.¹⁰ The macroscopic analysis conducted in 2014 established that these atypical fabric types fell broadly into three categories totaling 44.32% of the 492 recorded diagnostic Egyptian sherds or whole vessels from Area K. These sherds were generally beige- to light brown in color, in some cases nearly white. The three types were designated ZUR A, B and C (Figs. 4–6) and differed notably in types and quantities of inclusion.

ZUR A (14.23% of corpus) is tempered with large



Figure 1: Map showing the location of Zawiyet Umm el-Rakham and other settlements constructed or altered in the western Delta and Marmarican Coast during the Nineteenth Dynasty.

Figure 2: Site plan of the fort at Zawiyet Umm el-Rakham (courtesy of Steven Snape).



quantities of fine white limestone particles along with smaller quantities of crushed marine shells and the occasionally small fragments of microfossil. The fabric fires orange-brown throughout (5 YR 7/5) without any notable difference between the oxidized surface and the reduced section. ZUR B (25.72% of corpus) is more porous than ZUR A and tempered primarily with large quantities of rough sand as well as smaller amounts of straw and limestone. Its firing color is similar, although not completely identical, to ZUR A (5 YR 6/5). ZUR C (4.27% of corpus) is the least prevalent local fabric. It is primarily tempered with small quantities of straw and appears to have been levigated prior to firing, leaving very few inclusions and also making the finished sherds more friable and fragile than sherds made from ZUR A and B, possibly explaining the limited quantities of this fabric in the assemblage. It fires to a light beige-brown color throughout the section and on uncoated interior and exterior surfaces (5 YR 7/3).

Despite intensive excavations at the site, no kiln structures have so far been located. A magnetometry survey¹¹ failed to detect conglomerations of sufficiently concentrated vitrified material within the enclosure wall,

which could have been interpreted as kilns or furnaces. It is therefore likely that any kiln structures used by the inhabitants were located away from the settlement itself. The types of locally available clays in the Marmarica region were surveyed by Rieger and Möller,¹² who identified marl clay deposits created by the decomposition of the Marmarican limestone plateau as well as silt clays composed of sedimentary deposits caused by annual run-off events. Both of these types can be found in the wadis south of Zawiyet Umm el-Rakham. The physical characteristics of ZUR A, B and C, however, suggest that they are silt wares rather than marl clays.

Due to the previous identification of atypical fabric types, a decision was made prior to the 2014 season to import a Niton XLt-793W portable EDXRF (Energy Dispersive X-ray Fluorescence) spectrometer in order to identify the chemical composition of any uncommon fabrics identified during the work. The portable spectrometer transfers X-rays of a known energy into a sample, causing the atoms in the material to emit measurable fluorescent X-rays at energies characteristic of their elemental composition.¹³ A small reference sample was chosen (twelve sherds, four of each



Figure 3: Top plan of Area K (courtesy of Susanna Thomas and Steven Snape).

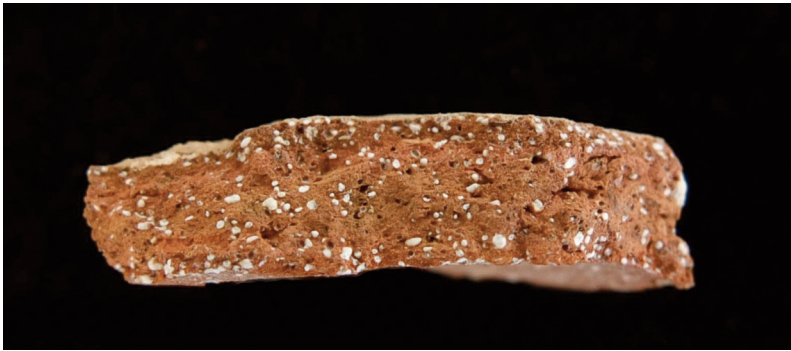


Figure 4: Local fabric ZUR A.

Figure 5: Local fabric ZUR B.

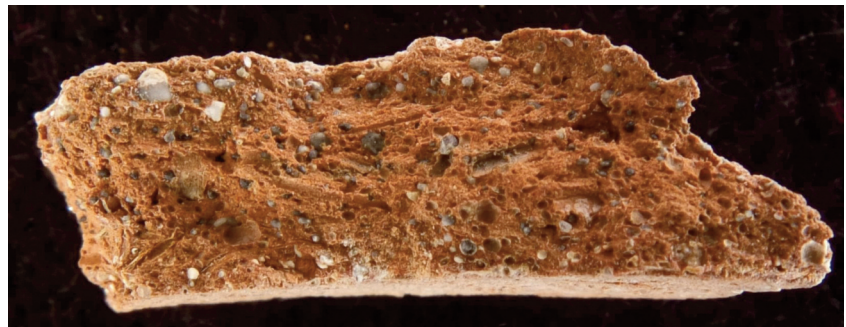


Figure 6: Local fabric ZUR C.

potentially local category) and analyzed with the Niton spectrometer (Table 1). The samples were prepared by lightly abrading the exterior surface, both to remove accretions from deposition and slips and secondarily to provide a smoother surface to conduct the analysis.¹⁴ Three readings were taken at different points of the samples in order to avoid potential biases caused by the reading directly on a major inclusion. The internal similarity between the three fabric types is generally high, with the exception of the calcium (Ca) quantities, which fluctuate greatly. In general, ZUR A has the consistently highest quantity, most likely due to the addition of

limestone and marine shell as temper (registered by the spectrometer as calcium). ZUR C has the lowest levels, although this can be explained by pre-firing processes, namely the levigation of the clay and the removal of naturally occurring limestone particles. By comparison with a large data set of Nile silt clay, analyzed using neutron activation analysis,¹⁵ it is evident that ZUR A, B and C are highly distinctive, in particular the low levels of iron (Fe) by comparison to calcium (Ca) and also the extremely low levels of manganese (Mn) both by comparison to the Nile silts but also by comparison to typical Egyptian marl clays.¹⁶

Element	ZUR A		ZUR B		ZUR C		J. D. Bourriau, A. Bellido, N. Bryan, and V. Robinson, "Egyptian Pottery Fabrics: A Comparison between NAA Groupings and the 'Vienna System,'" in E. Czerny, I. Hein, H. Hunger, D. Melman and A. Schwab, (eds.), <i>Timelines; Studies in Honour of Manfred Bietak</i> (Leuven: Peeters, 2006), vol. 3, 264.	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Zr (ppm)	305.32	10.24	321.54	10.6	394.92	10.31		
Rb (ppm)	45.52	4.43	42.65	4.42	46.65	4.27	45.3	14
Zn (ppm)	73.6	12.33	76.53	12.52	77.89	12.21		
Fe (%)	3.38	0.03	3.72	0.03	3.35	0.03	6.43	0.89
Mn (ppm)	236.2	71.23	286.59	74.69	370.79	75.53	1214	660
Ti (%)	0.56	0.01	0.66	0.01	0.61	0.01	0.87	0.16
Ca (%)	9.84	0.06	6.14	0.05	4.12	0.04	3.84	2.3
K (%)	1.86	0.04	2.28	0.04	2.24	0.04		

Table 1: Chemical composition of ZUR A, B and C by comparison to composition of Nile silt vessels.

On the basis of the macroscopic investigation and the chemical analysis it is clear that the three fabrics are highly dissimilar to common fabrics used in the Nile Valley during the New Kingdom. It is likely therefore that ZUR A, B and C represent fabrics sourced from nearby silt clay deposits and manufactured locally at Zawiyet Umm el-Rakham or, alternatively, at a detached pottery workshop elsewhere in the Marmarica region, similar to structures found at the contemporary forts of Haruba¹⁷ and Tell Heboua II in Sinai.¹⁸ No discoveries of significant quantities of contemporary Ramesside Egyptian pottery have so far been made in the Marmarica region,¹⁹ and comparison with other locally manufactured pottery is therefore not possible at this time. The remaining 56.66% of the corpus of Egyptian vessels from Area K are manufactured primarily from Nile B₂ (26.83%) and Nile D (23.17%), with smaller amounts of Nile B₁ (0.40%), Nile C (0.61%), Marl D (4.47%) and Marl F (0.20%).

OPEN SHAPES (FIG. 7)

The repertoire of open shapes from Area K overwhelmingly comprises plates (Type I.1), dishes (Type I.2) and bowls (Type I.3), which together account for 49.34% of the recorded diagnostic sherds or whole vessels from Area K.²⁰ While the dishes and bowls are primarily made from Nile silts (Nile B₂ and Nile D), the plates are predominately locally manufactured with 63.63% of this type manufactured from ZUR A, B or C. In total, 77 diagnostics or whole vessels were assigned to Type I.1 and its subcategories, the most complete of which are

described in the accompanying catalog.²¹ The plates are consistently wheel-made, and where surface decoration is evident this mostly takes the form of a red internal and external slip or, more uncommonly, a single band of red slip along the interior and exterior sides of the lip. Dishes were more commonly recorded than bowls or plates, with 99 diagnostic sherds or whole vessels subsumed under this group and its sub-categories.²² Six diagnostic sherds belonging to different dishes with a pronounced rim below the ledge (Type I.2.3)²³ were also found in the assemblage.

Bowls of various kinds are represented by 84 diagnostic sherds and complete vessels. No flat-based bowls were found in the assemblage.²⁴ Seventeen examples of bowls with outwardly rolled rims (Type I.3.3) and diameters between 20 cm and 65 cm were also found with clear parallels at the contemporary site of Kom Firin in the northwestern Delta.²⁵ Three types of carinated bowls were also registered; one (Type I.3.4a) represented by three diagnostic sherds and a single whole vessel finds parallels at Qantir,²⁶ Memphis²⁷ and Tell el-Borg,²⁸ while the less common larger carinated bowl (Type I.3.4b) evidenced only by a single diagnostic can be paralleled to contemporary material from Gurob.²⁹ Among the poorest represented types of carinated bowl are also two diagnostic sherds a series of molded handles placed around the exterior rim (Type I.3.4c).³⁰

Six so-called spinning bowls (Type I.4)³¹ were found in Area K, generally in a good state of preservation. While four of them were made from Nile silt, two were locally

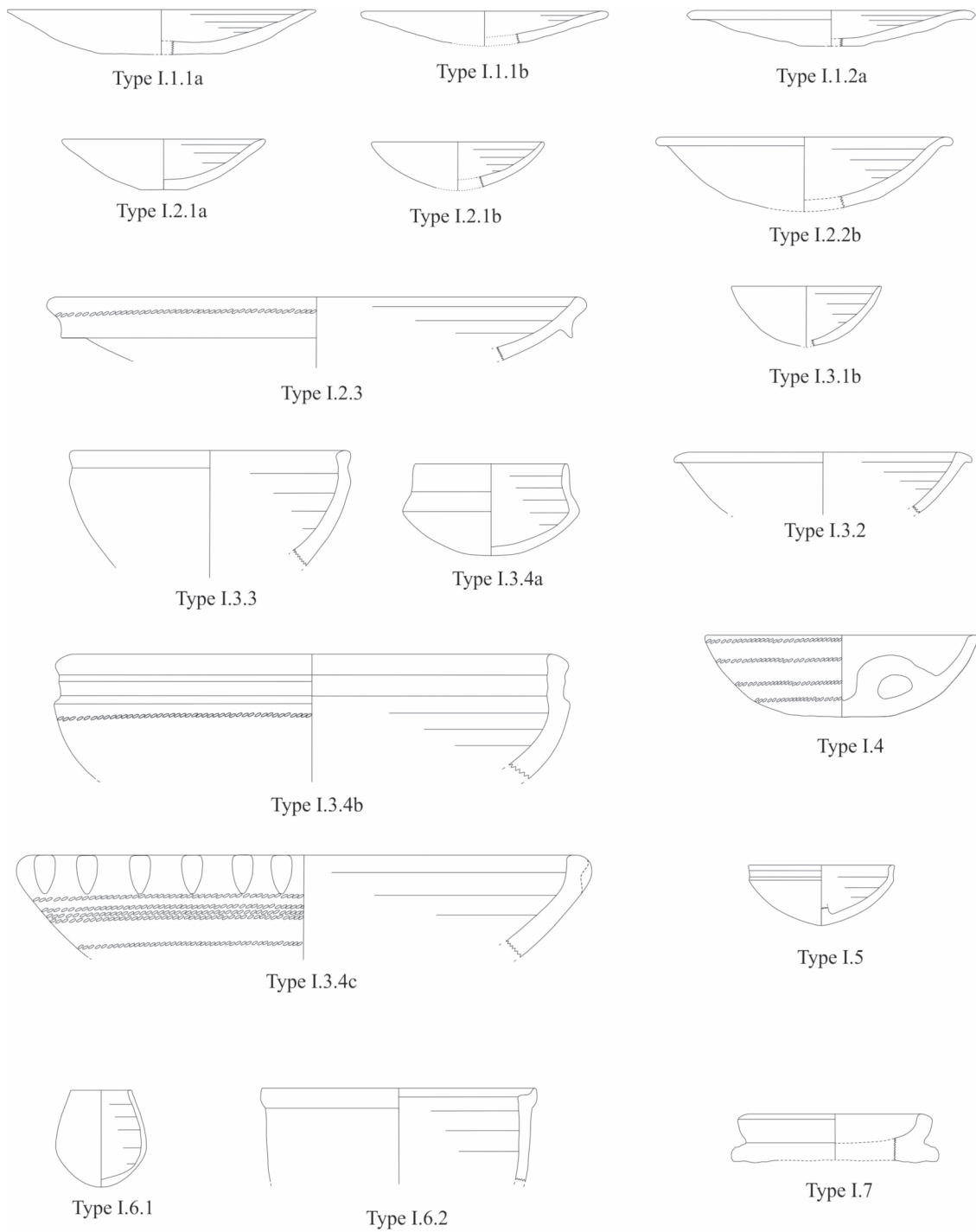


Figure 7: Open shapes in the Area K corpus.

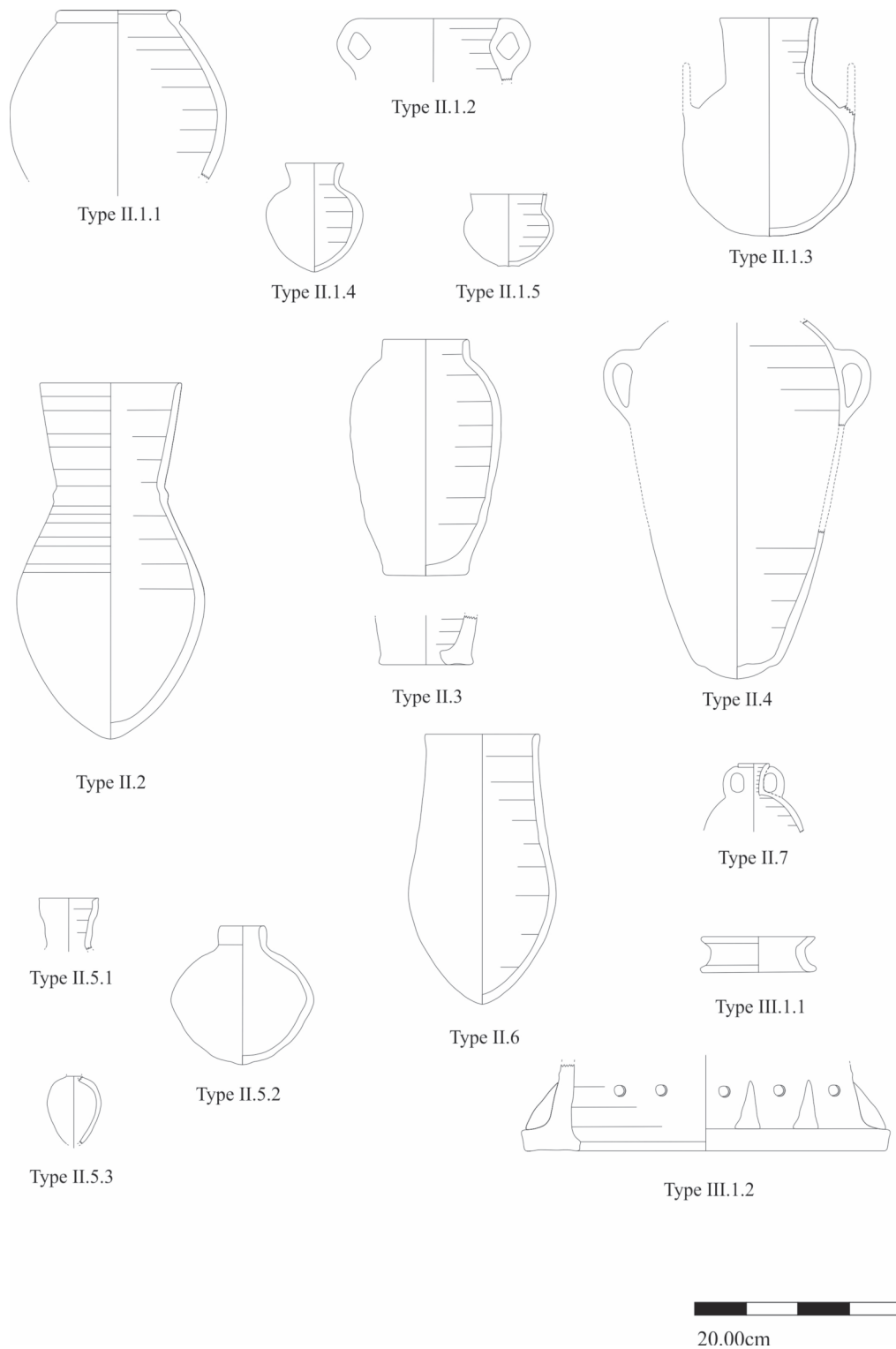


Figure 8: Closed shapes in the Area K corpus.

manufactured from ZUR B fabric and along with a single spinning bowl carved from local limestone (ZUR/KC/14) show that not only was flax processed at the site but there was also a production of relevant tools. This production was most likely supplementary in nature, intended to replace tools brought from Egypt when necessary.

Bowls with added ceramic snake figurines (Type I.5) are generally common at contemporary Ramesside sites inside Egypt³² and at Canaanite sites with Egyptian occupations, such as Beth Shan.³³

Only a single cobra-head bowl was found in Area K, its shape closely resembling a contemporary example from Kamid el-Loz in Canaan.³⁴ Beakers were uncommon but nonetheless present in the assemblage and found in two forms, one (I.6.1) of a type defined as a “wine goblet” by Holthoer³⁵ and a second type (I.6.2) distinguishable by the internal “notch” along the rim,³⁶ which most likely served to facilitate the closing of the vessel with a fitted lid.

The typical New Kingdom bread plates (Type I.7),³⁷ were nearly absent from Zawiyet Umm el-Rakham as a whole, and only a single diagnostic sherd of this type from Area K was recorded. This paucity is curious considering the extensive evidence for baking in Area K,³⁸ however, it is possible that the bread baked in Area K was hand molded and baked on the interior surface of the small ovens found at the site in the manner suggested by Samuels.³⁹

CLOSED SHAPES AND STANDS (FIG. 8)

Jars with globular bodies and modeled rims (II.1.1) are the second-most prevalent closed vessel found in Area K (11.92%) and is also common at contemporary sites in Egypt⁴⁰ where it bears some resemblance to the colloquially named “meat jars” fabricated in Marl D, although these are generally far larger.⁴¹ Regarding the globular jars from Area K, 66.13% are made from Nile silt imported from Egypt (predominantly Nile D at 33.87%), with the remainder being locally produced, most commonly (25.81%) with ZUR B fabric. Type II.1.2 is a globular jar with two vertical handles, and is similar to examples found at Tell el-Amarna.⁴² Type II.1.3 is a globular jar with a round base and two horizontal handles, similar to a type found at Qantir⁴³ and Tell el-Amarna.⁴⁴ Type II.1.4 has a flaring mouth and pointed base and is similarly attested at Tell el-Amarna⁴⁵ and Qantir.⁴⁶ Type II.1.5 is rarely found at Zawiyet Umm el-Rakham, and only one whole vessel and one diagnostic rim sherd of this type were found in Area K.⁴⁷

Funnel-necked jars (II.2)⁴⁸ are the most common closed vessels from Area K, comprising 13.46% of the entire corpus. As with Type II.1, the vessel is of composite manufacture, with the diverging neck separately thrown. Regarding the funnel-neck jars, 55.71% are made from either Nile B₂ or Nile D, the remainder being manufactured locally primarily from ZUR A. The crudely manufactured flat-based beer jars (II.3) are ubiquitous across New Kingdom sites in Egypt⁴⁹ and at sites in Nubia and Canaan with strong Egyptian influence. Unlike the

majority of the closed vessels from Area K, the beer jars from the site are predominately locally produced (62.50%). A notable aspect of the corpus of beer jars as a whole is two examples found with perforated bases, similar to examples uncovered at Ashkelon,⁵⁰ where they may have been used in the fermentation process of beer,⁵¹ a function they most likely fulfilled at Zawiyet Umm el-Rakham as well. Marl storage jars or amphorae (II.4) with two vertical handles and straight modeled necks were rarely found in Area K.⁵² Only 11 diagnostic sherds of this type were registered, eight of which were made from Marl D, with the remaining three—more unusually—made from Nile B₂ and Nile D. It is rare to see Egyptian amphora made from silt ware, although it is not unattested.⁵³ This paucity of a common transport amphora is curious, although Area K was most likely not a storage area, but rather a work and provisioning zone and, as such, the contents of any amphora may have been decanted into smaller vessels elsewhere and brought to the area.

Bottles and flasks (II.5) have been categorized into three sub-types within the Area K corpus. Type II.5.1 is an ovoid bottle with a distinct neck protrusion added for ease of carrying⁵⁴ and only a single diagnostic sherd of this type has so far been recorded. Type II.5.2 is a squat globular bottle with a short modeled neck, and—although rare—is comparable to examples found at Qantir.⁵⁵ Type II.5.3 is a small hand-molded “cosmetic” flask made from Marl D, which is similar to a recently published example from Kom Firin,⁵⁶ although the example from Area K is distinctly narrower and the base more rounded.

Tall ovoid jars (II.6) are common at Egyptian sites during the Eighteenth and Nineteenth Dynasties.⁵⁷ In Area K, thirteen diagnostic sherds or whole vessels of this type were found, manufactured in either Nile B₂ or Nile D. Five of the diagnostic sherds of this type were painted with simple bands of blue or red pigment of similar design to contemporary material from Qantir. Ten examples of Egyptian-made pilgrim flasks (II.8; not pictured here) were also found in Area K,⁵⁸ nine of which were made Marl D and treated with a thick white slip, while a single example was made from the Marl F with no added slip.⁵⁹

The most common type of ring stand (Type III.1.1) comprises narrow, squat rings, usually with smaller diameters (<20 cm),⁶⁰ while the second type (Type III.1.2) is larger and has added buttresses similar to examples found at Tell el-Amarna,⁶¹ although these lacked the holes cut through the walls found in the examples from Zawiyet Umm el-Rakham.

MANUFACTURE AND DECORATION

The vessels from Area K are overwhelmingly wheel-made or composite manufactures. The exceptions to this rule are a single marl clay flask (Type II.5.3) and a bread plate (Type I.7). Slips are prevalent on the material, in particular on the dominant open shapes (plates, dishes

and bowls), although slips are more common on the imported Nile silt ceramics (53.39%), while being found on only 35.78% of the locally manufactured vessels, possibly indicating either a more limited skill-set at the site or more restricted access to resources such as pigments.

Polychrome decorated pottery is rare at the site, with only 24 blue-painted diagnostic and body sherds, all manufactured from either Nile B₂ or Nile D and all stemming from either globular jars, funnel-neck jars, plates or tray. The decorative scheme is generally combination of geometric lines using blue and red pigments, with occasional additions of lotus-blossoms. A single example (ZUR/KM/13) is decorated with a duck taking flight from a lotus-covered pond. Potmarks are uncommon in the ceramic corpus from Area K, with only two pre-firing potmarks consisting of a curl in the slip of Marl D vessels.⁶² A single body sherd of a locally manufactured globular jar (ZUR/KKI/11) was incised post-firing with the phrase "Lord of the Two Lands."⁶³

CONCLUDING REMARKS

The Egyptian and Egyptian-style pottery from Area K at Zawiyet Umm el-Rakham shows clearly that the potters who worked at the site were highly familiar with common contemporary shapes, decorations and fabrics used in the Nile Valley.

The high percentage of Nilotic pottery at such a distant site may be explained by a rotation system of garrisons at the fort. Supplies would need to be transported, using ox-pulled carts and shoulder yokes along with the army en route⁶⁴ either overland or by sea.⁶⁵ When new detachments of soldiers arrived at Zawiyet Umm el-Rakham it is likely that they brought ceramic material with them. The short lifespan of the site (<50 years) also suggests that some of the material brought from Egypt by the first garrison and the builders of the fort may have remained in use for much of its occupation and deposited in Area K prior to the fort's abandonment. A local production of Egyptian-style pottery most likely functioned in a supplementary manner.

Further research is required into the ceramic assemblages from the various areas excavated at the site, and it is hoped that such investigations can be combined with additional chemical analysis of the material to explore the role that locally manufactured pottery played at this distant Ramesside outpost.

ACKNOWLEDGEMENTS

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- ⁵ The team is grateful for the assistance given by the Egyptian Ministry of Antiquities in facilitating this work. For publication of the imported vessels from Zawiyet Umm el-Rakham, see in particular S. Thomas, "Imports at Zawiyet Umm al-Rakham," in Z. Hawass and L. Pinch Brock (eds), *Egyptology at the Dawn of the Twenty-first Century: Proceedings of the Eighth International Congress of Egyptologists, Cairo, 2000* (Cairo: American University in Cairo Press,

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- ¹³ The technology has been used in recent years on ceramic material both from Egypt and the Eastern Mediterranean, see for instance: Y. H. Goren, H. Mommsen and J. Klinger, "Non-destructive Provenance Study of Cuneiform Tablets Using Portable X-Ray Fluorescence (pXRF)," *Journal of Archaeological Science* 38 (2011): 684–696; M. Morgenstein and C. A. Redmount, "Using Portable Energy Dispersive X-ray Fluorescence (EDXRF) Analysis for On-site Study of Ceramic Sherds at el-Hibeh, Egypt," *Journal of Archaeological Science* 32 (2005): 1613–1623; D. Frankel and J. M. Webb, "Pottery Production and Distribution in Prehistoric Bronze Age Cyprus: An Application of pXRF Analysis," *Journal of Archaeological Science* 39 (2012): 1380–1387. While some scholars (such as R. J. Speakman, N. C. Little, D. Creel, M. R. Miller and J. G. Iñáñez, "Sourcing Ceramics with Portable XRF Spectrometers? A Comparison with INAA Using Mimbres Pottery from the American Southwest," *Journal of Archaeological Science* 38 [2011]: 3483–3496) have noted problems with the uncritical application of pXRF analysis in particular in provenance studies, others have demonstrated that a great deal of accuracy can be achieved in relation to other analytical approaches, such as neutron activation analysis (see for instance N. Forster, P. Grave, N. Vickery and L. Kealhofer, "Non-destructive Analysis Using PXRF: Methodology and Application to Archaeological Ceramics," *X-Ray Spectrometry* 40 [2011]: 389–398) if the limitations of the equipment are considered in the experimental methodology.
- ¹⁴ Forster, Grave, Vickery and Kealhofer 2011, 398.
- ¹⁵ See Bourriau Bellido, Bryan and Robinson 2006, 263–264 for a discussion of experimental methodology employed in the presented analysis.
- ¹⁶ Bourriau Bellido, Bryan and Robinson 2006, 264–265.
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- ¹⁹ A possible exception to this general rule is the so-called Marmaric Fabric 2 used in the Late Bronze Age at Bates' Island which may have been manufactured from the same clay source as the later Egyptian pottery from Zawiyet Umm el-Rakham. See L. Hulin, "Marmaric Wares: New Kingdom and Later Examples," *Libyan Studies Journal* 32 (2001): 67–78.
- ²⁰ The sub-classifications into plate, dish and bowl were done on the basis of the mathematical formulae provided by Aston 1998, 43–44. In this preliminary catalogue, only vessels where both rims and bases were either fully preserved or could be inferred from the preserved material are represented. A full publication of all recorded ceramic material from Area K is scheduled to appear at a later stage.
- ²¹ **Type I.1.1a:** R. Hummel, "A Report on the Ceramics Recovered from Tell el-Borg," in J. K. Hoffmeier (ed.), *Tell el-Borg I: Excavations in North Sinai* (Winona Lake: Eisenbrauns), 364–435, pl. 3.8; Bourriau 2010, pl. 213/1.1.1; Nagel 1938, pl. IX.1164.54; E. Dziobek, *Das Grab des Ineni: Theben Nr. 81* (Mainz: Philipp von Zabern 1992), pl. 68.11/18. **Type I.1.1b:** Aston 1998, nos. 687–689; Bourriau 2010, pl. 60/1.2.4; Nagel 1938, pl. VII. **Type I.1.2a:** Aston 1998, nos. 722–727; Bourriau 2010, pl. 60/1.8.4. No plates with modeled rim and round base (Type I.1.2b) were found in the assemblage.
- ²² **Type I.2.1a:** Aston 1998, nos. 421–426 and 783–790; Bourriau 2010, pl. 60/3.2.1; R. Holthoer, *New Kingdom Pharaonic Sites — The Pottery* (Copenhagen: Scandinavian University Books, 1977), Type IR/0/f–g. **Type I.2.1b:** Aston 1998, nos. 334–342; Bourriau 2010, pl. 60/3.1.8; G. Brunton and R. Engelbach, *Gurob* (London: British School of Archaeology in Egypt, 1927), pl. xxxiii.7; Nagel 1938, pl. I/II. **Type I.2.2b:** B. Aston-Greene, "The Pottery," in M. J. Raven (ed.), *The Tomb of Pay and Raia at Saqqara* (Leuven: Peeters, 2005), 94–128, pls. 121.85., 121.87; Aston 1998, nos. 367–384 and

- Nagel 1938, pl. VIII.X. Dishes with modeled rims and flat bases (the hypothetical Type I.2.2a) have not been located in the assemblage so far.
- ²³ Aston 1998, nos. 832–836; Bourriau 2010, pl. 68/3.10.8; D. A. Aston, *Elephantine XIX: Pottery from the Late New Kingdom to the Early Ptolemaic Period* (Mainz: Philipp von Zabern, 1999), pl. 1.1; Holthoer 1977, pl. 26, type CU6/IR/o/h–i.
- ²⁴ **Type I.3.1b:** Aston 1998, nos. 448–451; Bourriau 2010, pl. 62/4.1.5; B. Gould, “Egyptian Pottery,” in T. Dothan and B. Brandl (eds.), *Deir el-Balah: Excavations in 1977–1982 in the Cemetery and Settlement: The Finds* (Jerusalem: Institute of Archaeology, Hebrew University of Jerusalem, 2010), 7–56, fig. 2.1.2. **Type I.3.2:** Holthoer 1977, pl. 26, type GO1–IR/0/c–d; Bourriau 2010, pl. 62/4.1.5; Smoláriková 2014, 125.
- ²⁵ Smoláriková 2014, 126.
- ²⁶ Aston 1998, nos. 457 and 468–469
- ²⁷ Bourriau 2010, pl. 62/4.5.2
- ²⁸ Hummel 2014, pl. 7.4.
- ²⁹ GU07/F18A/142/P, Valentina Gasperini, personal communication.
- ³⁰ For a possible but highly fragmentary parallel, see Aston 1998, no. 2144. See also Bourriau 2010, pl. 68/4.11.18 for similar molded handles.
- ³¹ For Nineteenth Dynasty examples see in particular Nagel 1938, pl. XI; Smoláriková 2014, 133; and S. Laemmel, “Preliminary Report on the Pottery from Area Q IV at Qantir/Pi-Ramesse,” *Ägypten und Levante* 18 (2008): pl. 5.9. See also earlier examples of similar vessels from the Eighteenth Dynasty in P. J. Rose, *The Eighteenth Dynasty Pottery Corpus from Amarna* (London: Egypt Exploration Society, 2007), figs. 148–149.
- ³² L. Giddy, *The Survey of Memphis II: Kom Rabi’a: The New Kingdom and Post-New Kingdom Objects* (London: Egypt Exploration Society, 1999), 13–28.
- ³³ F. W. James and P. E. McGovern, *The Late Bronze Egyptian Garrison at Beth Shan: A Study of Levels VII and VIII* (Philadelphia: University of Pennsylvania, University Museum, 1993), vol. 2, pls. 83–85.
- ³⁴ R. Echt, R. 1982. “Die Schlangenfiguren aus Kamid el-Loz und verwandte Kleinplastiken in Syrien und Palastina,” in R. Hachman (ed.), *Bericht über die Ergebnisse der Ausgrabungen in Kamid el-Loz in den Jahren 1971 bis 1974* (Bonn: Habelt, 1982), 37–52, 37, pl. 12.2.
- ³⁵ Holthoer 1977, pl. 68.2.
- ³⁶ Aston 1998, nos. 160–163.
- ³⁷ Laemmel 2008, pl. 11:2; Aston 1998, nos. 279–282; Aston 1999, pl. 2.29.
- ³⁸ Snape 2010, 284.
- ³⁹ D. Samuel, “Brewing and Baking,” in P. T. Nicholson and I. Shaw (eds.), *Ancient Egyptian Materials and Technology* (Cambridge: Cambridge University Press, 2000), 566.
- ⁴⁰ Aston 1999, pl. 1.25; Nagel 1938, pl. 81.4; Bourriau 2010, pl. 67/11.15.13; Holthoer 1977, pl. 35, Type VP/0/f–g; Laemmel 2008, pls. 2:2, 2:3.
- ⁴¹ Aston 1998, no. 478; Laemmel 2008, pl. 2:4.
- ⁴² Rose 2007, fig. 495. Rose notes that the vessel type may be slightly later than the Eighteenth Dynasty.
- ⁴³ Aston 1998, no. 512.
- ⁴⁴ Rose 2007, figs. 620–621.
- ⁴⁵ Rose 2007, fig. 484.
- ⁴⁶ Laemmel 2008, pl. 4:5.
- ⁴⁷ Aston 1998, no. 1971; possibly also similar to Aston-Greene 2005, pl. 114.30.
- ⁴⁸ Aston 1998, nos. 549–576; Aston-Greene 2005, pls. 116.50–52, 117.53–54; Bourriau 2010, pl. 65/10.4.16; Hummel 2014, pls. 2–3; Nagel 1938, fig. 82.10; Holthoer 1977, pl. 33, Type IR/0/i–k.
- ⁴⁹ Aston 1998, nos. 523–548; Aston 1999, pl. 1.4–12; Aston-Greene 2005, pl. 114.31–34; B. G. Aston and D. A. Aston, “The Pottery,” in N. Strudwick (ed.), *The Tombs of Three Memphite Officials: Ramose, Khay and Pabes* (London: Egypt Exploration Society, 2001), pl. 40.33; Holthoer 1977, pl. 18, Type IR/0/f–h; Gould 2010, 31–38.
- ⁵⁰ M. A. S. Martin, “Egyptians at Ashkelon? An Assemblage of Egyptian and Egyptian-Style Pottery,” *Ägypten und Levante* 18 (2008): 252–255.
- ⁵¹ M. Homan, “Beer and its Drinkers: An Ancient Near Eastern Love Story,” *Near Eastern Archaeology* 67:2 (2004): 89.
- ⁵² See in particular Bourriau 2010, fig. 58.f and also 58.e, originally from the tomb of Horemheb, and also Rose 2007, fig. 586.
- ⁵³ Aston 1998, nos. 584–585.
- ⁵⁴ N. Nielsen, “Some Notes on a New Kingdom Ovoid Bottle in the Liverpool World Museum,” *Journal of Egyptian Archaeology* 100 (2014): 483–488.
- ⁵⁵ Aston 1998, no. 962.
- ⁵⁶ Smoláriková 2014, 128.
- ⁵⁷ Laemmel 2008, pl. 1:8; Aston 1998, nos. 1185–1186; Bourriau 2010, pl. 64, 9.6.5; C. Hope, “Blue Painted and Polychrome Decorated Pottery from Amarna: A Preliminary Corpus,” *Cahier de la céramique égyptienne* 2 (1991): 31–46.
- ⁵⁸ Brunton and Engelbach 1927, pl. xxxix 93b; Nagel 1938, fig. 35.6.

- ⁵⁹ Aston 1998, nos. 2046–2048.
- ⁶⁰ T. E. Peet and C. L. Woolley, *The City of Akhenaten I* (London: Egypt Exploration Society, 1923), pl. xlvi I/43.
- ⁶¹ Peet and Woolley 1923, pl. xlvi I/1019.
- ⁶² A combination of Group A01 and Group C02 from Qantir; see B. Ditze, “Gedrückt—geritzt—gekratzt: die Gefäße mit Topfmarken,” in E. B. Pusch (ed.), *Die Keramik des Grabungsplatzes Q I. Teil 2: Schaber—Marken—Scherben* (Hildesheim: Gerstenberg, 2007), 290.
- ⁶³ Similar to Qantir Group G05 (Ditze 2007, 435).
- ⁶⁴ B. Heagren, “Logistics of the Egyptian Army in Asia,” in P. Kousoulis and K. Magliveras (eds), *Moving Across Borders: Foreign Relations, Religion and Cultural Interactions in the Ancient Mediterranean* (Leuven: Peeters, 2007), 142–143.
- ⁶⁵ Snape 2013, 452–454.