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A Late Bronze Age II clay coffin from Tel Shaddud in the Central Jezreel Valley, Israel: context and historical implications

Edwin C. M. van den Brink¹, Ron Beeri¹, Dan Kirzner¹, Enno Bron¹, Anat Cohen-Weinberger¹, Elisheva Kamaisky¹, Tamar Gonen ¹, Lilly Gershuny¹, Yossi Nagar¹, Daphna Ben-Tor², Naama Sukenik¹, Orit Shamir¹, Edward F. Maher³ and David Reich⁴

To the memory of Trude Dothan 1922–2016

During trial excavations carried out in 2013 on behalf of the Israel Antiquities Authority, a seemingly isolated clay coffin with anthropoid lid, containing a single primary burial, was uncovered within a 6 m × 5 m probe bordering the lower east slope of Tel Shaddud in the Jezreel Valley. It lay at the bottom of a tightly constricted burial pit, about 1.8 m below the present surface. Subsequent salvage excavations in 2014 uncovered, less than 3 m to its south-east, a further three burial pits (none of which contained a coffin), enclosing four additional primary burials, oriented east to west — in conformity with the coffin burial. Together these burials form part of an apparent Late Bronze Age II–Iron Age I burial ground at the eastern margin of Tel Shaddud. The coffin and associated funerary gifts bear a strong resemblance to comparable specimens and associated funerary assemblages known foremost from Deir el-Balah in the Gaza strip and Bet She'an in the Jordan Valley. The shared mortuary aspects of Tel Shaddud and the latter sites indicate a strong link with New Kingdom Egypt. Based on the Tel Shaddud data and its very location, in combination with selective reading of relevant, near-contemporary historic records (i.e. the el-Amarna letters) it is argued here that Tel Shaddud was a way station, or estate, functioning within the framework of the Egyptian New Kingdom colonization of the region during the Late Bronze Age II and succeeding Iron Age I.

Keywords southern Levant, Late Bronze Age II, clay coffin with anthropoid lid, petrography, ancient DNA, zooarchaeology, Egyptian colonization, mortuary rituals

Introduction

Tel Shaddud, a relatively small mound covering a visible area of about 2.1 hectares and rising 27 m above the surrounding plain (80 m asl), is located along the margin of the north-western Jezreel Valley (Fig. 1), c. 0.5 km south of Migdal Ha-'Emeq and about 9 kms north-west of Afula. While various

salvage excavations have been conducted around the tell (e.g., Braun 1985; Covello-Paran and Matskevich 2016; Raban 1977), the mound proper has not yet been subject to archaeological exploration.

Prior to the installation of connective infrastructure for a natural gas pipeline encroaching upon the east, west and southern margins of Tel Shaddud, two trial and salvage excavations were conducted in these areas in 2013 and 2014 respectively, on behalf of the Antiquities Authority (van den Brink *et al.* 2016).¹

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¹The excavations were conducted from November 21–29 December 2013 by E. C. M. van den Brink and D. Kirzner (Permit A-6949) and resumed from 9–20 February 2014 by R. Beeri and D. Kirzner (Permit A-7047) with the

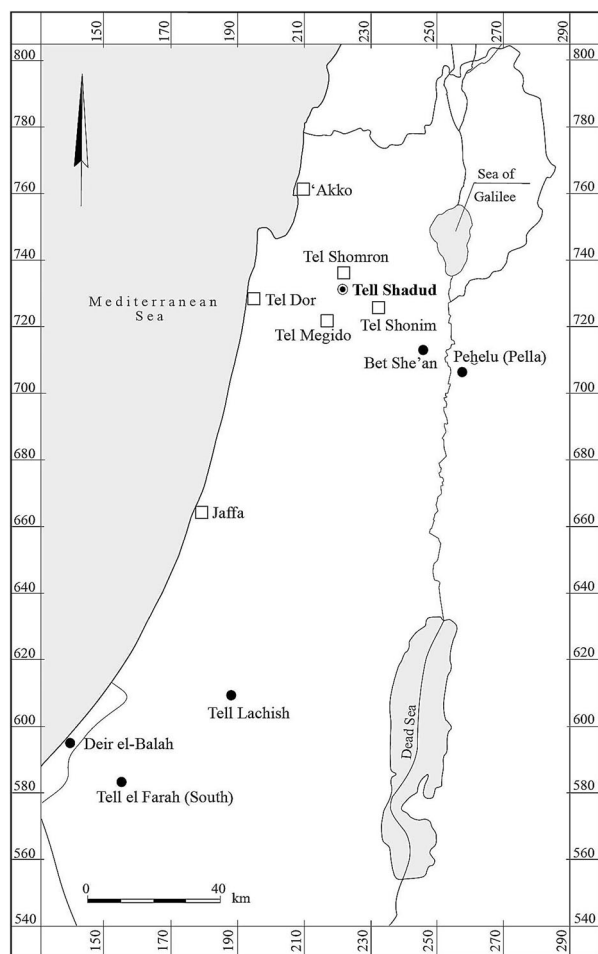


Figure 1. Map showing location of Tel Shaddud, other sites that produced clay coffins with anthropoid lids (●) and additional sites mentioned in the text (□). Photo by Natali Zak, courtesy of the Israel Antiquities Authority.

All together ten 5×5 m probes were initiated, distributed over four separate areas running along the foot of the tell (Fig. 2), namely, Areas A (2 squares), B (4 squares), C (2 squares) and D (2 squares). These revealed *in situ* settlement remains of a late phase of the Early Bronze Age I (EB I) (Area A, Sq. A2 and Area D, Sq. D2), a segment of a Late Bronze Age II (LB II) -Iron Age I burial ground (Area A, Sq. A2), settlement and burial remains of the Iron Age II (IA II) (Areas D and B respectively), and substantial structural remains dated to the Hellenistic and Roman periods (Areas B and C; van den Brink *et al.* 2016). In this article the focus is on the LB II burial remains in Area A exclusively.

The excavation, Area A

Two adjoining probes, initially 5×5 m (Squares A1 and A2), separated by a 1 m baulk, were excavated down to virgin bedrock, which was reached at a maximum depth of *c.* 3 m below the present surface (between 80.14 and 77.13 m above sea level). The bedrock is composed of natural, soft, Eocene limestone. Square A1 did not yield any evidence of *in situ* anthropogenic deposits, but the findings in Square A2 proved more rewarding.

Square A2

A *c.* 0.2 m thick layer of colluvial top soil uniformly seals a *c.* 1 m thick accumulation of light-brown, tell-like soil (Stratum 1) containing a mixture of potsherds of various periods, apparently washed-down from the south-east slope of the mound. It overlays a thick, *c.* 1.5 m accumulation of sterile clay soils percolated by many white lime concretions (Stratum 4), in its turn directly overlaying the natural, soft, Eocene limestone bedrock. At the interface of Strata 1 and 4, an *in situ* layer, *c.* 0.3 m thick was exposed (Stratum 3); it was composed of anthropogenic deposits, containing exclusively late EB I potsherds, flints and some ground-stone tools. The deposits are characterized by several, rather amorphous spreads of medium- and small-sized fieldstones restricted to the west part of this eventually $6 \text{ m} \times 5 \text{ m}$ probe, while in the east part these are absent, with the washed-down, tell-like Stratum 1 accumulations directly overlaying the compact, sterile clay soils of Stratum 4.

The *in situ* late EB I remains were cut by four east-west oriented burial pits (Stratum 2), one containing a clay coffin with anthropoid lid (Figs 3, 34–35). All four pits penetrated the top of the underlying compact clay deposits of Stratum 4.

Below we present the LB II Stratum 2 burial remains, starting with a presentation of the actual coffin burial in all its aspects,² i.e. a description of the coffin and its burial contents,³ the manufacturing process of the coffin and, based on comparative petrographic analysis of the coffin, its likely place of origin. This is followed by a brief description of the three additional burial pits and their contents, found in the near vicinity of the coffin, together with a brief account of yet another, stone built, LB II tomb found by chance in the 1970s, and which was located about 10 m north-east of the coffin burial. We will

assistance of E. Bron (area supervisor), Y. Yacobi and U. Leven (administrators), A. Hadjian, R. Mishayev and M. Kahan (surveyors), Y. Yelowitz (field photography), W. Atrash, Y. Tepper (pottery reading), B. Agami (safety), and Sky View Photography Ltd. (aerial photography). The excavations were financed by the Israel Natural Gas Lines (INGL).

²The results of residue analysis of eight samples taken from the coffin's interior are published in Namdar *et al.* (2017).

³Although the pottery retrieved from the burials has been restored, at present the vessels await final drawing and photography in the IAA lab. A full presentation of the funerary pottery will, therefore, be included in the final excavation report, which will be published elsewhere (*'Atiqot*).



Figure 2. Photograph showing excavation Areas A–D in relation to Tel Shaddud. Photo by Sky View Photography Ltd.

then review, briefly, the five other sites where comparable clay coffin burials have been identified. Finally we will argue that Tel Shaddud, located midway between the Plain of Acco on the coast and the inland Jordan Valley, served as a way station or estate, a situation that is best understood in the context of the Egyptian New Kingdom colonization of this region during the Late Bronze Age II and succeeding Iron Age. This point is illustrated by selective readings of slightly earlier, Egyptian records, in particular the el-Amarna (EA) letters.

Burial pit with clay coffin

The clay coffin was found during the initial trial excavation in 2013, protruding from the north baulk of Square A2 (Fig. 4; van den Brink *et al.* 2016). The burial pit accommodating the coffin cut through a late EB I stratum (Str. 3), penetrating into the sterile clay deposits of the underlying Stratum 4. The east part of the north baulk was set back by 2 m to enable full exposure of the burial pit and the coffin it contained (Figs 3–5).

The coffin had been placed horizontally at the bottom of a rectangular burial pit (L102), *c.* 2.5 m long, 1 m wide and 1.8 m below present ground surface (Fig. 3: section A-A). The pit tightly confined the clay burial container and associated funerary gifts. The limited available free space around the coffin remaining at the bottom of the pit, had been stacked

with a variety of funerary gifts (see below). A stone marker, consisting of a chunk of natural limestone, had been placed just above the footboard of the coffin (Fig. 6). At the opposite end of the coffin had been placed the head of a bovid (Figs 7–8). Additional food offerings had been placed on top of the anterior of the coffin in between the stone marker and the bovid's head (cf. Fig. 5).

Description of the coffin

The coffin (IAA reg. no. 2015–98), is 1.94 m long and with a maximum cross-width of 58 cm. It consists of two parts: an elongated, near-cylindrical, slightly tapered clay box domed at one extreme (headboard) and flat at the other (footboard), and an accessory anthropoid lid (Figs 9–12).

Two small, axially opposed, circular apertures — one in the centre of the round headboard, the other in the centre of the flat footboard — had been created. These would have helped to create outlets for the expanding hot air, within the otherwise closed cylinder, when the coffin was fired (see below, manufacturing). Holes of varying size, drilled before firing, as well as small holes in the body of coffins, are common both in the southern Levantine examples and in clay coffins of Egypt (Cotelle-Michel 2004: 32; Oren 1973: 132–33; Rowe 1930: 39, pl. 40: 1). They may also have offered a possible outlet for bodily fluids, but perhaps also emulated Egyptian funerary

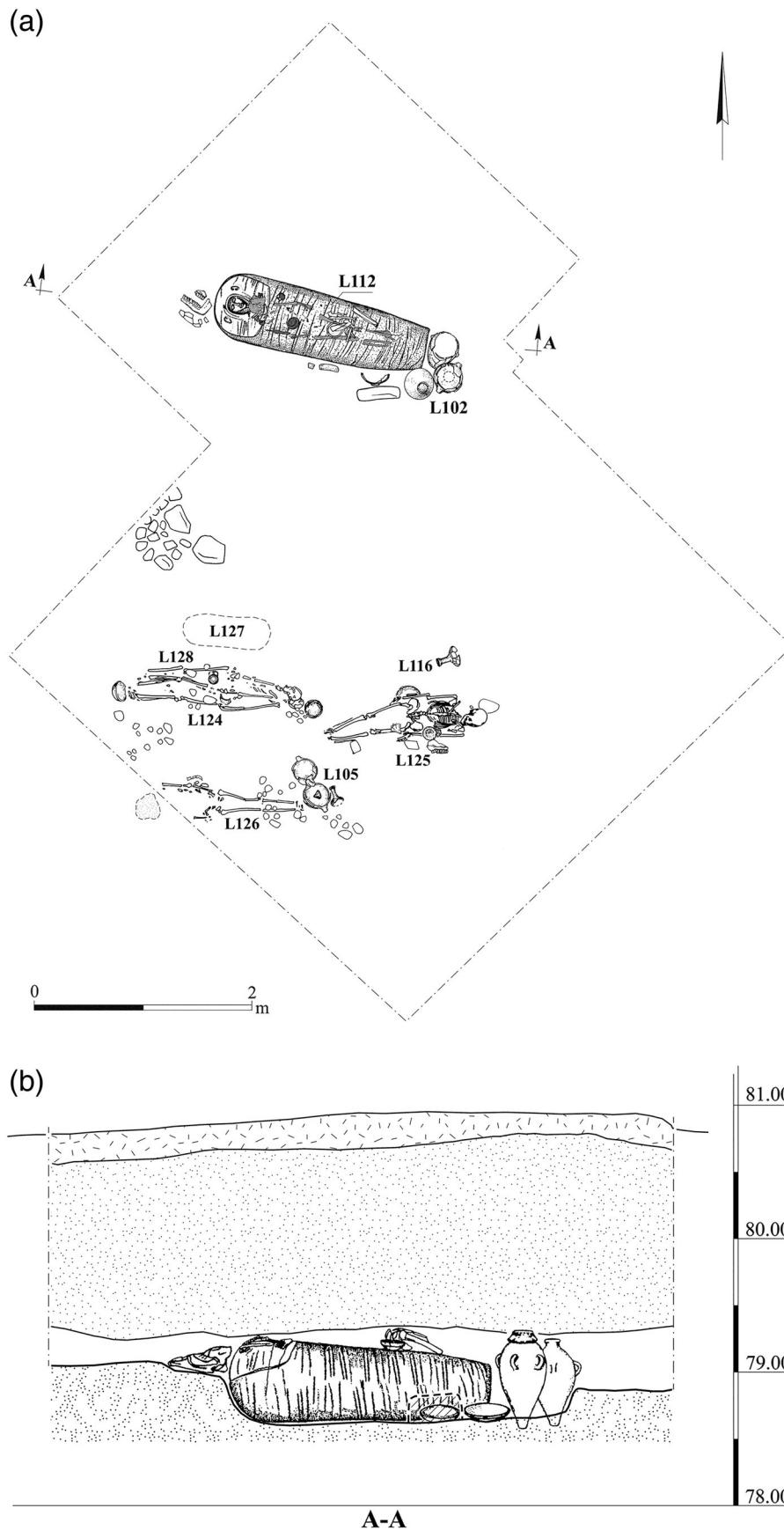


Figure 3. Excavation plan of Area A, Sq. A2 and section drawing A-A. Plan by Mendel Kahan, Roy Liran, Natali Zak and Dov Porotsky, courtesy of the Israel Antiquities Authority. Section drawing by Dov Porotsky, courtesy of the Israel Antiquities Authority.



Figure 4. Tel Shaddud, Area A, Sq. A2, L108. Exposure of the lower half of the clay coffin protruding from the original north baulk of the square, the burial pit cut through a late Early Bronze Age I stone level. Photo by Edwin C. M. van den Brink.

customs; enabling the deceased's spirit to enter and exit the coffin through the dome's aperture (Steindorff 1937: 72).

The lid had been cut out from the upper part of the cylindrical container while it was still in leather-hard condition, thus creating an aperture large enough to permit the insertion of the deceased and the accompanying funerary gifts, and one that could be sealed tightly afterwards. The centrepiece on the exterior surface of the lid is a naturalistic human face, framed by an almost indistinct wig, representing *pars pro toto* the deceased in its aspirant ancient Egyptian Osirian form (Figs 5, 10–11). There is, however, no representation of the Osiris' beard on the chin of the mask.⁴ Additional physical details, e.g. the ears and crossed, shortened arms and hands, surround the actual face. Sporadic remains of a white plaster are still visible, but only on the upper part of the lid.

There are two inter-related types of clay coffin known from LB II contexts in the southern Levant (e.g., Dothan 1973): the minority consists of clay coffins where the head and shoulders are delineated in the contour of the receptacle (Beit-Arieh 1985: Tomb 111, 47–48, fig. 4, pl. 7: 3; Dothan 1973: Tomb 114, 5–12, figs 4–13; Lipton 2010: Tomb 301, 6–10, fig. 1.4, photos 1.3–1.5), the majority includes clay coffins where head and shoulders are not accentuated and the overall shape is near-cylindrical. The Tel Shaddud coffin clearly falls within the latter category.

⁴Representations of the false Osiris beard are also absent on the anthropoid lids of the coffins from Tel Bet She'an (Oren 1973: figs 52–58), but are found on a few examples deriving from Deir al-Balah (Dothan 1979: 100, figs 70, 78–79, 118–22).

From an iconographic point of view, researchers have additionally distinguished two styles of facial features appearing on the lids of the anthropoid coffins: a naturalistic style, as in the case of the serene, almost el-Amarna style-like face on the Tel Shaddud lid, considered to be earlier (13th century BC), and a much less naturalistic, 'grotesque' style, believed to be later (the 12th–11th centuries BC) based on exemplars found at Bet She'an and Deir al-Balah (Dothan 1979: 99–100; 1982: 255; Fischer 1923: 234; Oren 1973: 133–39).

Manufacturing process of the coffin

The coffin was built from coils of clay that were placed on top of each other and joined by pulling excess clay vertically and horizontally to enhance the adhesion between them (Hamer and Hamer 1986: 69–70; Kamaisky and Ben-Gal 2013: 474–75; Rice 1987: 127–28; Yannai and Porath 2006: 39–40).

The manufacturing process started at the base or footboard, which is about 50 cm across, 10 cm thick, and has a circular opening in the middle, of diameter 10 cm (Fig. 13). One function of this opening is to diminish the risk of cracks and breaks that may occur in a thick, large surface of such ample dimensions. Although the coil technique is a fairly simple one, using it for building an artefact of such large dimensions makes it a great challenge.

During the building process a balance had to be found between the addition of wet, heavy coils and the stability of the part already built (Rye 1981: 21). To overcome this problem and avoid its collapse, strings were tied around the built body when the clay was still wet: string impressions can be seen on several parts of the body (Fig. 14). Presumably pauses were taken in the building process in order to give the built segments time to dry and stabilize slightly before more coils were added (Courty and Roux 1995: 23).

Manufacturing ended at the headboard of the coffin, leaving another round opening, about 10 cm in diameter, at the domed centre (Fig. 9). The last unsmoothed coils, left untouched, can be seen on the inside (Fig. 15).

The container was built as a single unit, and only after completion of the building process was the lid cut out from the anterior, or front-side, of the body. The description of this part of the building process corresponds with building techniques noted in coffins deriving from Deir el-Balah and Bet She'an (Dothan 1973: 130; Oren 1973: 133). The cutting of the lid was accomplished with twine, and



Figure 5. Tel Shaddud, Area A, Sq. A2, L108. Full exposure of the clay coffin with anthropoid lid (L112). Photo by Edwin C. M. van den Brink.

not a sharp tool, as dragging marks characteristic of a string can be seen on the cutting edges of both the body and lid (Fig. 16).

The depth of the marks indicates that the clay was at the leather hard stage when the cut was applied. The tight fit between the lid and the edge of the main body, along with the horizontal string-tie marks on corresponding parts of the lid and body, lead us to assume that the lid was left to dry *in situ* on the coffin (Fig. 17).

Regarding the human features on the lid, we suppose they were made prior to the cutting of the lid, as horizontal string-tie marks can be observed above and below the hands (Fig. 18).

As for the manufacturing method of the corporal features, it is very difficult to determine, when looking only at their joint marks, how the different features were produced. The hands were presumably made from clay patches that were added to the surface and shaped into the desired form. Another feasible option is that they were made in a mould, either as one unit, left and right hand both, or each hand separately in a different mould — since they differ in shape and orientation (Fig. 18). The ears were made from a coil added to the surface and given its final shape there. Clay was added around the face to depict a wig. As for the face itself, it is hard to decide whether it was made by clay pressed



Figure 6. Stone marker at, and above, the footboard of the coffin (at the time the photo was taken still to be exposed). Photo by Dan Kirzner.



Figure 7. Coffin during excavation with skull of bovid deposited on the (as yet unexposed) anthropoid lid. Photo by Edwin C. M. van den Brink.



Figure 8. Close-up of the bovine skull. Photo by Edwin C. M. van den Brink.

into an open mould and subsequently applied to the lid as one piece, or by applying clay patches directly on the lid's surface, thus creating its final shape there. As no radiographic scanning analyses have yet been performed on the lid, there is currently no decisive answer to this question.

After the completion of the building process, the artefact was left to dry (Courty and Roux 1995: 23; Shephard 1995: 73–74). The openings left at opposite sides in the headboard and footboard acted as vents for the excessive water from the clay (Hamer and Hamer 1986: 107).

There are several theories as to how a receptacle this large was fired (Dothan 1973: 130; Gunneweg 2014; Oren 1973: 133; Ornan 1986: 121–22). We believe it was fired resting on its back, with the lid in place, in an open fire in a shallow ditch, with fuel placed around it. The openings at the base and top of the coffin acted as vents through which the hot air moved, thus creating air circulation that also enabled firing of the interior.

Notwithstanding the precautions taken by the artisan, two cracks did occur, on the left-hand side of the lid and lower body, during the manufacturing process: either during the drying or firing stages (Oren 1973: 133), or during transportation. These were covered with plaster after firing and before actual use of the coffin (Fig. 19).

Conclusion

This coffin was built with the same manufacturing techniques (coil building) as similar coffins of LB II date known in the region (see further below). This can be deduced from the different marks and imprints left on the receptacle by the potters who made it. Not all stages of the manufacturing processes are clear to us, for example, the way the facial features were applied. Radiographic analyses of the lid and its mask may provide the answer to some of these questions. Regarding the question of the firing process, one can only surmise, based on a good understanding of the firing process, how the artefact had been fired, in this case presumably in an open fire.

Petrographic examination of the coffin

The actual provenance of the clay coffin is inferred from the outcome of petrographic analysis of two samples taken from different parts of the receptacle (footboard and anterior side). For comparison sake, an additional sample was taken from another clay coffin with anthropoid lid from Bet She'an (Tomb 66a; Bet She'an IAA reg. no. P-1433; Oren

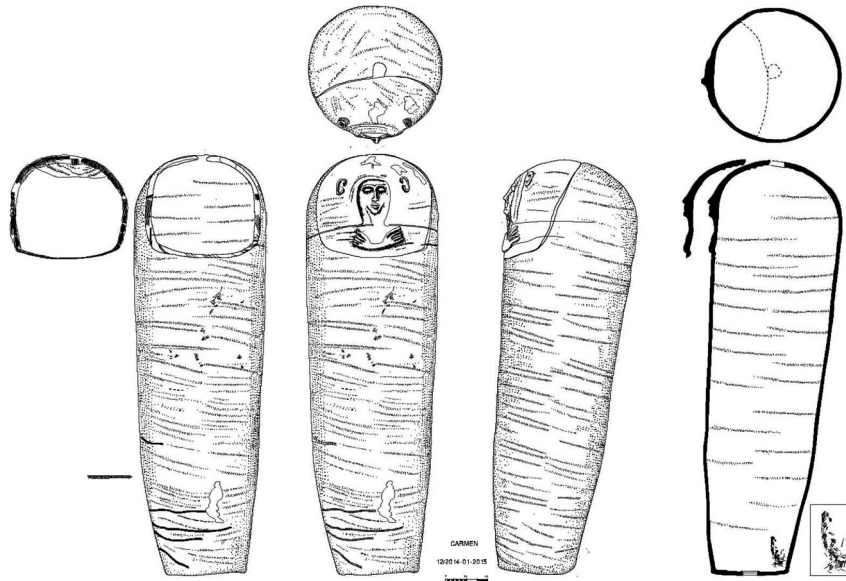


Figure 9. The Tel Shaddud clay coffin, various views and cross-sections. Drawing by Carmen Hersch, courtesy of the Israel Antiquities Authority.



Figure 10. Front view of the clay coffin. Photo by Clara Amit, courtesy of the Israel Antiquities Authority.



Figure 11. Lateral view of the clay coffin. Photo by Clara Amit, courtesy of the Israel Antiquities Authority.



Figure 12. Back view of the clay coffin. Photo by Clara Amit, courtesy of the Israel Antiquities Authority.



Figure 13. Interior view of the footboard of the coffin with opening in the middle, and showing coils of clay that were placed on each other and joined by pulling excess clay vertically and horizontally. Photo by Elisheva Kamaisky.



Figure 14. Detail of exterior of coffin with string impressions. Photo by Elisheva Kamaisky.



Figure 15. The final, unsmoothed coils seen from the inside, left untouched. Photo by Elisheva Kamaisky.



Figure 16. Dragging marks of twined string on the lid's edge, created during the cut separating the lid from the body of the coffin. Photo by Elisheva Kamaisky.



Figure 17. Detail of the lid sealing the coffin, showing the close fit between the lid and the edge of the main body of the coffin, indicating that the lid had been dried in place. Photo by Elisheva Kamaisky.

1973: 9–10, figs 53: 4; 62: 2; 80; Rowe 1930: 39, pls 37, 38).⁵ The basic petrographic premise is that the fabric of pottery, and other clay objects, reflects the geology of their locus of production, on the assumption that the raw material was not transported.

The three samples were prepared as standard 30µm thin-sections, and were examined under a polarized light microscope using x50–x400 magnifications.⁶ All three are characterized by calcareous clay. The non-plastic inclusions comprise ~1% silty quartz grains and mainly poorly sorted tufa (travertine) and mollusc fragments, as well as elongated voids, which represent the negative imprints of chopped straw

⁵A fragment of an anthropoid coffin from Bet She'an was included in a provenance Neutron Activation Analysis (N.A.A.) study of the anthropoid coffins from Deir el-Balah. The N.A.A. result of this coffin did not match any of the known chemical fingerprints, so the provenance remained unresolved (Perlman *et al.* 1973).

⁶For details of petrographic analysis, see Quinn 2013.

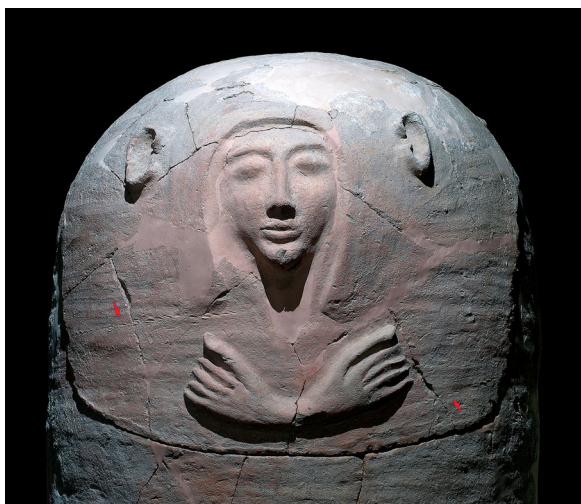


Figure 18. The human features on the lid, presumably made prior to the cutting of the lid: horizontal string-tie marks above and below the hands (their position indicated by the red arrows), also showing the close fit between the lid and the body of the coffin, indicating that the lid had been dried in place. Photo by Clara Amit, courtesy of the Israel Antiquities Authority.

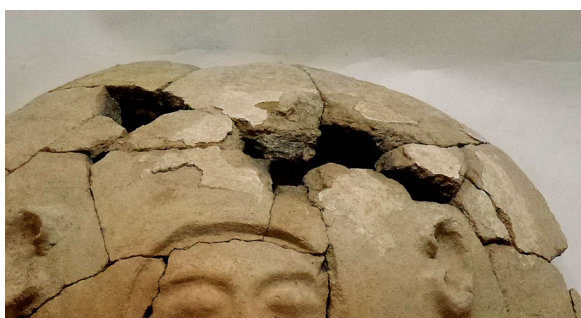


Figure 19. Traces of ancient plaster covering up cracks that had occurred during the drying or firing stages of production or during subsequent transport. Photo by Elisheva Kamaisky.

(Figs 20–21). Rarely, fine basalt fragments are present (Fig. 22). Some of the tufa particles are cut perpendicular to the long axis of stems and some have pisolitic appearance (Fig. 23).

The composition of the non-plastic components of all three samples suggests a provenance in the Bet She'an Valley. Quaternary tufa (travertine) dominates the lithology of this valley (Hatzor 2000; Horowitz 1979; Kronfeld et al. 1988; Rozenbaum et al. 2005; Schulman 1962; Shaliv et al. 1991; Sneh et al. 1998; Zilberman et al. 2004). The pisolite-bearing tufa known as the Bet She'an Formation was separated from the upper 'marl member' (Shaliv et al. 1991; 173), which is termed the Rehov Formation (Horowitz 2001: 546–47). The sequence of the 'marl member' comprises white-brownish, occasionally

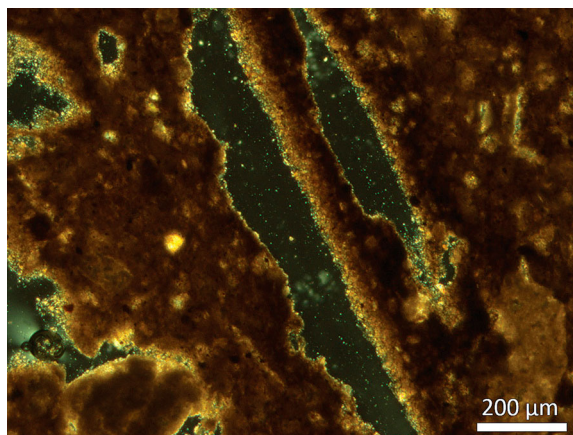


Figure 20. Photomicrograph: elongated voids of burnt-out straw; cross-polarised light (xpl). Photo by Anat Cohen-Weinberger.

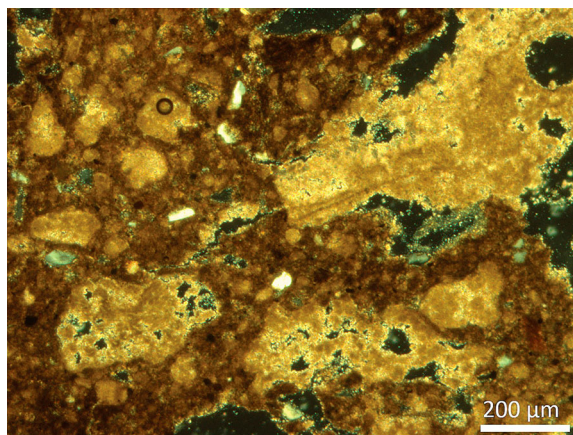


Figure 21. Photomicrograph: calcareous clay with poorly sorted tufa fragments, (xpl). Photo by Anat Cohen-Weinberger.

black clays and marls, with very abundant pisolites and *Melanopsis* shells (Horowitz 2001: 547; Shaliv et al. 1991). This tufa-rich marl was mostly used for the locally produced Egyptian, as well as Canaanite, pottery at Bet She'an during the 19th–20th dynasties (e.g., Cohen-Weinberger 1998; 2009).

Conclusions derived from the petrographic analysis

The petrographic results strongly suggest that the Tel Shaddud clay coffin was manufactured in the Bet She'an Valley and, therefore, must have been transported from there to Tel Shaddud, some 43 km to the west. The effort taken in the transportation of such a heavy, and relatively fragile, clay coffin for burial purposes must stem from shared, deep-seated funerary customs; we believe this can probably be attributed to individuals working with the Egyptian administration in the area (see further below).

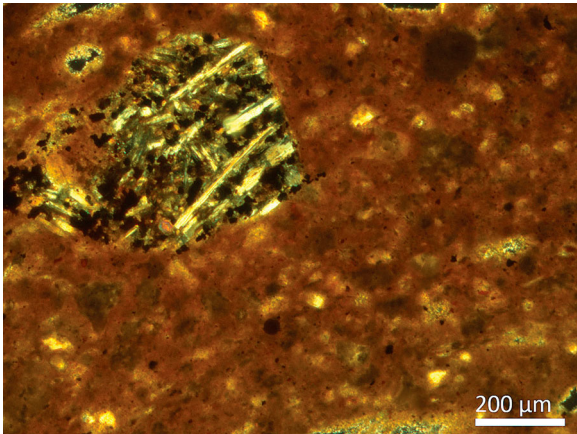


Figure 22. Photomicrograph: basalt fragment embedded in calcareous clay, (xpl). Photo by Anat Cohen-Weinberg and Clara Amit, courtesy of the Israel Antiquities Authority.

Contents of the coffin

The human skeletal remains

The front of the clay coffin, which was cracked in many places by the sheer weight of the backfilled soil in the burial pit, and post-depositional overburden, was found caved in (Figs 4–5). After careful removal of the fractured anterior and its lid, the remains of a single, male individual, were exposed inside the coffin. The bones were anatomically articulated, indicating a primary burial. The deceased had been placed in supine, extended position, oriented east–west, head to the west, facing north (Figs 24–25). It is unclear, however, whether the face was intentionally turned towards the north or if this orientation resulted from post-depositional processes. The arms were stretched alongside the body.

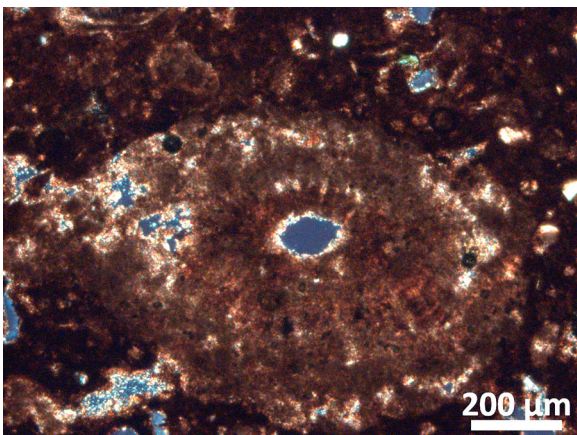


Figure 23. Photomicrograph: tufa fragment with pisolitic appearance, (xpl). Photo by Anat Cohen-Weinberger.



Figure 24. Tel Shaddud, Area A, Sq.A2, L112. Primary burial inside clay coffin. Photo by Dan Kirzner.

The pelvic bones are mostly deteriorated, as are the long bone epiphyses. Yet, the distal end of the left humerus was measurable: the epicondylar width is 60 mm, an intermediate figure between the mean values for male and female skeletons (Bass 1987: 151).

The glabella and left eyebrow region are fragmentary. However, the right eyebrow, the mastoid process, and the superior nuchal line are relatively pronounced — morphology indicative of a male. The sagittal suture shows closure at some points, indicative



Figure 25. Tel Shaddud, Area A, Sq.A2, L112. Primary burial inside clay coffin. Detail. Photo by Dan Kirzner.

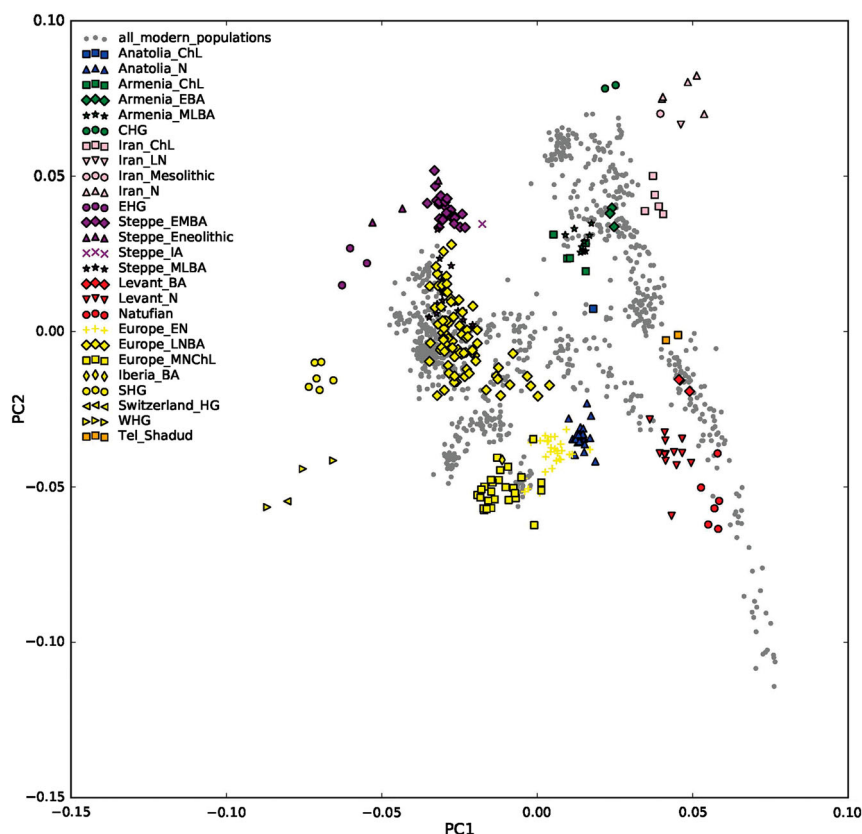


Figure 26. The PCA from Lazaridis *et al.* (2016) with the Tel Shaddud individuals projected against the published data for West Eurasians. Photo by Eadaoin Harney.

of an individual aged >35 years (Hershkovitz *et al.* 1997). Upper teeth include a central incisor and canine showing attrition of approximately half of the crown in height; the lateral incisor shows a deep dentine cup; the first molar shows attrition of more than half the height of a crown, as well as root attrition. The lower jaw includes, on the right side, the first molar, which shows attrition of approximately half the height of the crown. At the left side, the incisor shows a deep dentine cup; the second premolar shows a deep dentine cup at one cusp; the second molar was lost *ante mortem*; the third molar shows dentine exposure at three cusps. Age at death, based upon tooth attrition rate, is estimated as 50–60 years (Hillson 1993).

Ancient DNA analysis of the coffin burial and one of the pit burial remains

Genetic analysis using ancient DNA was attempted on skeletal remains of three of the individuals exposed in Area A, Square A2 at Tel Shaddud: the petrous bone of the temporal bone from L112 (the coffin burial), and lower molar teeth from pit burial individuals L125 and L126. For ancient DNA processing, the methods used are those described in Lazaridis *et al.* (2016). Here we

present some summary results on the two samples that passed the quality control process (see Lazaridis *et al.* 2016). The full genetic analysis will be presented elsewhere.

The sample from individual L112 (the petrous bone from the coffin burial) gave high quality data, with each targeted position covered by an average of 1.15 sequences. The individual was genetically male. The sample from individual L126 (a lower molar tooth) gave low quality data, with each targeted position in the genome covered an average of 0.028 times. This individual was also genetically male.

Principal Components Analysis of L112 and L126 was carried out within the framework described in Lazaridis *et al.* (2016). This analysis showed that the two individuals cluster genetically, with similar estimated proportions of ancestry from diverse West Eurasian ancestral sources (Fig. 26). These results are consistent with the hypothesis that they derive from the same population, or alternatively that they derive from two quite closely related populations. To the limits of our current resolution there is no indication of any sub-Saharan African genetic material in either of these samples. The genetic analysis was also able to determine that they are not relatives within the first, second, or third degree.

Funerary gifts

The offerings placed near the deceased inside the coffin include a bronze dagger at the right-hand side of the burial and a drinking bowl found upside-down on the chest (Fig. 25); a steatite scarab set on a silver ring was found near the left hand (Fig. 31, see below). Also present were a silver earring and small pottery vessels originally containing liquid and solid commodities. The latter include a small, cup-like bowl and two stirrup jars (one found at the left arm).

Metal finds

A bronze bowl (L111/B1116) was discovered upside down on top of the deceased's chest, and a dagger (L111/B111 4) was lying alongside the right upper arm, pointing toward the lower limbs (Fig. 25).

The bowl has a concave disc base, a deep lower curve and a rim that has a flat top and a pointed edge. Since the bowl has not yet been cleaned, it is impossible to determine whether it belongs to Group 4 or 5 in Gershuny's (1985: 5–7, pls 4, 5) classification of the bronze bowls from Israel. Bowls of Group 4 are fairly common: examples were recorded in a LB tomb at Sahem in Jordan (Fischer 1997: fig. 28, 5) and several from LB tombs at Jatt (Artzy 2006b: fig. 2.1, 6–11).

The fabric remains adhering to the base of the bowl and one side of the dagger indicate that the body had been wrapped in textile (see below). Similar occurrences of fabric remains visible within the corrosion of metal artefacts, indicative of a textile cover (or shroud) of the body, have been detected at other sites e.g., in the cemetery at Tell es-Sa'idiyeh (Tubb

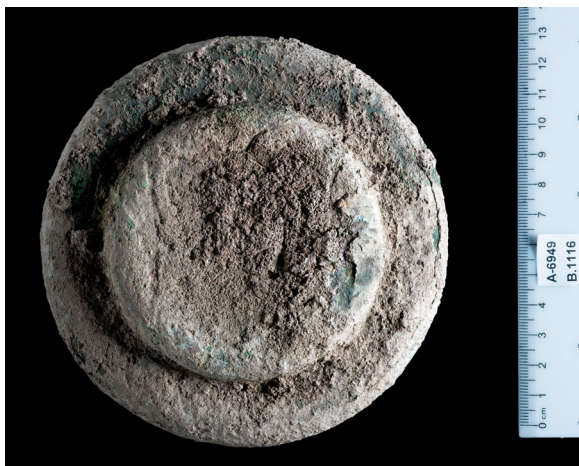


Figure 27. The textile on the base of the bowl. Photo by Clara Amit. Courtesy of the Israel Antiquities Authority.

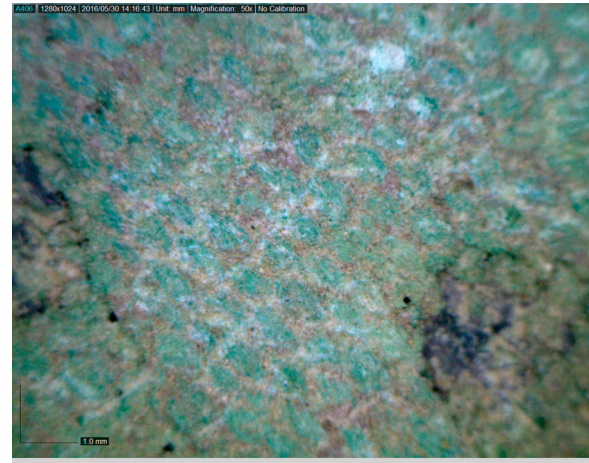


Figure 28. The textile on the base of the bowl (close-up). Photo with Dino lite, ×50, by Naama Sukenik.

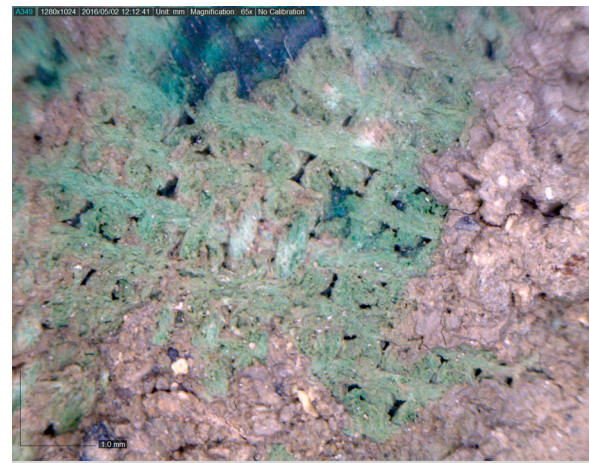


Figure 29. Fragment of textile on the base of the bowl. Photo with Dino lite, ×65, by Naama Sukenik.



Figure 30. The textile on the dagger. Photo by Clara Amit. Courtesy of the Israel Antiquities Authority.

1988: 48); bowls placed upside down over the face or the genitals of the deceased are also recorded at this cemetery.



Figure 31. Tel Shaddud, Area A, Sq A2, L112. Scarab with name of Seti I (*mn-m3't-r*). Drawing by Carmen Hersch, photo by Clara Amit. Courtesy of the Israel Antiquities Authority.

The dagger (length *c.* 28.5 cm) has a long tang (*c.* 10 cm), broad sloping shoulders (width *c.* 3.8 cm), and a blade with irregular edges, a flat mid-rib, and a wide rounded tip. The dagger shape and measurements conform to Type 2B of Shalev's (2004: 13–15) dagger classification. This type is indigenous to, and widespread in the region, mainly in occupation levels, and its peak extended from Late Bronze IIA to Late Iron I. Examples from recent excavations, and thus not included by Shalev (2004), comprise one from a LB tomb at Sahem in Jordan (Fischer 1997: 70, fig. 27, 5) and from Tomb 100 at Tell Beit-Mirsim (Ben-Arieh 2004: fig. 2.45, 133).

The textile remains

Introduction

Pieces of textile were observed adhering to the copper alloy bowl and dagger described above (Lena Kuperschmidt, pers. com.). The textiles belong to a category of organic materials that are rarely found in archaeological context since, under normal deposition conditions, natural fibres are readily perishable. Their preservation requires particularly favourable environmental conditions that prevent their destruction by micro-organisms, such as extreme dryness or extreme cold (Strand *et al.* 2010: 51–152). Plant fibres have been recovered in

a Mediterranean climate only, in association with metals such as copper in the process of mineralization (Chen *et al.* 1998), as is the case presented here from Tel Shaddud.

Methodology

Examination and study of the textiles, after conservation treatment of the two metal objects, was carried out by Raisa Vinitzky in the laboratory of the Israel Antiquities Authority. The textiles were examined microscopically using a Dino Lite at x60–x70 magnification throughout the physical treatment, in order to extract the maximum amount of possible information.

Results of examination of the textile remains

The textile on the bowl (L111/ B1116) was observed only on its base (Fig. 27), but for one other additional spot midway on the exterior wall of the bowl. Despite poor preservation conditions, microscopic examination revealed that the textile covered most of the base. The fibres of the textile were identified as flax (*Linum usitatissimum L.*) and the threads were made in S-spun (clockwise direction), a common technique in Israel, attested since the Neolithic period; it coincides with the natural spin direction of flax fibres (Shamir and Rosen 2015: 136; Yadin 1963: 252). The textile is warp-faced tabby weave (Fig. 28), where the number of warp threads per centimetre is significantly higher than the number of wefts, as is typical for linen textiles (Yadin 1963: 253–54). The number of threads per cm amount to 19 threads in the warp, but the weft threads were impossible to count. In one place the weaving is very loose (Fig. 29): this was probably caused by stretching of the textile, and, as a result, of the general poor preservation. The textile appears thick and the width of the thread is 0.5 mm.

The textile on the dagger (L111/B1114) was observed on one side only, covering an area of 6.2 cm × 2 cm (Fig. 30). It was in very poor condition and even less well preserved than the bowl textile. It was also made of linen in warp-faced tabby weave, just like the bowl textile. The textile also appears thick, with a width of the thread of 0.5 mm and although the spin direction and the count of the threads per centimetre could not be recorded, it can be determined that it is part of the same textile found on the bowl.

Discussion of textile examination

Linen is a plant fibre derived from the stalks of the flax plant *Linum usitatissimum L.*, characterized by strong, flexible fibres that can reach a length of over 120 cm

(Kislev *et al.* 2011: 579). Linen threads have been used in the southern Levant since the Pre-Pottery Neolithic B and flax became a popular raw material in textile production throughout the southern Levant and the world (Forbes 1964: 27; Shamir 2015; Zohary *et al.* 2013: 103–06).

It is hard to know the exact origin of the Tel Shaddud fibres and where the textiles were made, but we can rule out the possibility of an Egyptian importation. Egypt had a highly developed linen industry, and its textiles are characterized by much thinner threads and a higher degree of weaving density (Hall 1986) than that observed in the textiles found at Tel Shaddud. From the weaving quality we may assume that the textile was locally made and purchased from one of the weaving centres in Israel where flax was grown intensively, like in the Jordan Valley at sites such as En-Gedi, Jericho or, perhaps not unimportant in the present context, in the Bet She'an Valley (Shamir and Rosen 2015: 327), a major centre of production of fine linen (Boertien 2013: 37; Shamir 2015: 13). In the excavations at Tel Bet She'an, a million charred flax seeds were found dating to the early Iron Age (Kislev *et al.* 2011). Tiny fragments of linen were found in Bet She'an dating to 13th century BC (Shamir 2009).

Given that the textile covered only the base of the bowl and one side of the dagger, and that the bowl was found upside down on the chest bones (see Fig. 25) suggests that these metal items had been placed in the clay coffin under a linen cover. It can be assumed that the original linen textile had been used as a shroud and that it had covered the deceased together with the metal artefacts. A similar situation was recorded at the Late Bronze Age cemetery of Deir el Balah (some 200 km south-west of Tel Shaddud), where linen textile was found on the base of a metal platter and a mirror, in a similar clay coffin with anthropoid lid (Dothan 1979: 68). Braunstein (2011: 7) recorded that in the cemeteries at Tell el-Far'ah (northern Negev) remains of linen fabric were found adhering to some of the bracelets and earrings found in two graves dating to the LB IIb–Iron Ia (c. 1300–1150 BC). Braunstein therefore suggested that some of the bodies must have been wrapped in linen textile. Similar findings were reported from Gurob and the Matmar Gurob cemetery in Egypt (18th–20th Dynasties, 19th–21st Dynasties, respectively), where one-quarter of the burials had been wrapped in textiles or reed mats (Braunstein 2011: 22). The Tel Shaddud shroud, though made locally, might therefore reflect imitation of yet another aspect of Egyptian burial.

In conclusion, the linen textile remains are an important addition to the archaeological record, because linen finds from the north of Israel are rarely encountered, and the parallels known to us today from the southern Levant dating to the Late Bronze are extremely few in number. These results therefore represent a significant contribution to our knowledge of textiles in the Late Bronze Age and also extend our understanding of mortuary practices.

The scarab

The scarab measures $1.8 \times 1.4 \times 0.8$ cm. It is made of steatite and was originally glazed, but like most scarabs found outside the dry climatic conditions of the Nile Valley, the glaze has worn off (Fig. 31). The scarab is set in a gold mount with collars at both ends, the latter enfolding tips of the wire threaded through the scarab, indicating that the scarab had formed a bezel of a ring; most probably the silver ring found slightly distanced from it. Both the scarab and the ring were found close to the left hand of the deceased, and may have adorned one of the fingers.

The base of the scarab displays an unusual variation of the throne name of Seti I: *mn-m3't-r'* (Eternal is the Justice of Re), presenting a flattened form of the sun disk (Re) protected by the wings of a uraeus, and a phonetic complement *n* following the sign *mn*. No published scarab showing this particular version of the throne name of Seti could be identified. Nevertheless, a winged uraeus protecting the same flattened form of the sun disk is typical of scarabs of the early Ramesside period, usually in association with a royal or a divine sphinx (Giveon 1985: 32–37, nos 34, 35, 39; Hornung and Staehelin 1976: no. 322; Keel 2010: 813, no. 811). The features of these scarabs are typical of the 13th century BC, and examples frequently display the name of Ramesses II (Ben-Tor 1989: 48, nos 1–2, 6; Giveon 1985: 28–29, nos 19, 21; Hornung and Staehelin 1976: nos 402, 405; Keel 2010: 269, no. 560). The back-type of the Tel Shaddud scarab is also typical of this period (Ben-Tor 1989: 64, no. 24; Giveon 1985: 29, no. 23; Keel 2010: 263–351, nos 549, 565, 762).

The scarab was in all likelihood produced during the reign of Seti I, yet the question of the absolute date of the coffin cannot be based on the scarab, which merely offers a *terminus post quem*.

Funerary gifts positioned outside the coffin

A bovine skull was exposed on top of the coffin-lid (Figs 7–8), while additional cattle, sheep, pig and fish bones were found dispersed on top of (Fig. 5) and around the coffin; some were found within

bowls, and were clearly intended as food provisions for the deceased in the afterlife. A small group of wine amphorae, some with a dipper juglet inside and sealed with a bowl turned upside-down, had been deposited behind the footboard of the coffin (Figs 32–33). The pottery vessels further included some cult-related items: few lamps, braziers, a stirrup jar and chalices with soot marks.

Associated pit burials

Notably, less than 3 m to the south-east of the coffin, three additional burial pits were found (Fig. 34), all showing the same east–west orientation as the coffin (Fig. 35) and probably, therefore, associated with it. One burial pit contained two superimposed, antithetical-deposited individuals (Locs 124 and 128): individual L128 was placed first, in supine elongated position, in the burial pit, head orientated north-west, feet



Figure 32. Two amphorae, the up-side-down top part of a chalice and a juglet deposited in the burial pit, near the footboard of the coffin. Photo by Dan Kirzner.



Figure 33. Dipper juglet found on the bottom of one of the amphorae. Photo by Dan Kirzner.



Figure 34. Four human burials close to the coffin burial. Photo by Ron Beeri.

south-east; individual L124 was placed resting on top of individual L128 in the same position, but with reversed orientation — head facing south-east, feet north-west (see Fig. 34). Another pit burial (L126)

was marked by a large mudbrick placed above the head of the deceased. Like the coffin burial, these four individuals were interred in supine, extended position, with arms stretched alongside the body. Another



Figure 35. Square A2, an overview, showing the position of additional burial pits in relation to the clay coffin's original position. Photo by Ron Beeri.

similarity to the coffin burial is that the head of one of the deceased (L126) was positioned to the west, towards the sunset, the main burial orientation in New Kingdom Egypt (Raven 2005: 40, 52), whereas the heads of the other three individuals were at the east.

The human burial remains

L124. The remains found in burial pit L124 include an anatomically articulated skull and postcranial bones, indicative of primary burial. The deceased was placed on its back, oriented east–west, head towards the east. The arms are stretched alongside the body (Fig. 24).

The skull was extremely fragmentary. However, the mastoid process is relatively low, the lower jaw is pointed at the chin and the bones are generally gracile: characteristic of a female individual. The vertical diameter of the femoral head is measured as 40 mm (right side), indicative of a female (Bass 1987: 219). Upper teeth: the central incisor shows attrition of above half crown's height at its lingual aspect, the canine shows a deep dentine cup. The lower premolar shows dentine exposure at both cusps. Age at death, based on tooth attrition stages: 40–50 years (Hillson 1993).

L125. The remains found in burial pit L125 include an anatomically articulated skull and postcranial bones, indicative of primary burial. The deceased was placed on its back, oriented east–west, head towards the east. The arms are stretched alongside the body.

In the skull, the glabella and supraorbital ridge are not pronounced, something that is indicative of a female. The coronal suture is still open, characteristic of an individual aged <40 years (Hershkovitz *et al.* 1997). The lower jaw: the ascending ramus is gracile, showing a morphology characteristic of a female individual (Loth and Henneberg 1996). Two incisors show dentine cup, the canine shows dentine exposure, the second molar shows dentine exposure at one cusp, the third molar is erupted. Upper teeth: the central incisor shows deep dentine cup, the premolar shows dentine exposure at both cusps. Age at death, based on tooth attrition stages: 30–40 years (Hillson 1993).

L126. The upper part of this skeleton, exposed in burial pit L126, lies underneath the south baulk of Sq. A2 and therefore could not be exposed. The excavated remains include anatomically articulated postcranial bones of the lower half of the skeleton, indicative of primary burial. The deceased was placed on its back, oriented east–west, head towards the west. The arms are stretched alongside the body, the fingers show fused epiphyses, indicative of an adult individual (Johnston and Zimmer 1989). In the

pelvis, the auricular surface shows clear horizontal arrangement, and no changes are noticed at the apex, therefore indicating an individual aged <30 years (Lovejoy *et al.* 1985). The vertical diameter of the femoral head is measured as 46 mm (right and left), indicative of a male (Bass 1987: 219).

In a later episode of the excavation, teeth were taken out for DNA studies (see above). These teeth were not touched by hand. The upper lateral incisor shows dentine exposure, the upper first molar shows dentine cup in three cusps, the upper premolar shows dentine exposure at both cusps. Age at death, based upon tooth attrition stages, was estimated as 25–35 years (Hillson 1993: 176–201).

L128. Underneath skeleton L124 human remains were found that included an anatomically articulated skull and postcranial bones, indicative of primary burial. The deceased was placed on its back, oriented east–west, head towards the east. The arms are stretched alongside the body.

The frontal bone manifests pronounced glabella and brow ridges, indicative of a male individual. In the pelvis, the iliac crest is fused, indicative of an individual aged <20 years (Johnston and Zimmer 1989). The vertical diameter of the femoral head is measured as 47 mm (right and left), also indicative of a male (Bass 1987: 219). No cribra orbitalia was found at one available orbital roof.

Associated funerary gifts

In comparison to the coffin burial, the funerary equipment of the four nearby burials was significantly more modest, and included only a few pottery vessels per individual.

The sequential order of deposition of the funerary gifts pertaining to the four pit burials can be divided into two stages, in analogy with the coffin burial, where offerings were placed inside the coffin, simultaneously with the actual deposition of the deceased, and separately on and outside the coffin, after sealing of the coffin by putting the lid in place. In the case of the simpler pit burials, the two stages are gifts that were simultaneously deposited alongside the deceased in the burial pits, and funerary offerings that were placed on top of the burials, after the pits had been backfilled.

Simultaneous offerings

Dishes and a dipper juglet, as well as a flint sickle, were recovered from the pit burials adjacent to the coffin. Notably, a small ceramic flask was placed on the left arm of each of the deceased buried in the pits, in analogy to the stirrup jar that had been placed on the left arm of the coffin burial. These flasks and

their original contents were intended to serve the deceased in the afterlife. The fact that these were found on the left arm of each individual indicates shared funerary customs.

Post-burial offerings

Additional offerings were placed on top of the back-filled burial pits (Fig. 36). These included meat offerings, dishes, bowls and jars, and some cult-related items, including lamps, bowls and chalices with soot stains. One jar was found sealed with a lamp (L105), while a dipper juglet was found inside another jar. These vessels were probably used for libation, burning incense, a funerary meal and for reciting invocations after covering the deceased with soil during, or perhaps after, burial. The tall jars supposedly also marked the location of the graves, according to their position over the head or feet.

Dating the coffin and associated pit burials

Considering the archaeological contexts of clay coffins with anthropoid lid found elsewhere in the southern Levant (see above), the Tel Shaddud coffin most

likely dates within the range of the late 13th/early 12th century BC. With the analysis of the pottery not yet fully concluded (cf. n. 3), we cannot be more precise at this stage. The pottery assemblages associated with all four pit burials seem typical of a rather late phase within the LB IIb, and apart from some small containers (flasks and stirrup jars), all vessels are plain and undecorated. The scarab of Seti I constitutes a *terminus post quem* for the coffin burial's assemblage and, by indirect association, for those of the other pit burials.

An additional LB II burial at Tel Shaddud

In the 1970s another LB II grave was discovered by chance some 10 m north-east of the present excavation site, Area A (see Fig. 2). It was severely damaged during unsupervised mechanical excavation of a pit for the foundations of a tall electricity pole (Arie 2011: 263–64, figs 9.4.2, 4–8; Raban 1979: 30). It consisted of a burial chamber built with inclined stone walls, sealed with stone slabs. The deceased, possibly also having been covered by a textile, had been placed on a stone bench constructed on the floor of the tomb. Most of the tomb's contents were destroyed or robbed during the operation. Avner Raban was able to salvage several pottery vessels (jars, a flask, a Mycenaean pyxis) and a bronze spearhead from inside the mechanically dug pit. These items (Arie 2011: fig. 9.4.2, 4–8) are contemporary with, or possibly slightly earlier than, the funerary gifts found in association with the burials in Area A, Sq. A2. The location of this stone-built tomb (Fig. 2: Area A, below the electricity pole) corroborates our assumption that the LB II cemetery of Tel Shaddud extended over a larger area along the south-eastern slope of the tell than has been examined thus far.

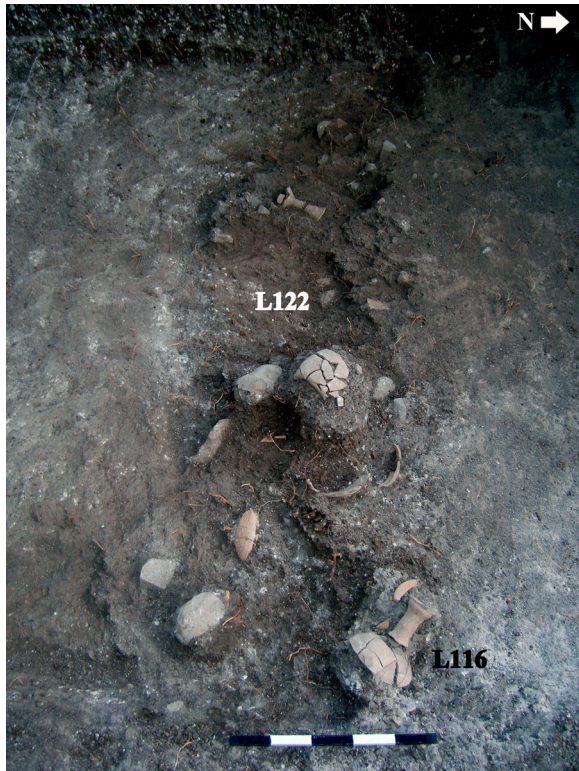


Figure 36. Partial exposure of burial pit L122 with various funerary offerings (L116), i.e. chalices, bowls and lamp deposited above it after the actual burial pit had been sealed. Photo by Ron Beerli.

Table 1. Spatial associations of the mortuary fauna in Area A.

Species	Fauna Associated with the Clay Coffin		Fauna Associated with the Non-Coffin Burials	
	NISP	NISP %	NISP	NISP %
Cattle (<i>Bos taurus</i>)	115	62.5%	5	50%
Caprine (<i>Ovis/Capra</i>)	66	35.9%	3	30%
Pig (<i>Sus scrofa</i>)	2	1.1%	2	20%
Fish, Nile perch (<i>Lates niloticus</i>)	1	0.5%		
Medium-sized Mammal	57		13	
Large-sized Mammal	12		6	
Unidentified	309			
Total Identified	184		10	
Total Assemblage	562	100.0%	29	100%

Fauna associated with the coffin and non-coffin burials

The animal remains from Area A, Sq. A2 were introduced as mortuary offerings. They can be conceptualized as belonging to two main spatial categories: offerings associated with the anthropoid clay coffin, and those that are associated with four other nearby contemporary pit burials (Table 1). The largest of the two zooarchaeological assemblages is associated with (in, on, and around) the coffin, yielding a total of 562 animal bones. An additional assemblage of 29 bones was spatially linked to the non-coffin burials. This preliminary investigation of the fauna focuses on the animal remains spatially associated with the clay coffin. The animal bones from Tel Shaddud were made available for zooarchaeological analysis during the summer of 2014.

Most of the animal remains are from common domestic stock, indicating their selection from readily available herds. The most abundant animal in the assemblage (NISP 115; 62.5%) was cattle (*Bos taurus*). Sheep (*Ovis aries*) and goats (*Capra hircus*) represent the next most common animals (NISP 66; 35.9%). Identifying the distinctions between caprines (sheep and goats) was assisted by Boessneck (1969), Halstead and Collins (2002), Payne (1985), Prummel and Frisch (1986), Zeder and Lapham (2010) and Zeder and Pilaar (2010): Sheep were the only positively identified caprine associated with the coffin, but given the morphological and metric similarities between them, it is entirely possible that goats were also included in the mortuary proceedings. Pigs (*Sus scrofa*) represent a minor component (NISP 2; 1.1%) of the funerary rites.

The fusion rates of post-cranial remains were assessed (based on Silver 1969) to better understand slaughter schedules. Although data collection is still in the preliminary stages, a total of 43 bones yielded relevant aging data. The ratio of fused to unfused bones was considered for cattle (25 fused; 6 unfused), caprines (9 fused; 1 unfused); and pigs (0 fused; 2 unfused). With so few unfused articular ends it suggests that the inclusion of juvenile animals in the funerary ritual was either, not a priority, or was not possible. Some younger specimens present in the collection were identified not only by their unfused epiphyseal ends, but also by their dentition that features premolars and molars with relatively little attrition (Payne 1973), as well as teeth that had not yet fully erupted. However, mature animals were more commonly included in the rites, a practice that seems to have been applied to multiple animal species.

The skull of a large mammal (L102, B1079), which was not available for initial study, but which will be the subject of future analysis, was found on the lid of the coffin (Figs 7–8). More specifically, the skull (possibly that of a cow or a bull) was positioned near the top or head area of the coffin and to the immediate right side of the coffin's anthropoid face. Although the skull was found facing west, whether it had fallen and eventually settled to assume that position, or if its orientation was the result of purposeful placement is unclear. Based on its general morphology, size and apparent stages of dental eruption, the animal is not a juvenile, being either a sub-adult or adult at the time of its death. Found lying on its right side, the skull was associated with both halves of its mandible which were lying in correct anatomical orientation (facing west) and position (below the skull), thus demonstrating the inclusion of the entire decapitated head of the animal.

Additional evidence that some animal parts were not haphazardly tossed in, but may instead reflect deliberate interment, is the lower hind leg of a *Bos* (Fig. 37a–c) found in a layer above the coffin. This



Figure 37. (a) Hind leg bones of cattle found above the coffin (b) Lower hind leg bones of cattle with phalanges and distal metatarsal and (c) Lower hind leg bones of cattle with proximal metatarsal and tarsals. Photo by Edward F. Maher.

limb segment consists of ten complete and intact elements, including tarsals (astragalus, calcaneum, naviculo-cuboid), a metatarsal and phalanges. Along with the fragment of a proximal tibia of *Bos* from the same side of the body (not in photo), these hind limbs were all discovered within the same locus of excavation and likely represent a joint of meat (hind quarters?) consisting of both meaty and non-meat bearing parts. The fused distal metatarsal, unfused calcaneum and unfused proximal tibia mark the animal's death at between 36–42 months old.

A more fine-grained approach to the spatial distribution of the mortuary fauna can be considered by the fact that there were animal bones found inside, as well as outside, the clay coffin. Most of the animal offerings associated with the coffin were found inside the coffin (NISP 411 bones) of which 144 (35%) were identifiable. Fewer animal bones (NISP 151) were found above or outside of the coffin, of which 40 (26.5%) were taxonomically recognized. The slightly higher rate of species identification of the bones within the coffin may be due to its clay body, which would have partially protected the animal offerings from taphonomic loss due to post depositional stratigraphic disturbance. The two assemblages associated with the coffin (interior and exterior) seem to vary in that pigs and fish were only found in exterior areas; they were not found inside the coffin. In addition, although the coffin interior does contain caprines, sheep remains were only identified in layers above the coffin. It should be noted that goats were probably incorporated as mortuary offerings more readily than can be demonstrated zooarchaeologically. Alternatively, rather than an illustration of an ancient ritual, this apparent spatial pattern may instead reflect the relatively small sample size of the mortuary zooarchaeological remains.

Very few animal bones bore evidence of cultural modification. Two cattle bones, a carpal and a distal tibia, had cut marks that were inflicted during general dismemberment of the carcass. One additional unidentified bone fragment also had cut marks. All three cut marked bones were found outside the coffin. No butchery marks were found on caprine or pig remains, nor on any animal bone inside the coffin. Again, the sample size of the zooarchaeological assemblage may have contributed to this apparent spatial pattern.

None of the animal remains were burned and there is no evidence that the interred animal bones were cooked. In addition, there was no evidence for trauma or pathology on the bones of these animals. Perhaps a specimen's health status represented an

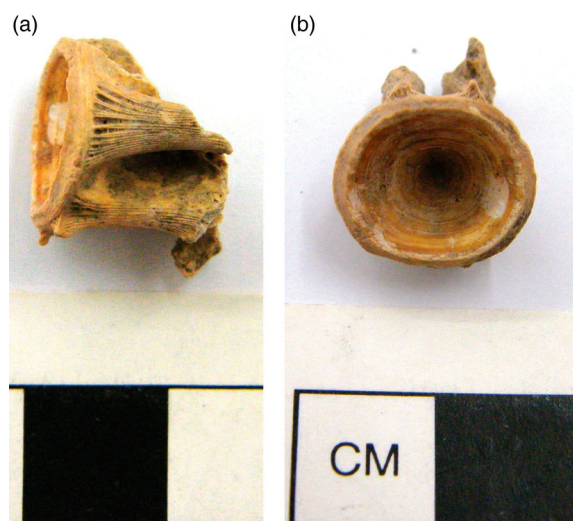


Figure 38a–b. Fish caudal vertebra fragment, Nile perch (*Lates niloticus*) from Square A2, Locus 102 Basket 1015. Photos by Edward F. Maher.

important consideration when animals were selected from the living herd for inclusion in the mortuary ritual. It should be noted that many illnesses in animals seem to be age specific and are limited to juveniles; parasitic and bacterial agents do not represent the same threat to mature adults (Baker and Brothwell 1980: 27). Thus the high proportion of mature animals in the assemblage may help to explain the lack of evidence for pathologies.

The caudal (tail section) vertebra of a Nile perch (*Lates niloticus*) was found in a layer above the coffin (Fig. 38a and b). This is of particular interest since this fish is not a local species and was probably acquired from distant markets in Egypt. Although *Lates* appear at many Bronze and Iron Age sites throughout the Near East (e.g., van Neer *et al.* 2004), this represents one of the few instances where *Lates* was included as a funerary offering in the southern Levant. So, as far as the author (EFM) is aware, the only other example of Levantine mortuary Nile perch (*Lates*) was discovered in Tomb 1 from the Late Bronze Age at Tel Dothan (Lev-Tov and Maher 2001: 97).

The animal bones from archaeological layers sometimes exhibit contact with terrestrial or avian scavengers. Evidence of such bone modification is due to feeding patterns that include tooth marks, canine punctures and even partial digestion (evidenced by pitted, polished and even shrivelled surfaces, or thinned and eroded shafts with jagged edges) in which the bone is evacuated from the body of the carnivore or raptor (see Brain 1981; Davis 1987; Horwitz 1990; Maher 2006/2007; Payne and Munson 1985). In

addition, the gnaw marks of small rodents often appear on the exterior surface of animal bones. The absence of any evidence of scavenger access or rodent gnawing suggests that the coffin had been sealed relatively quickly, and that the pit filled in soon after the ritual had concluded.

Summary of the faunal remains

The fauna associated with the clay coffin in Area A suggest the deployment of certain selection protocols that required the interment of whole, or partial, body parts of domestic species, very few of which were from juvenile specimens, that were apparently of good health with no evidence of trauma or illness. Species identification and cultural modification that suggest any manner of spatial patterning may represent tangible aspects of the funerary ritual, or they could simply reflect the relatively small size of the animal bone sample. The inclusion of an imported commodity (Nile perch) acquired from a distant source may emphasize the special nature of the funerary deposits.

Discussion

Comparison of the Tel Shaddud clay coffin and its burial context with those found elsewhere in the southern Levant

To date seven sites in the region are known to have yielded clay coffins with anthropoid lids, or fragments thereof, dating to the Late Bronze or Early Iron Ages. Apart from Tel Shaddud (1 coffin) and Deir el-Balah (c. 50 coffins), similar examples have been retrieved from Tel Bet She'an (c. 50 coffins), Tel Midrash (1 coffin fragment), Tabakat Fahel -*Pehelu* (Pella; at least 3 coffins), Tell el-Far'ah south (3 coffins) and Lachish (2 coffins).⁷ In very general terms, their dates range from the late 14th–the early 11th centuries BC. According to Dothan (1979: 103) the earliest clay coffins derive from Deir el-Balah, and date to the late 14th century BC. A second group of coffins from Deir el-Balah, Bet She'an and Tell el-Far'ah (South; Tomb 935) is ascribed to the 13th–early 12th centuries BC (Dothan 1979: 101–03; Oren 1973: 139–42 with further references). The coffin burial from Tel Shaddud appears to fit this particular time slot. Tomb 570 from Tel Lachish and several coffins from Tell el-Farah south and Tel Bet She'an can be ascribed

to the final phase of the 13th–early 11th century BC (Dothan 1979: 103; Oren 1973: 130; Tufnell 1958: 131–32, 248–49, pls 45–46). The relevant tomb structures at Tel Bet She'an, Tabakat Fahel, Tell el-Far'ah south and Tel Lachish are different from the tombs of Tel Shaddud and Deir el Balah. The tombs of the first three sites concern graves cut into bedrock, which were used for multiple burials; possibly close relatives. At Tell el-Far'ah south access to the tombs was obtained by means of a staircase hewn in the rock, opening into a roughly square tomb-chamber. Two of the tombs had been enlarged by the addition of a smaller chamber also square in the rear (Petrie 1930: 8, pl. XIX). The same applies to Beth-Shan⁸ (Oren 1973: 9–10, 12–17, 101–03; Rowe 1930; Yassin 1975: 59–60) a group of similar tombs were also found at Tabakat Fahel-Pella (Yassin 1975: 60, 62). The relevant Lachish tombs are not quite the same, but tombs of this type were found in Lachish (Yassin 1975: 60 based on Tufnell 1953: pl. 126; 1958, 248–49, fig. 10). Most burial offerings in these hewn tombs were placed next to the deceased. The orientation of the burials in these sites was not uniform; in many of the tombs, moreover, the burial orientation was not properly documented by the excavators. In contrast, the tombs of Tel Shaddud and Deir el-Balah were pit graves excavated in areas where bedrock outcrops are absent, resulting in a different tomb layout and disposition of burial offerings (and see below).

As discussed above, the Tel Shaddud coffin was apparently manufactured in the vicinity of Tel Bet She'an, which was an Egyptian administrative centre during the 18th–20th Dynasties. Segments of c. 50 clay coffins with anthropoid lid were found here, distributed over 11 tombs in the 'Northern Cemetery' (Oren 1973: 101, 132). These had been plundered in antiquity, and the bones and objects they once contained were discarded, and their immediate archaeological contexts lost. Most of Bet She'an coffins are of the cylindrical type with a lid that has facial features depicted in a 'naturalistic' style, similar to the Tel Shaddud coffin. A few have grotesque masks on their lids.

In addition, the assemblages of the individual artefacts associated with the anthropoid coffins of both sites — as well as Deir el-Balah — appear to be homogeneous and trustworthy from a chronological standpoint. The objects that were deposited with the deceased include mainly locally manufactured serving bowls, dipper juglets, lamps, stirrup jars and flasks.

⁷For relevant data from Deir el-Balah, see, e.g., Dothan 1979; for Tel Bet She'an, cf. Oren 1973: 139ff, figs 12, 53:4, 80 (Tomb 66); figs 9, 52:1–4, 78–79 (Tomb 90); Rowe 1930: 23, 39–40, pls 37–40; for Tel Midrash (east of Bet She'an; surface find), see Oren 1973: 140; Zori 1962: 170; for Tell el-Far'ah south, cf. Macdonald et al. 1932: 25, pl. LIII; Petrie 1930: 6–9, pls XIX, XXIV; for Lachish, see Hennequin 1939; Tufnell 1953: 219, pl. 126; 1958: 36, 66, 131–32, 248–49, pls 45–46; For Pella, see Pritchard 1968: 108; Yassin 1975: 60, 62, n.11. Later (i.e., post-LB) coffins found in Sahab, Dibon and Amman in Transjordan, date to the 10th–8th centuries BC and have no bearing on the present discussion (Albright 1932: 295–306; Pritchard 1968: 108; 1969: 381, 851–53; Yassin 1975: 57–68).

⁸Most of the Bet She'an tombs that contained clay coffins are reused shaft tombs, cut during the EB IV period (Oren 1973: 101–02).

However, in the northern cemetery of Bet She'an there were hardly any storage jars, in contrast to the situation in the tombs of Tel Shaddud and Deir el Balah, where jars were placed near each coffin burial.

Deir el-Balah

The fact that the Bet She'an tombs were looted impedes their contextual comparison with the coffin and associated pit burials at Tel Shaddud. The burial protocol at Tel Shaddud can however be compared to those present in the partially contemporary cemetery at Deir el-Balah situated on the coast within the Gaza strip, and located *c.* 200 kms south of the Jezreel Valley. As in the case of Tel Bet She'an, Deir el-Balah is believed to have served as a burial ground for Egyptian soldiers or officials (Dothan 1979: 98–104; 1982: 288).

The Deir el-Balah graveyard covers a large area west of the LB II settlement and the Egyptian fortress (Brandl 2010a; Dothan 1979; 2010; Lipton 2010). The cemetery's main period of use spans the 13th century BC, possibly beginning in the 14th century BC and extending into the 12th BC (Dothan 1979: 3). Some 50 clay coffins (and one made out of stone) were discovered in clusters of three or more, distanced 3–4 m from one another.

Comparing the burial characteristics at Tel Shaddud and Deir al-Balah reveals great similarity between them in many details, despite the distance separating the two sites. These include: burial orientation, nature of the offerings, location of the funerary equipment inside and atop the burial pits, the placement of artefacts of personal grooming inside the coffin with the deceased. The dimensions of the coffin from Tel Shaddud are also similar to those of Deir al-Balah. Simple grave pits containing individuals of both sexes were found next to the coffins at both sites. The burial orientation at both locations is east–west. Contrary to Tel Shaddud, with a single primary burial in the clay coffin, at Deir al-Balah multiple burials (ranging from 2–4 individuals) were deposited inside the coffins (Arensburg and Smith 1979; Dothan 1979; Lipton 2010), a trait that differs from the prevailing contemporary Egyptian burial customs.⁹

Food offerings (indicated by the presence of pottery vessels and animal bones), metal objects, scarabs and

jewellery were found inside the coffins at both sites. These were diverse and rich in comparison to the more unassuming pit graves without coffins that were dug alongside them. Some of the jars at both sites were covered with an inverted bowl, or oil lamp, and frequently contained a dipper juglet on the bottom, originally probably suspended on a string or twig.

The positions of the coffin burials at both sites were marked by jars or unassuming stones that were erected above the head- or footboard of the deceased's coffin. Although the burial ground at Deir el-Balah included dozens of excavated tombs next to each other, they did not encroach upon one another, nor did they cut one another, suggesting their locations were known and remained visible over a considerable period of time. In a manner resembling the burial practices observed at Tel Shaddud, Deir el-Balah Tomb 118 (containing a double burial) and possibly also Tomb 116, revealed flasks or stirrup jars placed on the left arm of the deceased (Dothan 1979: 41, 59, figs 75–76, 94, 119, 138–39).¹⁰

The similarity in many of the funerary details at Deir el-Balah, Bet She'an and Tel Shaddud clearly suggests that this was a *mortuary* population that shared a common funerary belief and burial protocol, and possibly also the same ethnic and geographic background. On an intra-site level, the preliminary results of ancient DNA analysis from Tel Shaddud show that at least two individuals (the owner of coffin burial L112 and one from pit burial L126) shared a local, i.e., non-Egyptian genetic background, albeit without any detectable kinship (at least down to the 3rd generation; see above).

Numerous scholars have suggested that the clay coffins with anthropoid, 'naturalistic' lid found in the southern Levant reflect traditional Egyptian burial costumes and were associated with the burials of Egyptian administrative and military personnel and their family members (Galal and Aston 2003; Gonen 1992: 28–29; James *et al.* 1993: 239; Killebrew 2005: 65, 67; Kuchman 1977–8: 12, 20; Mazar 2011: 176; Oren 1973: 142–46). Other researchers suggest that the LB II clay coffin burials in the southern Levant, as well as some found in Egypt and Nubian sites (see below) were those of local elite members in regular contact with Egyptians (Albright 1932: 301–02; Pouls Wegner 2015; Yassin 1988: 38–40). The data from Tel Shaddud (including ancient DNA analysis) clearly corroborates the latter position (see below).

⁹In the latter part of the New Kingdom, funerary protocol in Egypt emphasized the coffin as the discrete dwelling place for a single individual within a larger mortuary community reflected in group burials (Cooney 2011: 18 and references cited therein). For this reason, burial of more than one person in a single coffin, as was the case in Deir el-Balah, was not acceptable (Cooney 2011). Although the interment of more than one individual in the same grave or burial chamber occurred with increasing frequency in Egypt during the New Kingdom, in such contexts each individual was provided with his own anthropoid coffin (Pouls Wegner 2015: 303, 307).

¹⁰Another flask, found near the head of the deceased, was uncovered in an anthropoid clay coffin from Tell el-Yahudiya (Tomb 24; Petrie 1906: 16). Petrie makes reference to the presence of a pottery coffin in Tomb 24, although he didn't illustrate it in his report.

Comparison of the Tel Shaddud clay coffin with exemplars from Egypt

The custom of primary burial of individuals (usually mummified) in anthropoid coffins originated in Egypt during the 12th Dynasty and continued well into the New Kingdom (Bourriau 2001; Ikram and Doson 1998: 166–57). Coffins for the middle class were usually made of wood and cartonnage, whereas stone coffins were reserved for members of the royal family and their followers. Burial in anthropoid clay coffins was unusual during this latter period but did occur, mainly in the Nile Delta and in Nubia (Dothan 1982: 279–87; Oren 1973: 142–46 and references sited therein; Pouls Wegner 2015).

The similarities between some of the LB II Canaanite and Egyptian burial customs vis-à-vis anthropoid clay coffins have been discussed extensively in the past by scholars including: Albright (1932: 295–306), Cotelle-Michel (2004: 197–206); Dothan (1979: 100–04; 1982: 279–88); Oren (1973: 142–46); Wright (1959: 57–66); Yassin (1975) and, most recently by Pouls Wegner (2015: 292–311).

Seventy-three anthropoid clay coffins dating to the 18th–20th Dynasties, some containing imported, Canaanite LB II ceramics, were found in the cemeteries at, and adjacent to, Tell el-Yahudiyeh in the Nile Delta (Cotelle-Michel 2004: II-B1-1, II-M8-M14; Kuchman 1977–78: 17; Mesnil du Buisson 1929: 157, fig. 2; Naville and Griffith 1890: 15, 38–47, pls 12–14; Petrie 1906: 16–17, pls XIIc, XVI–XV; XIX, 310; Pouls Wegner 2015: 297–303) and Tel Nebesheh (Petrie 1888: 20, pls I, II, XVI), as well as at Aniba in Nubia, a site where 12 tombs containing 20 clay anthropoid coffins were discovered (Steindorff 1937: 170, pls 39: c, d, e; 40: 2). Clay coffins were also found at Kom Abou Billou in the western Delta (Leclant 1971: 227–28), Riqqeh in Upper Egypt (Engelbach 1915: 10, 18, pl. XIX, 1) and Sedment (Naville 1894: pl. IX).

Clay coffins with anthropoid lids, their faces shaped in a naturalistic style were found at Tell el-Yahudiyeh together with funerary offerings similar to those discovered in the graves at Deir el-Balah, Tell Far'ah south, Tel Lachish, Tel Bet She'an and Tel Shaddud. Most of the tombs at Tell el-Yahudiyeh had been plundered in antiquity and their ascription to the 20th Dynasty is mainly based on a generic inventory of remaining artefacts (foremost scarabs) rather than on specific funerary assemblages.¹¹ The inventory of

both local and imported pottery vessels is characteristic for the end of the Levantine LB II and the Early Iron Age (Cotelle-Michel 2004: II-B1-1, II-M8–M14; Kuchman 1977–78: 17; Mesnil du Buisson 1929: 157, fig. 2; Naville and Griffith 1890: 15, 38–47, pls 12–14; Petrie 1906: 16–17, pls XIIc, XVI–XV; XIX, 310; Pouls Wegner 2015: 297–303). The date of the funerary assemblages at Tell el-Yahudiyeh is primarily based on scarabs that were found in the collection, bearing the names of Ramses III, Seth-Nakht, the son of Ramses III, and of Ramses IV. The pottery from these contexts has been dated to the 12th–10th centuries BC (Aston 1996: 61–62). The mask on one of the anthropoid lids found at Tell el-Yahudiyeh (Dothan 1982: pl. 26) notably resembles that found on the lid from Tel Shaddud.

Other coffins were found at Rifeh in Middle Egypt. Petrie reports that there were three cemeteries in the area of the 18th and 19th Dynasties without providing further details (Kuchman 1977–78: 14, fig. 1; Petrie 1907: 22, fig. XXVII).

The status of Tel Shaddud during the Late Bronze Age in the context of Egyptian administration in the Jezreel Valley, and the connection between Tel Shaddud, Shimon/Tel Shimron, 'Akko and Bet She'an

We may now consider the status of Tel Shaddud during the LB II in the region. So far no excavations have been conducted on the higher reaches of the mound. The discovery of a clay coffin with anthropoid lid in its margin may, however, very well imply that there had been an Egyptian administrative presence, or a Canaanite administration under Egyptian auspices, situated on the tell during the 13th to mid-12th centuries BC. This is implicit in the fact that most excavated LB II sites in the southern Levant, where clay coffins with anthropoid lids have been found (but for Tel Shaddud), have also produced residential and/or administrative buildings (so-called governor's residences) or cultic structures (temples) in Egyptian style, indicating a strong interconnection with Egypt at the time. This applies to Bet She'an (Mazar 2011 and references therein), Tel Lachish (Tufnell *et al.* 1940; Rainey 2015, EA 233: 28, 1622–23; Ussishkin 2004: 215–61),¹² Deir el-Balah (Brandl 2010b: 63–208; 2010c: 251–65) as well as Tell Far'ah south (Macdonald *et al.* 1932: 28–29, pls LXVII–

¹¹There were eight tumuli built of basalt blocks, seven of which contained clay anthropoid coffins. In tumulus no. 6 alone, 22 such burials were found (Naville and Griffith 1890).

¹²In Tel Hasi, located 11 km west of Tel Lachish, a letter (number 333) was discovered that was sent, during the 14th century BC by an Egyptian official, named Paapu, stationed in Tel Lachish (Moran 1992: 333; Rainey 2015, EA 233: 28, 1622–23).

LXVIII, LXIX, LXXXIX; Petrie 1930: 17–19, pl. LIV).

The presence of a clay coffin with Egyptian affinities at Tel Shaddud in the Jezreel Valley, which, based on the results of petrographic analysis, was apparently manufactured in or near Bet She'an in the Jordan Valley, is consistent with known historical sources from Egypt that relate to the status of both the Jezreel Valley and Bet She'an in the LB II.

Tel Shaddud is located in the northern part of the Jezreel Valley, the largest valley in northern Canaan and — *nomen omen est* — renowned for its fertile soils.¹³ During the LB it served as a convenient west to east land route from the coastal plain to the Jordan Valley (Arie 2011: 38; Artzy forthcoming; Beeri 2008: 18; Raban 1982: map A; 1999, 13; van der Steen 1996: 63). The entrances to the valley were, therefore, vital for the international land routes crossing the length and breadth of Canaan. In the northern part of the valley was one of the important inland branches of the Via Maris, which, from the 15th century BC, connected the coastal cities of Tyre, 'Akko, Tel Nahariyya and Tell Abu-Hawam with the Jezreel Valley and the Jordan Valley (Fig. 1). The (in)land road that began at the Galilee coast passed through a series of Canaanite cities, among them Shimon (viz., Tel Shimron near Nahalal), Tel Shaddud, Tel Shunam (located at today's Kefar Sulam at the foot of Giv'at Ha-Moreh (Covello-Paran and Arie 2016: 25)) and Bet She'an, which controlled the passage from the Jordan Valley to the Jezreel Valley (Fig. 1; Mazar 2011: 152, 179). Tel Shaddud is located strategically in the middle of this land route, c. 43 km west of Bet She'an and 43 km south-east and east of the two most sheltered anchorages in the region, those of Tel 'Akko and Tel Dor.

During this period the Jezreel Valley was a royal Egyptian domain with a special legal and administrative status. In the list of booty taken by Thutmose III after his victory at the battle of Megiddo, it is recorded that 'now the fields (of the valley) were made into arable plots and assigned to inspectors of the palace ... in order to reap their harvest ...' (Giveon 1967: 165; Na'aman 1981: 178) It was within this administrative framework that Egyptian fortresses were constructed and large tracts of land in the valley were annexed for Egyptian ownership.

Based on the annals of Thutmose III, Letter 2 from Tel Ta'anach (Cochavi-Rainey 2009: 305–07) and Letter 365 from el-Amarna (Cochavi-Rainey 2009: 201–02) it is known that following the conquest of Megiddo, the Egyptians took possession of extensive areas in the Jezreel Valley, in the territory stretching between Megiddo, Shunem and Bet She'an. Under these arrangements, the town of Bet She'an became the seat of Egyptian rule in the north of Israel. One of its main purposes, presumably, was to supervise the collection of taxes from the Egyptian domains in the valley. In EA 365 the governor of Megiddo reports that the king's fields in the area of Shunem were cultivated by corvée workers brought from remote locations in Canaan such as Jaffa and Narbat under the auspices of Canaanite rulers (Cochavi-Rainey 2009: 201–02; Moran 1992: 363). Tel Shaddud is located in the heart of this territory, and possibly it played a role in overseeing these estates that were subordinate to the administrative centre at Bet She'an. The status of Tel Shaddud and Shunem were probably both royal estates, possibly managed by commissioners from Bet She'an or Megiddo.

We can learn about the supervision of Egyptian commissioners in the region of Tel Shaddud from EA 225 in which Šum-Hadda, the ruler of Shimon, the largest city in the north-western part of Jezreel Valley, and close to Tel Shaddud (Fig. 1), expresses his loyalty to Egypt and declares 'I obey all the orders of the commissioner whom my king appoints over me' (Moran 1992: 288; EA 225). EA 224, which concerns a millet tax of the ruler of Shimon to the king of Egypt, says that Egyptian commissioners also supervised Shimon at the time of Kusuna, father of Šum-Hadda (Cochavi-Rainey 2009: 280; Moran 1992: 287; Na'aman 1975: 78). Notably the letter sent by the king of Shimon (EA 224) to the king of Egypt, was written in Bet She'an (Goren et al. 2004: 233–37), a fact that underscores the administrative ties that existed between both sites. It is thus possible that an official from Bet She'an, charged with overseeing the king's land in the north-western Jezreel Valley, was residing at Tel Shaddud, which occupied a strategic key position for controlling this region, and was located just 4 km north-west of Tel Shimron/Shimon. The Tel Shaddud coffin burial is admittedly several generations later than the time of Akhenaten/EA 224, but LB I–II pottery has been collected in the past on the northern slope of Tel Shaddud (Arie 2011: 263, fig. 9.4.2: 1–3) and in the current excavation. The Jezreel Valley constituted a large grain basket that could have provided for the needs

¹³The word Jezreel comes from the Hebrew, translating into 'God sows'. The valley is in the northern part of Israel, between the modern towns of Bet She'an, Nazareth, Jokneam (Tel Yokneam), Haifa and Jenin.

of the Egyptian army when crossing to the north-west (towards the coastal plain) or south-east (towards Bet She'an and Peḥelu (Pella)), crossing the plain while heading north — towards the Jordan Valley and the northern Bekaa Valley (Ḥa-ni-gal-bat in Mitanni, or Naharin in the Egyptian texts); hence the need to collect grain taxes from this region, as implied by EA 224 (Cochavi-Rainey 2009: 267–68).

The crops that were harvested on the king's lands in the Jezreel Valley were apparently not sent to Egypt, a grain basket in and by itself, but rather to the Egyptian administration seated in the fortresses and coastal anchorages in the region. The anchorages along the coast and the fortresses in the valley were meant to provide military and logistical support for Egypt's military campaigns in Asia (Arie 2011: 46; Cochavi-Rainey 2009: 267–68; Mizrahi 2005: 264–68; Na'aman 1981: 180). At the beginning of the 18th Dynasty these anchorages became the principle points for Egyptian activities and presence in the Levant (Mizrahi 2005: 167, 266; Redford 1990: 59; Beeri 2008: 395–96). The northern anchorages, such as Jaffa, Tel Dor, Tel 'Akko (Fig. 1) and Tyre allowed Egypt to manage its relations with its dependencies in Canaan, such as in the Jezreel Valley, and served as a supply and logistics base for Egyptian ships sailing to the Levant. The supply of commodities, including food products such as grain, bread, oil, wine, honey, as well as incense, for north Levantine harbours like Tyre and Ugarit was the responsibility of the local governors and constituted a permanent section in the annual Egyptian reporting on record from the 31st regnal year of Thutmose III until his 42nd regnal year (Mizrahi 2005: 167, 266; Redford 1990: 59). Tel Shaddud is located midway along the road between Bet She'an and the coastal anchorages, and the officials that were probably stationed there could have monitored both the collection of taxes and the transfer of agricultural produce to the Egyptian granaries in the coastal cities. In EA 294 royal granaries in the Egyptian fortress at Jaffa are mentioned, and the grain was presumably brought there from the king's lands (Cochavi-Rainey 2009: 223–24), which were cultivated under the supervision of local rulers and their vassals in the region. Thutmose III, for example, used the Phoenician coastal cities as bases for collecting food and other supplies, and boats for crossing the Euphrates were designed and made in the mountains of Lebanon, near the Phoenician coast (Na'aman 1981: 180–81).

From the beginning of the 2nd millennium BC 'Akko was the most sheltered natural anchorage along the coast of Israel, and, since the 18th

Dynasty, one of the important staging points for Egypt along the Levantine coast (Artzy 2006a; Artzy forthcoming; Artzy and Beeri 2010; Beeri 2008; Dothan 1976; Dothan and Raban 1980; Raban 1991). Documents indicating this were found in the destruction layer of Tel Ras Shamra-Ugarit (KTU 2.38 = RS 18.031) as well as in the residence of the Egyptian governor at Tel Afek. The relevant document from Afek deals with the deliveries of wheat by Haya, the 'great man, the Egyptian commissioner in Canaan' to Takuhlinu, the commissioner of Ugarit (Owen D. I. in Kochavi 1989: XVII). The deliveries were sent by Haya by way of the Canaanite port cities of Jaffa and 'Akko. The delivery of wheat from 'Akko was done by a local representative/trustee named Adduya, the man from 'Akko' (D. I. Owen in Kochavi 1989: XVII).

'Akko and Bet She'an were the largest Egyptian administrative centres in the north of the country during the LB, (Artzy forthcoming; Beeri 2008: 105–08; Mazar 2011: 178–79) and they had close ties already in the 14th century BC. It is no coincidence that the diplomatic letters sent by the rulers of 'Akko, namely Surata and his son Satatna, to Egypt (EA 232, 234, 235), were written by a scribe situated in Bet She'an (Goren et al. 2004: 237–39). Egypt maintained its commercial ties with the Egyptian fortresses in Bet She'an, Jaffa, and Afek (near Rosh Ha-'Ayin), with the coastal cities of Tyre and Ugarit, and even more distant places such as Babylon.

Direct Egyptian control in 'Akko in the 14th century BC is indicated by the letter of Rib-Hadda, king of Byblos, who complained that Suratata, the ruler of 'Akko (see also above), 'received' 400 soldiers and 30 pairs of horses from the king of Egypt whereas he himself was not honoured and received fewer soldiers (EA 85, 88; Cochavi-Rainey 2009: 127, 129–30). The presence of Egyptian officials in 'Akko is also indicated by the occurrence of scarabs, jewellery and a wealth of imported Egyptian pottery, including many simple utilitarian vessels, found in excavations conducted by Moshe Dothan and Avner Raban at Tel 'Akko (unpublished).

A royal scarab of Seti I, who had suppressed an uprising in the Bet She'an Valley in his first military campaign (Pritchard 1969: 253–54), was found in the clay coffin burial at Tel Shaddud (Fig. 30). That king saw great importance in controlling both the Jezreel Valley and the anchorage at Tel 'Akko. Thus the occupation of 'Akko is mentioned in the graphic list of conquests (Nos 54, 56, 59) commemorated in his temple at Karnak (Kitchen 1975: 29.1; 32.1; Porter and Moss 1972: 57 {170}; 55{168}; Simons

1937: 139, 141, 143) and in the lists (Nos 12, 13) engraved on the northern and southern sphinxes in the Temple of el-Qurna/Korna (Beeri 2008: 106–07; Kitchen 1975: 33.11; 34.12; Porter and Moss 1972: 408 {3–4}; Simons 1937: 144–45). His son, Ramses II, also states that he conquered 'Akko and the relief that he erected in the Temple of Amon, in Karnak, shows the destruction of its city gate (Beeri 2008: 107, fig. e.1). The conquest of 'Akko is further mentioned in the topographic lists (No. 31) that were engraved in the same temple (Kitchen 1979: 155.16; 163.14; Porter and Moss 1972: 57–58 [171.II2; 173.II]; Simons 1937: 160–61).

The genetic background of the owner of the Tel Shaddud clay coffin

With the first preliminary results of ancient DNA analysis of the burial remains found inside the clay coffin at hand (see above), the question whether the individual buried in the Tel Shaddud coffin was of local, south Levantine or possibly of Egyptian origin, can now be answered affirmatively in favour of the former. We therefore have to conclude that this individual was, apparently, a Canaanite official residing at Tel Shaddud and emulating selected funerary aspects of Egyptian mortuary culture.

In the past a number of theories have been proposed with regard to the nature of the Egyptian presence in Canaan. At one extreme of the spectrum Weinstein (1981: 1–28) suggested a model whereby, during the Late Bronze Age, Egypt maintained direct physical control over Canaan by means of fortresses built in Egyptian style ('direct rule' model). In contrast, Higginbotham (1996; 2000) proposed a model that attempted to explain the Egyptian finds in Canaan, including the fortresses and temples, as indications of the local Canaanite elite's desire to emulate the 'sublime' Egyptian culture ('elite emulation' model). In her opinion, Egyptian fortresses were established in Canaan only to a limited extent, focusing on the sites of Deir el-Balah, Gaza, Jaffa and Bet She'an.

As was shown above, the Tel Shaddud clay coffin burial evidences inter-relationships with both the administrative centre of Tel Bet She'an during the 19th and 20th Dynasties — a centre that even Higginbotham (1996) believes was directly controlled by officials and members of the Egyptian army — and the cemetery of Deir al-Balah. This is borne out by the fact that the coffin was made from clay typical of the Bet She'an region, by the similarity between the mask applied to the lid of the coffin from Tel Shaddud and several fragments of lids found at Tel Bet She'an (Oren 1973: Tomb 90X, fig.

53: 3; Tomb 107, fig. 55a: 1; Tomb 66C, fig. 55a: 2; Tomb 202A, fig. 55b: 4–5; Tomb 219b, fig. 56b: 7), and by the arrangement of associated, simpler burials as attested on a larger scale at Deir el-Balah.

The scarab found inside the coffin, inscribed with the name of Seti I, illustrates the Egyptian connection of the burial at Tel Shaddud, thus allowing contemplation of the possibility that the deceased had been a local official with ties to the Egyptian administrative centre at Bet She'an.

A final, minor, but perhaps telling detail corroborating such a view is the find of a caudal vertebra of a Nile perch, found on top of the Tel Shaddud clay coffin (see above Fig. 38). This was surely brought in dried condition from the Nile Valley to Tel Shaddud, via one of the Mediterranean ports (probably that of Tel 'Akko, Tell Abu Hawam or Tel Dor). Remains of Nile perch were also common in the strata associated with the Egyptian fortress at Tel Bet She'an (Lernau 2009: 776). The apparent consumption of Nile perch in habitation and funerary contexts in this part of the Levant, well outside its natural habitat in the Nile Valley, offers yet another indication of strong Egyptian influence, in this specific case, one that concerns the diet.

Conclusion

The discovery of a clay coffin with anthropoid lid at Tel Shaddud contributes to our understanding of the nature of Egyptian rule in the Jezreel Valley, reinforcing proposals already put forth by Giveon and Na'aman that during the 18th–20th Dynasties parts of the valley took the form of land domains, or estates, usurped by the king of Egypt and managed under the supervision of senior officials stationed at Bet She'an. In this scenario, and given the first ancient DNA results, it is eminently plausible that the owner of the Tel Shaddud clay coffin was a local official, associated with the Egyptian occupation, a person who probably ensured the loyalty of local rulers to Egypt, collected taxes and transferred grain from the north-western Jezreel Valley to Egyptian administrative centres in the Jezreel Valley and/or along the coast.

Strategically situated in the Jezreel Valley and the midpoint of an ancient land route, leading south-east towards Bet She'an at the junction of the Jezreel and Jordan river Valleys, and north-west to Akko in the coastal plain with its protected anchorages giving access to maritime routes, one may hope that future excavations at Tel Shaddud will facilitate textual identification of this site with one of the Canaanite

toponyms appearing in, for example, the topographic lists of Seti I.

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References

- Albright, W. F. 1932. An anthropoid clay coffin from Sahab in Transjordan. *American Journal of Archaeology* 36: 295–306.
- Arensburg, B. and Smith, P. 1979. The human remains. In, Dothan, T. (ed.), *Excavations at the Cemetery of Deir el-Balah*: 92–97. Quedem 10. Jerusalem: Ahva Press.
- Arie, E. 2011. *In the Land of the Valley: Settlement, Social and Cultural Processes in the Jezreel Valley from the End of the Late Bronze Age to the Formation of the Monarchy*. PhD. Tel Aviv University (Hebrew).
- Artzy, M. 2006a. Filling in the void: observations on the habitation pattern in Tel Akko at the end of the Late Bronze Age. In, Maeir, A. M. and de Miroschedji, P. (eds), 'I Will Speak the Riddles of Ancient Times', *Archaeological and Historical Studies in Honor of Amihai Mazar* (Vol. 1): 115–22. Winona Lake: Eisenbrauns.

- 2006b. *The Jatt Metal Hoard in Northern Canaanite/Phoenician and Cypriote Context*. Cuadernos de Arqueología Mediterránea 14. Barcelona: Editions Bellaterra.
- forthcoming. From Akko to Bet She'an and back in the Late Bronze Age period. *Bulletin of the American Schools of Oriental Research*.
- Artzy, M. and Beeri, R. 2010. Tel Akko. In, Killebrew A. E. and Raz-Romeo V. (eds), *One Thousand Night and Days. Akko through the Ages: 15–24*. Haifa: Hecht Museum, University of Haifa.
- Aston, D. 1996. *Egyptian Pottery of the Late New Kingdom and Third Intermediate Period (Twelfth–Seventh Centuries BC)*. Studien zur Archäologie und Geschichte Altaegyptens Band 13. Heidelberg: Heidelberger Orientverlag.
- Baker, J. and Brothwell, D. 1980. *Animal Diseases in Archaeology*. London: Academic Press.
- Bass, W. M. 1987. *Human Osteology. A Laboratory and Field Manual*. 3rd edition. Columbia: Missouri Archaeological Society.
- Beeri, R. 2008. *Tel Akko and the Urbanization of Akko Plain in the First Half of the Second Millennium BC*. PhD. Haifa University (Hebrew).
- Beit-Arieh, I. 1985. Further burials from the Deir el-Balah cemetery. *Tel Aviv* 12:1: 43–53.
- Ben-Arieh, S. 2004. *Bronze and Iron Age Tombs at Tell Beit-Mirsim*. Israel Antiquities Authority Reports No. 23. Jerusalem: Israel Antiquities Authority.
- Ben-Tor, D. 1989. *The Scarab: A Reflection of Ancient Egypt*. Jerusalem: Israel Museum.
- Boertien, J. H. 2013. *Unraveling the Fabric: Textile Production in the Iron Age Transjordan*. PhD. Groningen University.
- Boessneck, J. 1969. Osteological differences between sheep (*Ovis aries* Linné) and goat (*Capra hircus* Linné). In, Brothwell, D. and Higgs, E. (eds), *Science in Archaeology: A Survey of Progress and Research*: 331–50. London: Thames and Hudson.
- Bourriau, J. 2001. Change of body position in Egyptian burials from the mid XIIth Dynasty until the early XVIIIth Dynasty. In, Willems, H. (ed.), *Social Aspects of Funerary Culture in the Egyptian Old and Middle Kingdoms. Proceedings of the International Symposium held at Leiden University 6–7 June 1996*: 1–20. *Orientalia Lovaniensia Analecta* 103. Leuven: Uitgeverij Peeters and Department Oosterse Studies.
- Brain, C. K. 1981. *Hunters of the Hunted? An Introduction to African Cave Taphonomy*. Chicago: University of Chicago Press.
- Brandl, B. 2010a. General introduction to the stratigraphy of the settlement. In, Dothan, T. and Brandl, B. (eds), *Deir el-Balah: Excavations In 1977–1982 in the Cemetery and Settlement. Vol I: Stratigraphy and Architecture*: 53–61. Quedem 49. Jerusalem: Ahva Press.
- 2010b. The stratigraphy of the settlement. In, Dothan, T. and Brandl, B. (eds), *Deir el-Balah: Excavations In 1977–1982 in the Cemetery and Settlement. Vol I: Stratigraphy and Architecture*: 63–208. Quedem 49. Jerusalem: Ahva Press.
- 2010c. The Egyptian origin of the architecture at Deir el-Balah. In, Dothan, T. and Brandl, B. (eds), *Deir el-Balah: Excavations In 1977–1982 in the Cemetery and Settlement. Vol I: Stratigraphy and Architecture*: 251–66. Quedem 49. Jerusalem: Ahva Press.
- Braun, E. 1985. 'En Shaddud: *Salvage Excavations at a Farming Community in the Jezreel Valley, Israel*. BAR International Series 249. Oxford: British Archaeological Reports.
- Braunstein, S. L. 2011. The meaning of Egyptian-style objects in the Late Bronze cemeteries of Tell el-Far'ah (South). *Bulletin of the American Schools of Oriental Research* 364: 1–36. <http://www.jstor.org/stable/10.5615/bullamerschoorie.364.0001>
- Brink, E. C. M. van den, Kirzner, D., Bron, E. and Beeri, R. 2016. Tel Shaddud. Preliminary report. *Hadashot-Arkheologiyot* 128. http://www.hadashot-esi.org.il/report_detail_eng.aspx?id=25133&mag_id=124
- Chen, H. L., Jakes, K. A. and Foreman, D. W. 1998. Preservation of archaeological textiles through fibre mineralization. *Journal of Archaeological Science* 25(10): 1015–21. <http://www.sciencedirect.com/science/article/pii/S0305440397902867>.
- Cochavi-Rainey, Z. 2009. *To the King my Lord. Letters from El Amarna, Kumidu, Taanach and other Letters from the Fourteenth Century BC*. Jerusalem: Bialik Institute.
- Cohen-Weinberger, A. 1998. *Petrographic analysis of the Egyptian forms from Stratum VI at Tel Beth-Shean*. In, Gitin, S., Mazar, A. and

- Stern, E. (eds), *Mediterranean Peoples in Transition: Thirteenth to Early Tenth Centuries BC*: 406–12. Jerusalem: Israel Exploration Society.
- 2009. Petrographic studies. In, Panitz-Cohen, N. and Mazar, A. (eds), *Excavations at Tel Beth-Shean 1989–1996. Vol III. The 13th–11th Century BC Strata in Areas N and S*: 519–29. Jerusalem: Israel Exploration Society.
- Cooney, K. M. 2011. Changing burial practices at the end of the New Kingdom: defensive adaptations in tomb commissions, coffin commissions, coffin decoration, and mummification. *Journal of the American Research Center in Egypt* 47: 3–44.
- Cotelle-Michel, L. 2004. *Les Sarcophages en Terre Cuite en Nubie*. Dijon: Editions Faton.
- Courty, M. A. and Roux, V. 1995. Identification of wheel throwing on the basis of ceramic surface features and microfibrils. *Journal of Archaeological Science* 22: 17–50.
- Covello-Paran, K. and Arie, E. 2016. Excavations at Tel Shunem (Sulam), Areas G and G1. *'Atiqot* 84: 26–62.
- Covello-Paran, K. and Matskevich, Z. 2016. 'En Shaddud, Area C. Final report. *Hadashot-Arkheologiyot* 128 (April 26, 2016). http://www.hadashot-esi.org.il/Report_Detail_eng.aspx?print=nopic&id=24962&mag_id=124
- Davis, S. J. M. 1987. *The Archaeology of Animals*. New Haven: Yale University Press.
- Dothan, T. 1973. Anthropoid clay coffins from a Late Bronze Age cemetery near Deir el-Balah. Preliminary report II. *Israel Exploration Journal* 23(3): 129–46.
- 1979. *Excavations at the Cemetery of Deir el-Balah*. Qedem 10. Jerusalem: Ahva Press.
- 1982. *The Philistines and their Material Culture*. Jerusalem: Israel Exploration Society.
- 2010. Introduction. In, Dothan, T. and Brandl, B. (eds), *Deir El-Balah: Excavations In 1977–1982 in the Cemetery and Settlement. Vol I: Stratigraphy and Architecture*: XXVII–XXXVI. Qedem 49. Jerusalem: Ahva Press.
- Dothan, M. 1976. Akko: Interim excavation report first season 1973/74. *Bulletin of the American Schools of Oriental Research* 224: 1–48.
- Dothan, M. and Raban, A. 1980. The sea gate of ancient Akko. *Biblical Archaeologist* 43(1): 35–9.
- Engelbach, R. 1915. *Riqqeh and Memphis VI*. London: School of Archaeology in Egypt.
- Fischer, C. S. 1923. Bethshan: excavations of the University Museum Expedition 1921–1923. *The Museum Journal, Philadelphia* 14(4): 227–48.
- Fischer, P. M. 1997. *A Late Bronze to Early Iron Age Tomb at Sahem, Jordan*. Wiesbaden: Harrassowitz Verlag.
- Forbes, R. J. 1964. *Studies in Ancient Technology, V*. Leiden: Brill.
- Galal, A. and Aston, D. 2003. New Kingdom anthropoid pottery coffins from Kom Abu Rady and Sedment. *Jaarbericht van het Vooraziatische Genootschap Ex Oriente Lux* 37: 127–80.
- Gershuny, L. 1985. *Bronze Vessels from Israel and Jordan*. Prähistorische Bronzefunde II, 6. Munich: C. H. Beck Verlag.
- Giveon, R. 1967. *Egyptian documents and remains relating to the western Jezreel Valley*. In, Teradion, N. (ed.), *From the Land of Qishon — The Valley Book*. Tel Aviv: Qishon Regional Council (Hebrew).
- Giveon, R. 1985. *Egyptian Scarabs from Western Asia from the Collections of the British Museum*. Orbis Biblicus et Orientalis, Series Archaeologica 3. Göttingen: Vandenhoeck and Ruprecht.
- Gonen, R. 1992. Burial patterns and cultural diversity in Late Bronze Age Canaan. *American Schools of Oriental Research Dissertation Series* 7. Winona Lake: Eisenbauns.
- Goren, Y., Finkelstein, I. and Na'aman, N. 2004. *Inscribed in Clay. Provenance Study of the Amarna Tablets and Other Ancient Near Eastern Texts*. Tel Aviv: Emery and Claire Yass Publications in Archaeology.
- Gunnweg, J. 2014. Anthropomorphic coffins of the Late Bronze Age II in Gaza. <http://www.researchgate.net/publication/264274335>
- Hall, R. 1986. *Egyptian Textiles*. London: Shire Publications.
- Halstead, P. and Collins, P. 2002. Sorting the sheep from the goats: morphological distinctions between the mandibles and mandibular teeth of adult *Ovis* and *Capra*. *Journal of Archaeological Science* 29: 545–53.
- Hamer, F. and Hamer, J. 1986. *The Potters Dictionary of Materials and Techniques*. London, New York: Pitman Publications; Watson-Guptill Publications.
- Hatzor, Y. H. 2000. *Geological Map of Israel 1:50,000, Sheet 6–I, II, Bet-She'an*. Jerusalem: Survey of Israel.
- Hennequin, L. 1939. Trois sarcophages anthropoïdes en poterie trouvés à Tell Duweir. In, *Mélanges Syrien offerts à R. Dussaud II*: 965–74. Paris: Geuthner.
- Hershkovitz, I., Latimer, B., Dutour, O., Jellema, L. M., Wish-Baratz, S., Rothschild, C. and Rothschild, B. M. 1997. Why do we fail in aging the skull from the sagittal suture? *American Journal of Physical Anthropology* 103: 393–400.
- Higginbotham, C. 1996. Elite emulation and Egyptian governance in Ramesside Canaan. *Tel Aviv* 23: 154–70.
- 2000. *Egyptianization and Elite Emulation in Ramesside Palestine: Governance and Accommodation on the Imperial Periphery (Culture and History of the Ancient Near East)*. Leiden: Brill.
- Hillson, S. 1993. *Teeth*. Reprint of 1986 edition: 176–201. Cambridge: University Press.
- Hornung, E. and Staehelin, E. 1976. *Skarabäen und andere Siegelamulette aus Basler Sammlungen*. Ägyptische Denkmäler in der Schweiz I. Mainz: von Zabern Verlag.
- Horowitz, A. 1979. *The Quaternary of Israel*. New York: Academic Press.
- 2001. *The Jordan Rift Valley*. Lisse: A. A. Balkema.
- Horwitz, L. K. 1990. The origin of partially digested bones recovered from archaeological sites in Israel. *Journal of Archaeological Science* 16: 97–106.
- Ikram, S. and Dose, A. 1998. *The Mummy in Ancient Egypt: Equipping the Dead for Eternity*. London: Thames and Hudson.
- James, F. W., McGovern, P. E. and Bonn G. 1993. *The Late Bronze Egyptian Garrison at Beth Shan: a Study of Levels VII and VIII*. Philadelphia: University Museum.
- Johnston, F. E. and Zimmer, L. O. 1989. Assessment of growth and age in the immature skeleton. In, Iscan, M. Y. and Kenneth A. R. (eds), *Reconstruction of Life from the Skeleton*: 11–22. New York: Academic Press.
- Kamaisky, E. and Ben-Gal, M. 2013. The manufacturing techniques of the pottery vessels. In, Shalem, D., Gal, Z. and Smithline, H. (eds), *Peqi'in. A Late Chalcolithic Burial Site. Upper Galilee, Israel. Land of Galilee* 2: 473–91. Jerusalem: Ostrakon.
- Keel, O. 2010. *Corpus der Stempelsiegel-Amulette aus Palästina/Israel, Katalog Band III*. Orbis Biblicus et Orientalis, Series Archaeologica 31. Freiburg: Academic Press.
- Killebrew, A. 2005. *Biblical Peoples and Ethnicity: an Archaeological Study of Egyptians, Canaanites, Philistines, and Early Israel, 1300–1100 B.C.E.* Society of Biblical Literature Archaeology and Biblical Studies 9. Atlanta, Georgia: Society of Biblical Literature.
- Kislev, M. E., Simchoni, O., Melamed, Y. and Maroz, L. 2011. Flax seed production: evidence from the Early Iron Age site of Tel Beth-Shean, Israel and from written sources. *Vegetation History and Archaeobotany* 20(6): 579–84.
- Kitchen, K. A. 1975. *Ramesside Inscriptions, Historical, and Biographical* (Vol. I). Oxford: Blackwell.
- 1979. *Ramesside Inscriptions, Historical, and Biographical* (Vol. II). Oxford: Blackwell.
- Kochavi, M. 1989. *Aphek Antipatris. Five Thousand Years of History*. Tel Aviv: Hakkibutz Hameuchad Publishing House.
- Kronfeld, J., Vogel, J. C., Rosenthal, E. and Weinstein-Evron, M. 1988. Age and paleoclimatic implications of the Bet She'an travertines. *Quaternary Research* 30: 298–303.
- Kuchman, L. 1977–78. Egyptian clay anthropoid coffins. *Serapis* 4: 11–22.
- Lazaridis, I., Nadel, D., Rollefson, G., Merrett, D. C., N., Mallick, S., D., Novak, M., Gamarra, B., Sirak, K., Connell, S., Stewardson, K., Q., Gonzalez-Forbes, G., Jones, E. R., S. A., Lengyel, G., F., Gasparian, G., Monge, J. M., M., V., A., Meiklejohn, C., Gerritsen, F., Bejenaru, L., Blüher, M., Campbell, A., Cavalleri, G., Comas, D., Froguel, P., Gilbert, E., Kerr, S. M., Kovacs, P., Krause, J., McGettigan, D., Merrigan, M., Merriwether, D. A., O'Reilly, S., Richards, M. B., Semino, O., Shamoon-Pour, M., Stefanescu, G., Stumvoll, M., Tönjes, A., Torroni, A., Wilson, J. F., Yengo, L., Hovhannisyann, N. A., Patterson, N., Pinhasi, R., Reich, D. 2016. Genomic insights into the origin of farming in the ancient Near East. *Nature* 536: 419–24.
- Leclant, J. 1971. Fouilles et travaux en Egypte et au Soudan, 1969–1970. *Orientalia* 40: 227–28.

- Lernau, O. 2009. Fish bones. In, Mazar, A. and Panitz-Cohen, N. (eds), *Excavations at Tel Beth-Shean 1989–1996, Volume III: The 13th–11th centuries BC (Areas S and N)*: 774–81. Jerusalem: Israel Exploration Society.
- Lev-Tov, J. S. E. and Maher, E. F. 2001. Food in Late Bronze Age funerary offerings: faunal evidence from Tomb 1 at Tell Dothan. *Palestine Exploration Quarterly* 133: 91–110.
- Lipton, G. 2010. The excavation of the cemetery. In, Dothan, T. and Brandl, B. (eds), *Deir El-Balah: Excavations In 1977–1982 in the Cemetery and Settlement. Vol I: Stratigraphy and Architecture*: 3–46. Qedem 49. Jerusalem: Ahva Press.
- Loth, S. R. and Henneberg, M. 1996. Mandibular ramus flexure: a new morphologic indicator of sexual dimorphism in the human skeleton. *American Journal of Physical Anthropology* 99 (3): 473–85.
- Lovejoy, C. O., Meindl, R. S., Pryzbeck, T. R. and Mensforth, R. P. 1985. Chronological metamorphosis of the auricular surface of the ilium: a new method for the determination of adult skeletal age at death. *American Journal of Physical Anthropology* 68: 15–28.
- Macdonald, E., Starkey, J. L. and Harding, L. 1932. *Beth Pelet II*. London: Egypt Exploration Fund.
- Maher, E. F. 2006/2007. Imminent invasion: the abandonment of Philistine Ekron. *Scripta Mediterranea*; Special Issue — Cyprus, The Sea Peoples and the Eastern Mediterranean: Regional Perspectives of Continuity and Change 27–28: 323–37.
- Mazar, A. 2011. The Egyptian garrison town at Beth-Shean. In, Bar, S., Kahn, D. and Shirley J. J. (eds), *Egypt, Canaan and Israel: History, Imperialism, Ideology and Literature*. Proceedings of a Conference at the University of Haifa, 3–7 May 2009: 151–85.
- Mesnil du Buisson, le Compte du. 1929. Compte-rendu sommaire d'une mission a Tell el-Yahudiyyé. *Bulletin de l'Institut Français d'Archeologie Orientale* 29: 155–78.
- Mizrachi, Y. 2005. Egyptian Foreign Policy in the Levant during the Reign of Thutmose III — Continuity or Change? PhD. Haifa University (Hebrew).
- Moran, W. L. 1992. *The Amarna Letters*. Baltimore: Johns Hopkins University Press.
- Na'aman, N. 1975. *The Political Disposition and Historical Development of Eretz-Israel According to the Amarna Letters*. PhD. Tel Aviv University, (Hebrew).
- 1981. Economic aspects of the Egyptian occupation of Canaan. *Israel Exploration Journal* 31: 172–85.
- Namdar, D., Shoval, S., Amrani, A., van den Brink, E. C. M. and Beeri, R. 2017. Absorbed organic residues in the Late Bronze Age II anthropoid clay coffin from Tel Shaddud, Israel. *Journal of Archaeological Science: Report* 12: 726–33.
- Naville, É. 1894. *Ahmas el Medineh (Heracleopolis Magna)*. London: Egypt Exploration Fund.
- Naville, É. and Griffith, F. L. 1890. *The Mound of the Jew and the City of Onias, and the Antiquities of Tell el-Yahudiyeh*. London: Egypt Exploration Fund.
- Oren, E. D. 1973. *The Northern Cemetery of Beth-Shean*. Leiden: Uitgeverij Brill.
- Ornan, T. 1986. *A Man and His Land, Highlights from the Moshe Dayan Collection*. The Israel Museum Catalogue 270. Jerusalem: Hamakor Press.
- Payne, S. 1973. Kill-off patterns in sheep and goats: the mandibles from Aşvan Kale. *Anatolian Studies* 23: 281–303.
- 1985. Morphological distinctions between the mandibular teeth of young sheep, *Ovis*, and goats, *Capra*. *Journal of Archaeological Science* 12: 139–47.
- Payne, S. and Munson, P. J. 1985. Ruby and how many squirrels? The destruction of bones by dogs. In, Fieller, N., Gibertson, D. D. and Ralph, N. (eds), *Paleobiological Investigations: Research Designs, Methods, and Data Analysis*. B.A.R. International Series 266. Oxford: Archaeopress.
- Perlman, I., Asaro, F. and Dothan, T. 1973. Provenance of the Deir el-Balah coffins. *Israel Exploration Journal* 23(3): 147–51.
- Petrie, W. M. F. 1888. *Tanis II, Nebesheh and Defenneh*. London: Egypt Exploration Fund.
- 1906. *Hyksos and Israelite Cities*. London: Egypt Exploration Fund.
- 1907. *Gizeh and Rifeh*. London: School Of Archaeology in Egypt University College.
- 1930. *Beth Pelet I*. London: Egypt Exploration Fund.
- Porter, B. and Moss, R. L. B. 1972. *Topographical Bibliography of Ancient Egyptian Hieroglyphic Texts, Reliefs and Paintings, Vol. II: Theban Temples*. Oxford: Clarendon Press.
- Pouls Wegner, M. A. 2015. Anthropoid clay coffins of the Late Bronze Age to Early Iron Age in Egypt and the Near East: a re-evaluation of the evidence from Tell el-Yahudiya. In, Harrison, T. P., Banning, E. B. and Klassen, S. (eds), *Walls of the Prince: Egyptian interactions with Southwest Asia in Antiquity. Essays in Honour of John S. Holladay, Jr.*: 292–315. Leiden: Brill.
- Pritchard, J. B. 1968. New evidence on the role of the Sea Peoples in Canaan at the beginning of the Iron Age. In, Ward, W. (ed.), *The Role of the Phoenicians in the Interaction of Mediterranean Civilizations: Papers presented to the Archaeological Symposium at the American University of Beirut*: 99–112. Beirut.
- 1969. *Ancient Near Eastern Texts: Relating to the Old Testament*. Princeton: Princeton University Press.
- Prummel, W., and Frisch, H. J. 1986. A guide for the distinction of species, sex, and body side in bones of sheep and goat. *Journal of Archaeological Science* 13: 567–77.
- Quinn, S. P. 2013. *Ceramic Petrography. The Interpretation of Archaeological Pottery and Related Artefacts in Thin Section*. Oxford: Archaeopress.
- Raban, A. 1977. Tel Shaddud. *Hadashot-Arkeologiyot* 61: 13–14 (Hebrew).
- 1979. New discoveries in Tel Sarid. *HaEmek* 12: 29–30 (Hebrew).
- 1982. *Archaeological Survey of Israel, Nahalal Map* (28). Jerusalem: Keter Press (Hebrew).
- 1991. The port city of Akko in the MBII. *Michmanim* 5: 17–34.
- 1999. *Archaeological Survey of Israel, Map of Mishmar Ha'Emeq* (32). Jerusalem: Ahava Press.
- Rainey, A. F. 2015. *The El-Amarna Correspondence Vol. I* (ed.) by W. M. Schniedewind). Brill: Leiden-Boston.
- Raven, M. J. 2005. Egyptian concepts on orientation of the human body. *Journal of Egyptian Archaeology* 91: 37–53.
- Redford, D. B. 1990. *Egypt and Canaan in the New Kingdom*. Beer-Sheva 4, Beer-Sheva: Ben-Gurion University of the Negev Press.
- Rice, P. M. 1987. *Pottery Analysis. A Sourcebook*. Chicago: Chicago University Press.
- Rowe, A. 1930. *The Topography of Bet Shean I*. Philadelphia: The University Press for the University of Pennsylvania Museum.
- Rozenbaum, A. G., Zilberman, E., Bar-Matthews, M., Ayalon, A. and Agnon, A. 2005. *Tufa Deposits in Bet-She'an Valley — Stratigraphic Analysis of the Tufa Plateau*. Geological Survey of Israel Report TR-GSI/12/2005. Jerusalem: Geological Survey of Israel.
- Rye, O. S. 1981. *Pottery Technology. Principles and Reconstruction*. Washington, D.C.: Taraxacum.
- Schulman, N. 1962. *The Geology of the Central Jordan Valley*. PhD. Hebrew University of Jerusalem, Jerusalem (Hebrew).
- Shalev, S. 2004. *Swords and Daggers in Late Bronze Age Canaan*. *Prähistorische Bronzefunde IV*, 13. Stuttgart: Franz Steiner Verlag.
- Shaliv, G., Mimran, Y. and Hatzor, Y. 1991. The sedimentary and structural history of the Bet She'an area and its regional implications. *Israel Journal of Earth Science* 40(1–4): 161–79.
- Shamir, O. 2009. A linen textile. In, Paint-Cohen, N. and Mazar, A. (eds), *Excavation at Tel Beth-Shean 1989–1996. Vol. III. The 13th–11th Century BC Strata in Areas N and A*: 474–83. Jerusalem: Israel Exploration Society and The Hebrew University of Jerusalem.
- 2015. Textiles from the Chalcolithic period, Early and Middle Bronze Age in the southern Levant. *Archaeological Textiles Review* 57: 12–25.
- Shamir, O. and Rosen, S. A. 2015. Early Bronze Age textiles from the Ramon I rock shelter in the Central Negev. *Israel Exploration Journal* 65(2): 129–39.
- Shephard, A.O. 1995. *Ceramics for the Archaeologists*. Washington, D.C.: Carnegie Institution, Washington D.C.
- Silver, A. 1969. The aging of domestic animals. In, Brothwell, D. and Higgs, E. S., *Science in Archaeology: A Survey of Progress and Research*: 283–302. 2nd ed. London: Thames and Hudson.
- Simons, J., 1937. *Handbook for the Study of Egyptian Topographical Lists Relating to Western Asia*. Leiden: Brill.

- Sneh, A., Bartov, Y. and Rosensaft, M. 1998. *Geological Map of Israel 1:200,000. Sheet 1*. Jerusalem: Geological Survey of Israel.
- Steindorff, G. 1937. *Aniba I–II. Mission Archéologique de Nubie 1929–1934*. Glueckstadt: J. J. Augustin.
- Strand, E. A., Frei, K. M., Gleba, M., Mannering, U., Nosch, M.-L. and Skals, I. 2010. Old textiles — new possibilities. *European Journal of Archaeology* 13(2): 149–73. <http://www.maneyonline.com/doi/abs/10.1177/1461957110365513>
- Tubb, J. N. 1988. Tell es-Sa‘idiyeh 1987: third season interim report. *Annual of the Department of Antiquities of Jordan* 32: 41–58.
- Tufnell, O. 1953. *Lachish III (Tell ed-Duweir): The Iron Age*. London: Oxford University Press.
- 1958. *Lachish IV (Tell ed-Duweir): The Bronze Age*. London: Oxford University Press.
- Tufnell, O., Inge, C. H. and Harding L. 1940. *Lachish II: The Fosse Temple*. Oxford: Oxford University Press.
- Ussishkin, D. 2004. The Level VI temple. In, Ussishkin, D. (ed.), *The Renewed Archaeological Excavations at Lachish (1973–1994)* Vol. I: 215–81. Tel Aviv: Emery and Claire Yass Publication in Archaeology.
- van Neer, W., Lernau, O., Friedman, R., Mumford, G., Poblome, J. and Waelkens, M. 2004. Fish remains from archaeological sites as indicators of former trade connections in the Eastern Mediterranean. *Paléorient* 30: 101–48.
- van der Steen, E. J. 1996. The central east Jordan Valley in the Late Bronze and Early Iron Ages. *Bulletin of the American Schools of Oriental Research* 302: 51–74.
- Weinstein, J. A. 1981. The Egyptian empire in Palestine: a reassessment. *Bulletin of the American Schools of Oriental Research* 241: 1–28.
- Wright, E. W. 1959. Philistine coffins and mercenaries. *Biblical Archaeologist* 22: 54–66.
- Yadin, Y. 1963. *The Finds from the Bar Kokhba Period in the Cave of the Letters*. Jerusalem: Israel Exploration Society.
- Yannai, E. and Porath, Y. 2006. A Chalcolithic burial cave at et-Taiyiba. *‘Atiqot* 53: 1–44.
- Yassin, K., 1975. Anthropoid coffins from Raghdan royal palace tomb in Amman. *Annual of the Department of Antiquities of Jordan* 20: 57–68.
- 1988. *Archaeology of Jordan: Essay and Reports*. Amman: University of Jordan, Department of Archaeology.
- Zeder, M. A. and Lapham, H. A. 2010. Assessing the reliability of criteria used to identify postcranial bones in sheep, *Ovis*, and goats, *Capra*. *Journal of Archaeological Science* 37: 2887–905.
- Zeder, M. A. and Pilaar, S. E. 2010. Assessing the reliability of criteria used to identify mandibles and mandibular teeth in sheep, *Ovis*, and goats, *Capra*. *Journal of Archaeological Science* 37: 225–42.
- Zilberman, E., Amit, R., Bruner, I. and Nahmias, Y. 2004. *Neotectonic and Paleoseismic Study, Bet She’an Valley*. Geological Survey of Israel Report, GSI/15/04. Jerusalem: Geological Survey of Israel.
- Zohary, D., Hopf, M. and Weiss, E. 2013. *Domestication of Plants in the Old World*. 4th ed. Oxford: Oxford University Press.
- Zori, N. 1962. An archaeological survey of the Beth-Shean Valley. In, *The Beth Shean Valley. The 17th Archaeological Convention*: 135–198. Jerusalem: Israel Exploration Society (Hebrew).