

Deir el-Balah: A Geological, Archaeological, and Historical Reassessment of an Egyptianizing 13th and 12th Century B.C.E. Center

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Salvage excavations conducted at Deir el-Balah from 1972 to 1982 revealed a Late Bronze II Egyptianizing settlement (Strata IX–IV) and cemetery located along the Ways of Horus. In preliminary reports, Deir el-Balah is presented as a 14th- (Amarna-period) and 13th-century B.C.E. site, a stratigraphic interpretation that rests on the assumption that a large, open, man-made pit or crater served as a water reservoir. Based on an analysis of the microstratigraphy and sediments using grain size and micromorphological techniques, we challenge the claim that the crater ever functioned as a pond or water reservoir. Considered together with a reanalysis of the archaeological evidence, we propose that the two main periods of Late Bronze Age occupation, Strata IX and VII, date to the 13th and 13th/early 12th centuries B.C.E. As a result of the re-dating of Deir el-Balah, the site should be understood within the context of an expanding imperialistic Egyptian presence that characterized 19th and early 20th Dynasty New Kingdom Egyptian policy in Canaan.

During the final centuries of the Bronze Age (ca. 1400–1200 B.C.E.), Canaan formed part of an economic world system dominated by the major Late Bronze Age powers, Egypt and Hatti, and powerful coastal city-states that were linked by a vast economic and political network. Though not a significant core area, Canaan was a cultural and commercial crossroads of the region that was essential to Egyptian strategic and economic goals in the area. Egypt's imperial ambitions in the southern Levant are evident in numerous New Kingdom texts and in the Egyptianizing material culture excavated at sev-

eral strategically located sites in Canaan¹ (for overviews, see Weinstein 1981; Higginbotham 1996;

¹We use the term “Canaan” as a geopolitical entity that includes Israel, Jordan, the West Bank and Gaza Strip, Lebanon, and southern Syria. It is possible to identify, archaeologically speaking, second-millennium material culture in this region that shares many features in common. In this article, “Canaanite” is used to describe this culture and the peoples who produced it and spoke a Canaanite language. It does not represent an ethnic entity, but rather a group of people who share a common culture and live within a region that was defined by others as “Canaan” (Naʾaman 1994; 1999; Rainey 1996; Hess 1998).



Fig. 1. Map of selected Late Bronze Age sites in Canaan with a 13th- and early 12th-century Egyptian presence (blank template map © 2004 American Schools of Oriental Research).

1998; 2000; Hasel 1998; Killebrew 2005: 51–92; Morris 2005). Deir el-Balah is one of numerous Egyptian strongholds located along the Ways of Horus, 13 km southwest of Gaza City in the southern coastal plain (fig. 1). Following the 1967 Six Day War, several years of illicit digging at the site uncovered anthropoid coffins containing a wealth of burial goods. In response to this widespread looting of the site, Trude Dothan conducted salvage excavations from 1972 to 1982 that revealed a 13th-century B.C.E. cemetery and an associated settlement (T. Dothan 1972; 1973; 1979; 1981; 1982; 1985a; 1985b; 1987; 1998; Beit-Arie 1985). In her preliminary reports, Dothan delineates nine strata and dates Strata IX–IV to the 14th and 13th centuries B.C.E. The stratigraphic interpretation is based in part on the excavation of a large, open, man-made pit at the site that she interprets as a water reservoir and terms a “man-made crater-pond” (e.g., T. Dothan 1985b: 37)

or “lake” or “pool” (e.g., T. Dothan 1993: 343). As a result of these general preliminary reports, this interpretation has entered the scholarly literature as an example of an Amarna-period Egyptianizing settlement (see, e.g., Morris 2005: 302–5).

In this article, we reexamine the published interpretations of the site in light of the results of geoarchaeological investigations conducted at the site by Paul Goldberg and Arlene Rosen and the available archaeological evidence. Based on an analysis of the microstratigraphy and sediments using grain size and micromorphological techniques, we challenge the interpretation that the crater ever served as a pond or water source. Second, we reassess the stratigraphic interpretation as published in preliminary reports and reconsider the dating of the site in light of a representative assemblage of pottery from several loci in the potters’ workshop and parallel assemblages from the 13th-century cemetery.² Our results question the 14th-century Amarna-period date assigned to Stratum IX by the excavator and the subdivision of the Late Bronze Age occupation into six main strata (Strata IX–IV). Instead, we propose that the archaeological evidence indicates two main periods of Late Bronze Age occupation that should be attributed to 19th and early 20th Dynasty-period Egyptian activities at the site.

GEOLOGICAL AND ARCHAEOLOGICAL ANALYSIS OF DEIR EL-BALAH

The evidence from Deir el-Balah originates from three main sources: (1) illicit excavations in the cemetery following the 1967 Six Day War, (2) salvage excavations in the cemetery from 1972 to 1979 (T. Dothan 1972; 1973; 1979; Beit-Arie 1985); and (3) a second series of salvage excavations from 1980 to 1982 concentrating on uncovering the settlement (T. Dothan 1981; 1982; 1985a; 1985b; 1987; 1993; 1998; fig. 2). Dothan’s excavations in the settlement uncovered two major Late Bronze Age architectural phases, referred to as Strata IX and VII in the preliminary reports, and a large square pit or man-made crater (e.g., T. Dothan 1993; contrary to T. Dothan 1985b where she originally subdivides the Late Bronze Age occupation into three main strata—VI–

² Ann E. Killebrew would like to thank Professor Trude Dothan who granted permission to publish the Deir el-Balah material that appears in Killebrew 1999.



Fig. 2. View of the excavations in the Deir el-Balah settlement, looking southwest. (Courtesy of Trude Dothan)

IV; fig. 3). Other architectural remains were assigned to Strata VI, V, and IV, largely based on the assumption that the crater served as a pond or water reservoir during the Strata IX–VII occupation at the site. Thus, in Dothan's view, any architectural remains constructed on top of the crater fill must postdate the Stratum VII administrative building. Several post-Late Bronze Age episodes at the site include pits containing Philistine bichrome pottery (Stratum III) or Iron II red-slipped pottery (Stratum II) and a wadi that cut through the Late Bronze II structures and contained large quantities of Byzantine pottery (Stratum I). The site was subsequently covered by sand dunes.

The earliest activity at the site was the excavation of a large square-shaped crater, measuring approximately 20×20 m and 5 m deep. Two interpretations regarding the later use of the crater have emerged. Trude Dothan suggests that it served as a reservoir or pool for the site during Strata IX–VII. Following the abandonment of the Stratum VII square administrative building, the "pool" fell into disuse and was filled with debris. Several potters' kilns and structures were then constructed on top of the fill and

were designated as Strata VI–IV in the preliminary reports (T. Dothan 1993: 344–45). An alternative interpretation presented here is that the crater was initially used as a clay and mudbrick quarry. During the course of the Stratum IX occupation, the open pit filled with refuse (including massive amounts of broken pottery, especially beer bottles) and ash connected with activities in the Stratum IX potters' workshop. It is not possible to determine with certainty how long the crater served as an open trash pit. However, due to the nature of the relatively coarse fill, the significant quantity of ash and large pieces of broken pottery, and the homogeneity of the pottery assemblage, the crater could have filled rapidly over the course of a generation or two with debris from the potters' workshop. Over time the Stratum IX industrial area architecturally expanded onto the crater as it slowly filled with debris. Two kilns and structures constructed on top of the crater fill represent later phases of the Stratum IX occupation at the site. Thus, the function and ability of the crater to hold water are key to the site's stratigraphic interpretation and dating of the Late Bronze Age occupation at Deir el-Balah.

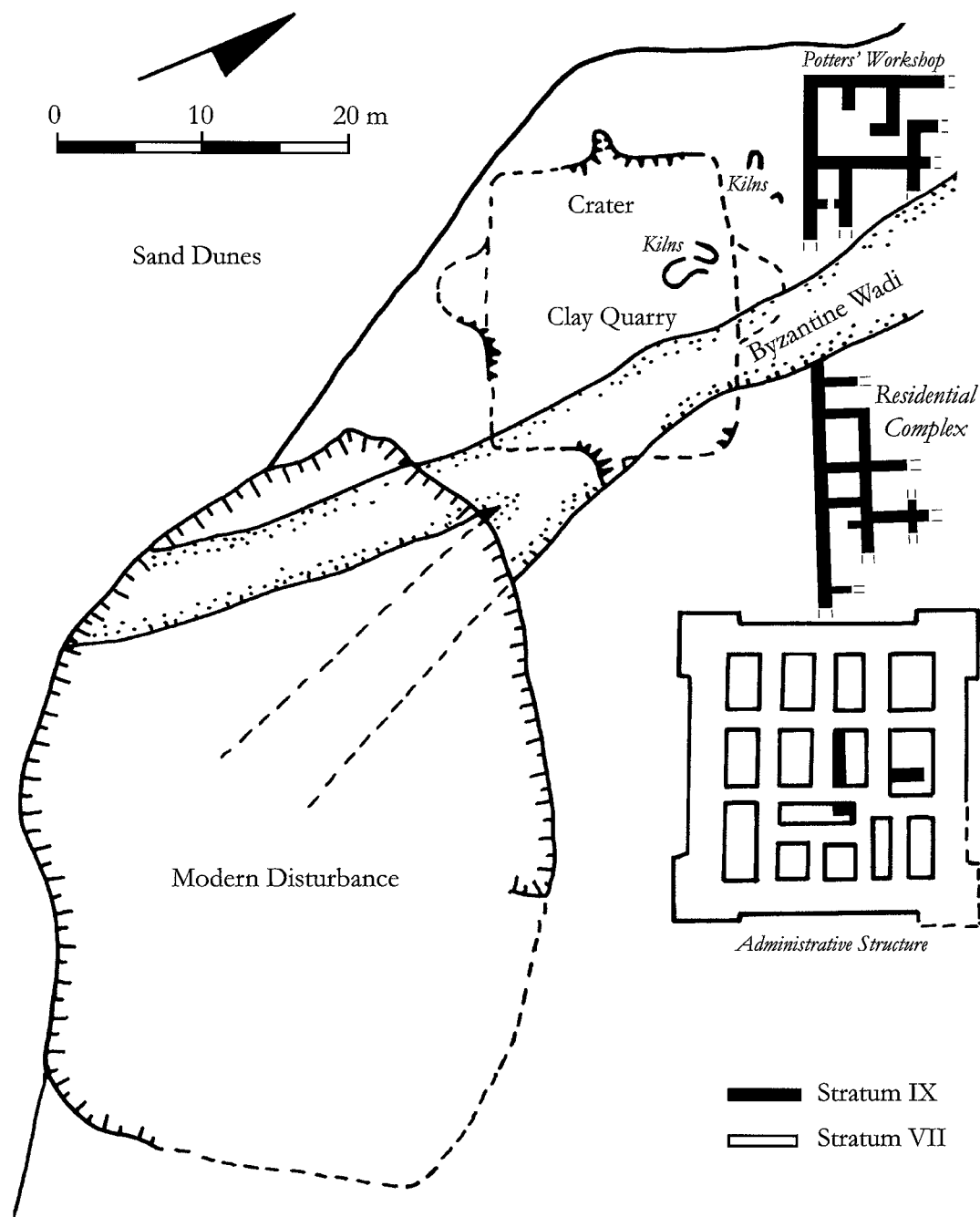


Fig. 3. Schematic plan of the main archaeological elements (Strata IX and VII) at Deir el-Balah. Redrawn after T. Dothan 1993: 343.

Geological Observations

During visits to the site in 1981 and 1982, Paul Goldberg and Arlene Rosen collected 34 samples from various natural and cultural deposits within

and around the settlement and associated cemetery. The natural sediments consist of local soils and sediments of late Pleistocene age that underlie the site, as well as sedimentary fills that come from within the large depression referred to as the "crater." Cultural

TABLE 1. Percentages of Sand, Silt, and Clay from Representative Samples

<i>Sample no.</i>	<i>% Sand</i>	<i>% Silt</i>	<i>% Clay</i>	<i>Description</i>
DB 81-101	86.5	13.5	—	Kurkar from crater
DB 81-102	85.8	14.5	—	Kurkar from crater
DB 81-103	54.0	27.5	18.5	Brown “nazaz”
DB 81-104	38.0	51.0	11.0	Yellow “nazaz” from crater
DB 81-105	18.0	62.0	20.0	“Stiff” clay” (laminated silts) from crater L. 1376
DB 81-106	58.5	24.0	17.5	Brown “nazaz” from crater, L. 1376
DB 81-107	36.0	55.0	9.0	Yellow “nazaz” from crater
DB 81-108	37.0	41.0	22.0	Clay sediment from potters’ area, L. 1930 resting on top of Floor 1938
DB-brick 2	49.0	45.0	6.0	Mudbrick, L. 402
DB-SW pit	63.0	33.0	4.0	Pit fill
DB-1404	58.0	30.0	12.0	Sediment, T. 1404
DB-1406	37.0	50.0	13.0	Sediment, T. 1406

materials analyzed by Goldberg and Rosen include bricks, kilns, and clay anthropoid coffins.

The deposits underlying the site have been referred to as yellow and brown “nazaz.”³ The upper yellow layer overlies the coarser brown sediment. They consist of sandy silts and silts that have been pedologically modified into materials resembling residual and cumulic dark brown soils and residual quartzic-psammic arid brown soils (Dan et al. 1976; Goldberg et al. 1986: 347). The crater cut through both layers. Granulometric analysis was carried out over 20 years ago using standard sieving and hydrometer methods as described by Lambe (1951). The analysis shows that the brown “nazaz” is distinctly sandier than the yellow “nazaz” (with 54–58.5 percent sand vs. 36–38 percent sand in the yellow “nazaz”) and is slightly richer in clay (17.5–18.5 vs. 9–11 percent in the yellow “nazaz”) (table 1; figs. 4, 5). The yellow “nazaz” contains more silt. In fact, the textures of these materials indicate that the sediment is not a nazaz, but rather a residual sand grumusol (Dan and Raz 1970). These textural changes are also clearly shown in thin-sections (figs. 6, 7).

Size analyses could not be performed on the baked kiln and anthropoid coffin samples because individual particles cannot be dispersed with materials that have been fired. In thin-section, however, one can readily observe that these materials are similar

to the underlying Pleistocene material (“nazaz”), although the sarcophagus is quite fine grained and with little sand-sized quartz (fig. 8). As can be seen in the thin-section, the kiln sample is virtually identical to the yellow “nazaz” (fig. 9). The same holds true for mudbrick, whether from Stratum IX (sample DB 81–5; fig. 10) or from Stratum VII (sample DB 81–7; fig. 11). It should be noted that these materials are also texturally similar to the pottery, which were shown to be locally derived from the underlying sediments and soils (see Goldberg et al. 1986 for a detailed discussion and description of “nazaz” sediments). This evidence indicates that the crater served as a quarry for these materials—brick, clay coffins, kiln, and pottery.

Other samples in table 1 differ in the sand/silt/clay ratios from the local sediment. This is probably a result of mixing or selective removal of some grain sizes. For example, the texture of a sediment sample DB 81–108 (clay sample from L. 1930 resting on top of L. 1938 in the potters’ workshop) appears to be a combination of levigated yellow and brown “nazaz” in roughly equal proportions. Similarly, sample DB 81-105 (bedded silts from the crater fill) was deposited by low-energy runoff that filled the crater with fine deposits, while leaving the coarser particles behind (figs. 12a, 12b). Therefore, many of the samples collected at the site vary in sand and silt content, yet clay does not exceed more than about 20 percent.

Another question addressed by this study is the possible function of the crater as a pool. Whereas some mottling and iron staining was observed at the base in Square A10, they are not sufficiently well developed to indicate that water stood over a long

³The term “nazaz” refers to a surface gley soil (Dan and Raz 1970) and apparently was applied by previous workers to refer to the underlying Pleistocene soils and sediments. It is used here with quotation marks (“ ”) to avoid confusion.

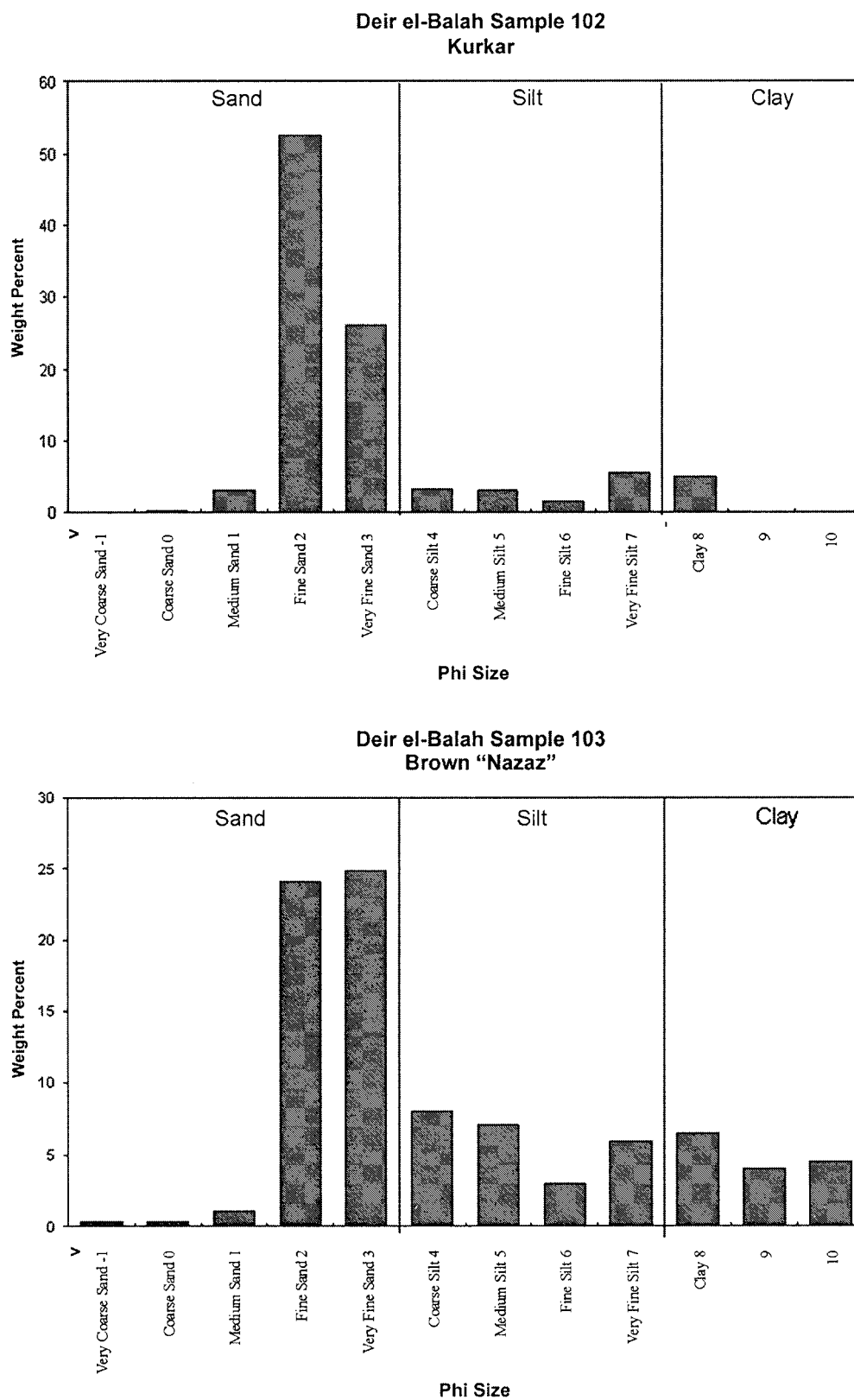


Fig. 4. Histograms of grain size distributions for kurkar (Sample 102) and brown "nazaz" (Sample 103).

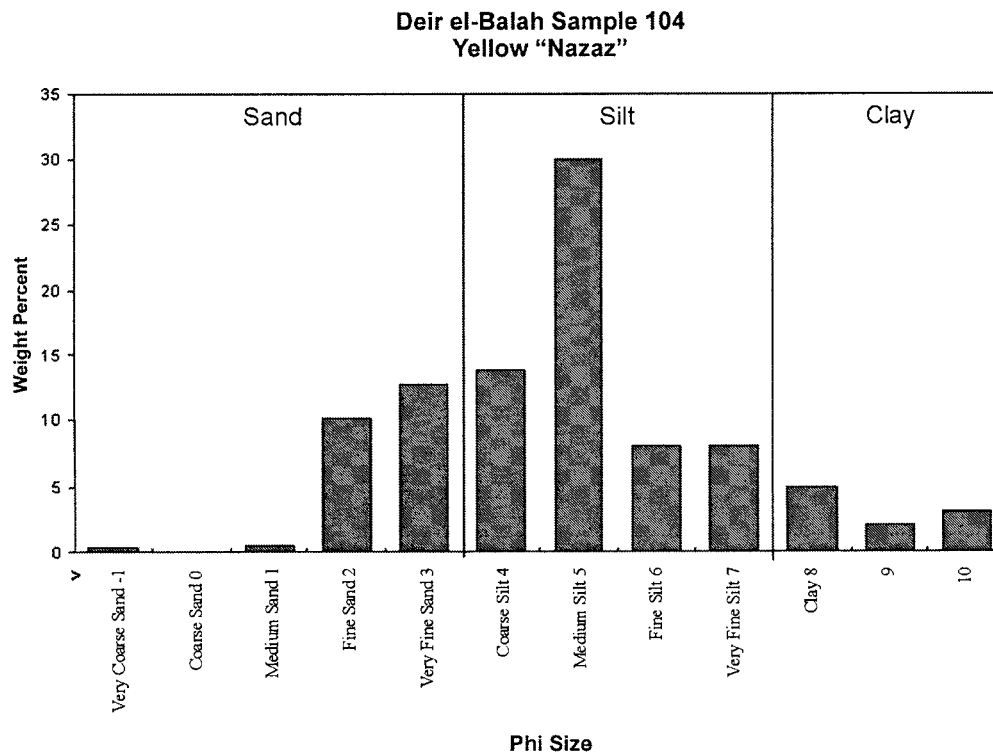
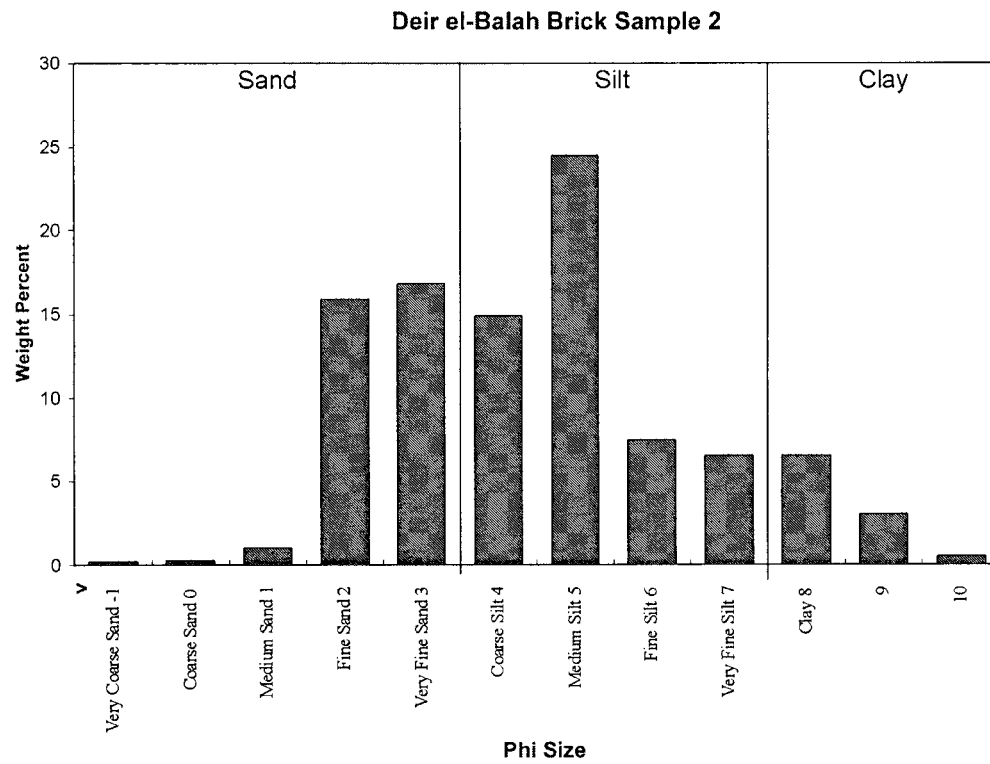


Fig. 5. Histograms of grain size distributions for brick (No. 2) and yellow "nazaz" (Sample 104). Note that the brick sample appears to be most similar to the yellow "nazaz."

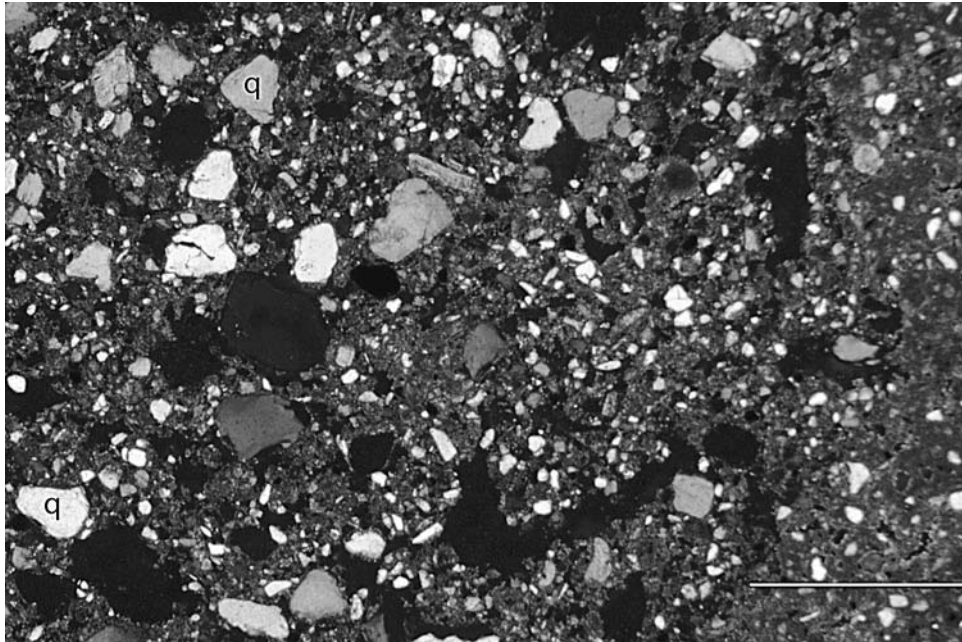


Fig. 6. Photomicrograph of yellow “nazaz” (Sample 104). The large, rounded grains are quartz sand (q); the smaller “dots” are finer quartz silt. The matrix—the fine, undifferentiated material in which these coarser grains are enclosed—is composed of calcareous clay. Taken with cross-polarized light (XPL). The scale here and in all photomicrographs is 1 mm.

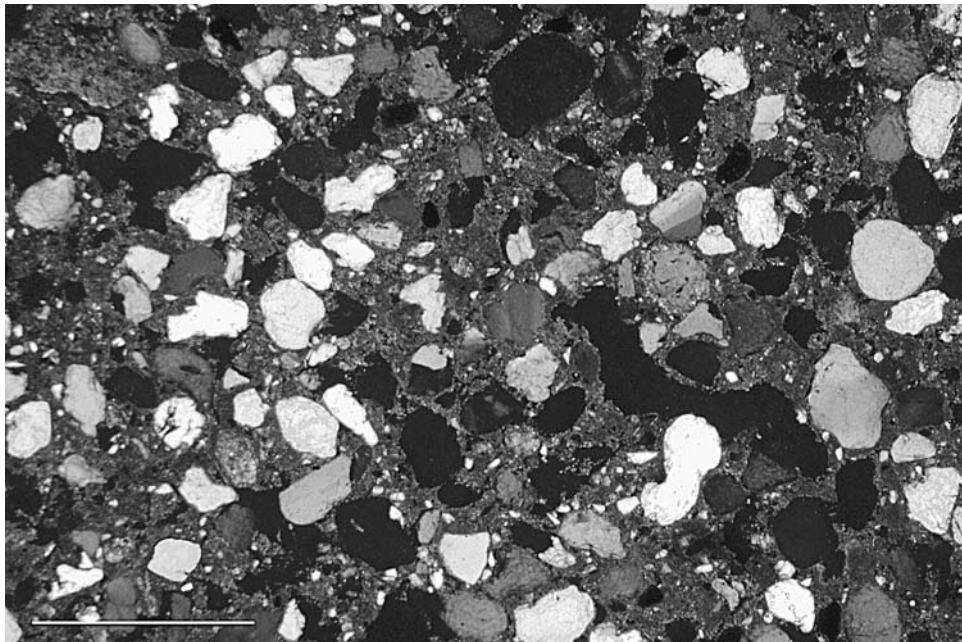


Fig. 7. Photomicrograph of brown “nazaz” (Sample 103). Note the general similarity to figure 6 in overall composition. However, this material has a greater quantity of quartz sand, which is also coarser and is better sorted (more uniform in size) than Sample 104. Taken with cross-polarized light (XPL). Scale = 1 mm.

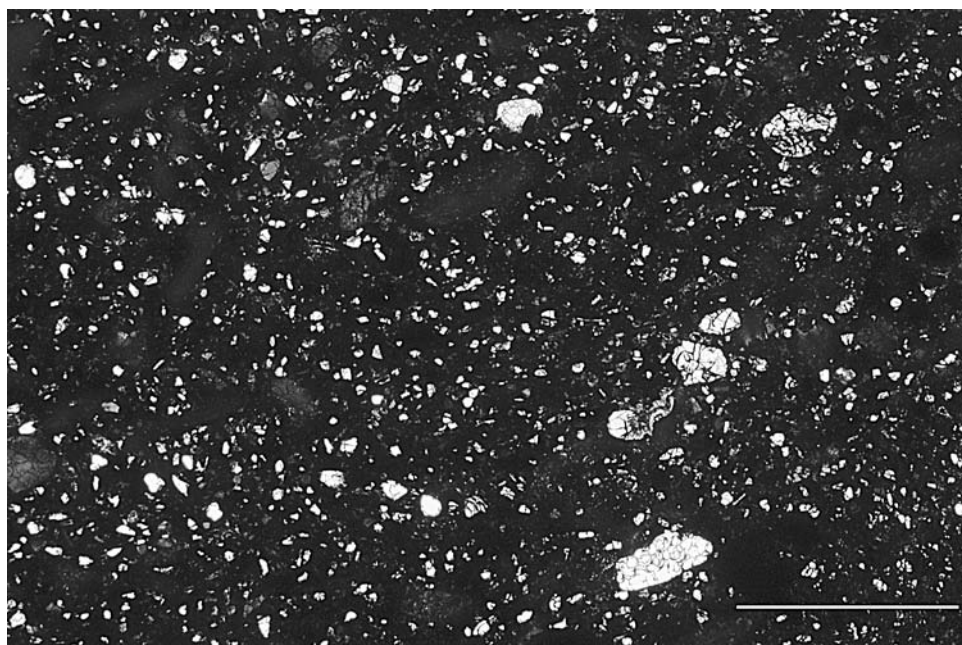


Fig. 8. Photomicrograph of anthropoid coffin sample found inside Kiln L. 512. Note the similarity to the “nazaz” samples, although the coarse sand-size quartz fraction is lacking. Taken with cross-polarized light (XPL). Scale = 1 mm.

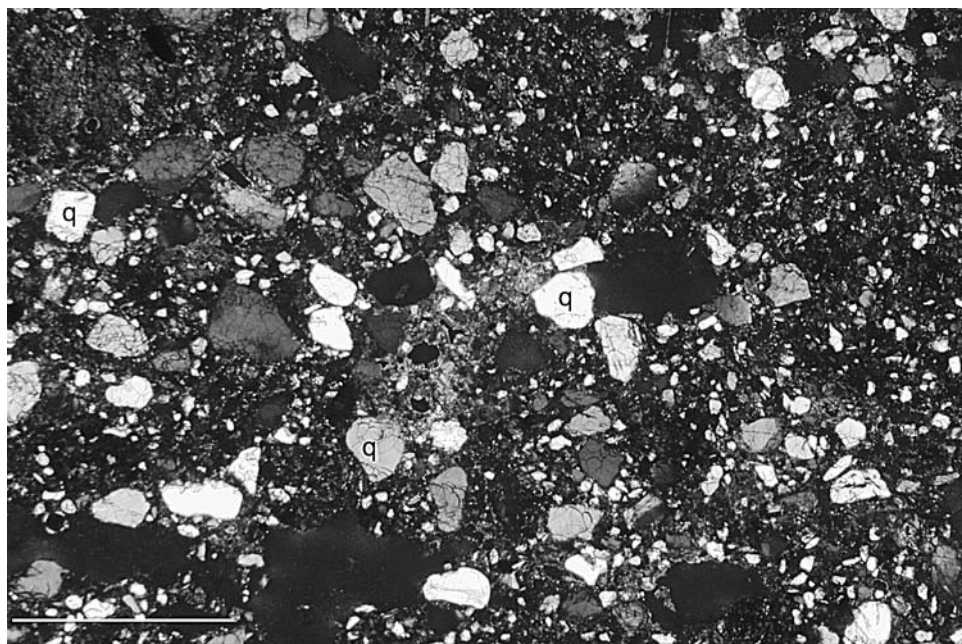


Fig. 9. Photomicrograph of a kiln sample. Note the resemblance to the brown “nazaz” shown in figure 7. Taken with cross-polarized light (XPL). Scale = 1 mm.

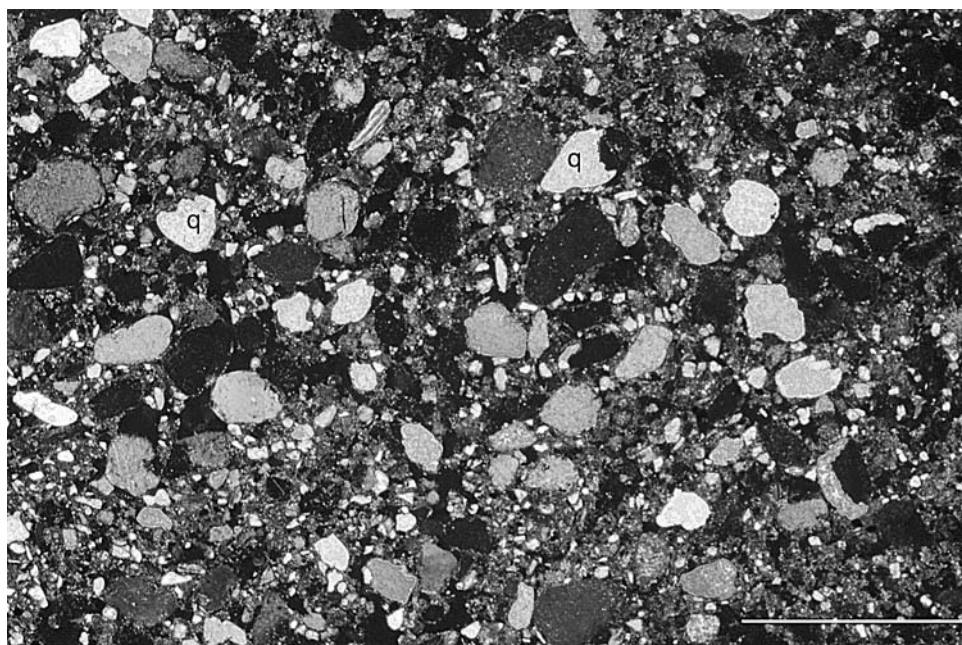


Fig. 10. Photomicrograph of mudbrick (Sample 81-5, W. 1503). Note the similarity with the brown "nazaz" of figure 7. Taken with cross-polarized light (XPL). Scale = 1 mm.

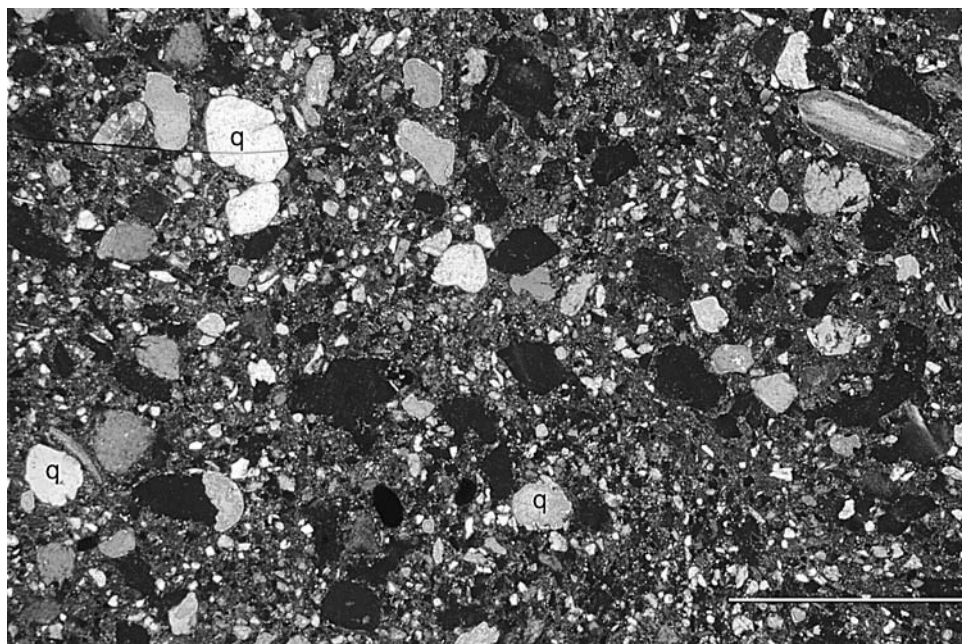


Fig. 11. Photomicrograph of mudbrick (Sample 81-7, W. 1511) showing quartz sand and silt in a calcareous matrix. The sample is identical to that in figure 10. Taken with cross-polarized light (XPL). Scale = 1 mm.

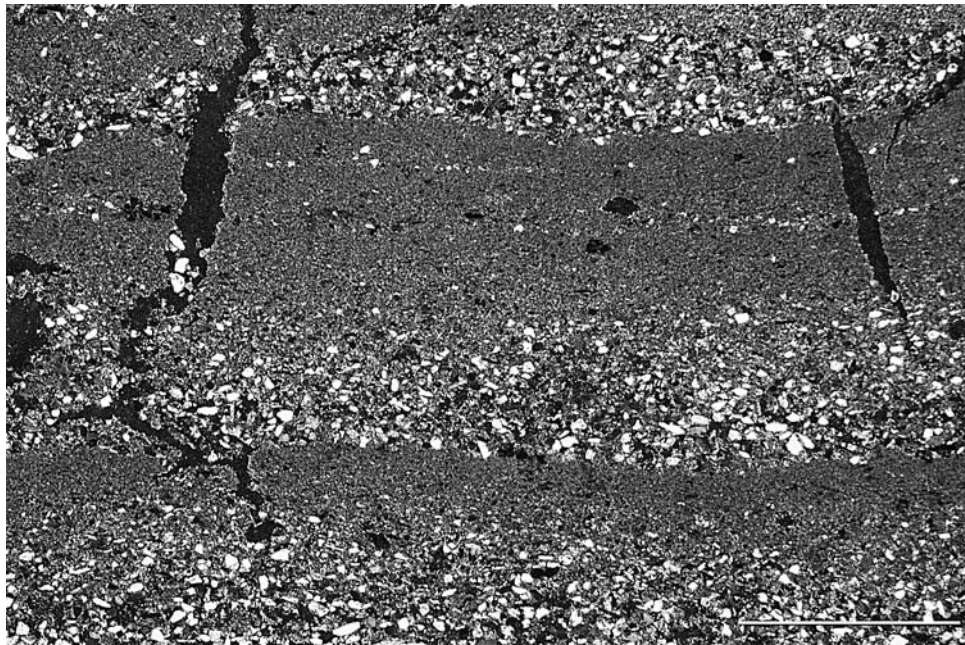


Fig. 12. (a) Field photograph of section through crater showing infill by ash and refuse layers and finely laminated clayey silts. (b) Photomicrograph of crater sample. Note the lamination and graded bedding of water-laid silt and clay evident in thin-section. Taken with cross-polarized light (XPL). Scale = 1 mm.

period of time. Also, the laminations exhibited by the silts and sands that fill the "crater" (figs. 12a, 12b) would be logically attributable to runoff produced during the winter rainy season. Runoff would have carried the silts and sands into the basin of the "pool" depression (Talbot and Allen 1996: 100).

Finally, the porosity of the natural yellow and brown "nazaz" sediment, as revealed in thin-sections (figs. 6, 7), is sufficiently great as to rule out the possibility that the "nazaz" could have impeded the drainage of water. Hydraulic conductivity (an indicator of permeability) cannot be viewed in two-dimensional thin-sections, which exhibit only void space or porosity. However, measurements of hydraulic conductivity made by A. Issar revealed values of 60 cm/day for raw, unmodified sediment and 20 cm/day for sediment that had been artificially compacted (Issar n.d.). These measured values of water conductivity indicate that the "crater" could have only held rain and runoff water for a limited time, as the following calculations demonstrate.

To be on the conservative side, we use figures that are unreasonably and unrealistically large, which would err in the direction of the argument that the "crater" was indeed a pool. The area of the crater is approximately $20 \text{ m} \times 20 \text{ m}$ ($= 400 \text{ m}^2$). To this we may wish to add 30 m per side as a possible contributor to runoff, i.e., $50 \times 50 \text{ m}$ ($= 2500 \text{ m}^2$). If we make overly generous estimates of annual precipitation of 400 mm (present measurements indicate about 300 mm/yr.; Orni and Efrat 1980) that would fall at one time, and with no evaporation (presently 3 to 4.5 mm/day; Orni and Efrat 1980) or infiltration of soil runoff, then the total volume of water for a given winter season when rainfall occurs is 1000 m^3 ($50 \times 50 \times 0.4 \text{ m}$). If this volume is restricted to the area of the crater itself (400 m^2), then we arrive at a depth of standing water within the crater itself of 2.5 m (i.e., $1000 \text{ m}^3/400 \text{ m}^2$). If we use the larger hydraulic conductivity value of 60 cm/day, we readily see that under natural conditions, the crater would hold water for 4 days. For the smaller value, 20 cm/day, the water would drain after 12.5 days.

Thus, the available evidence clearly indicates that the crater could not have served as a pool for holding water for more than only a few days, even if the sediment had been compacted along the base. In this light, one may also ask the simple question, if the inhabitants had wanted to build a pool (even a semi-permanent one), why did they not line it with plaster? The fact that plastered installations and floors (not yet published) occur elsewhere within the site

shows that they possessed the technology and ability to manufacture it, if they so desired. If this interpretation is correct, the stratigraphy of the site requires revision and reexamination.

Archaeological Evidence: A Reevaluation⁴

The best-preserved architectural phase, designated as Stratum IX in the most recent summaries (e.g., T. Dothan 1993; 1998), comprises a large, partially excavated mudbrick structure or "residential complex" (fig. 3). This building was constructed to the northeast of the crater, with some fragmentary architectural remnants to the southeast of the crater (not indicated on fig. 3). There is no archaeological evidence that this structure continued to the west and south or surrounded the crater, as indicated in preliminary reports (see, e.g., T. Dothan 1982: 754–55). Thus, Dothan's comparisons to Amarna-period houses or palaces with pools in the center are invalid (e.g., T. Dothan 1982: 755; 1985b: 37). The excavated portion of the building measures ca. 50 m in length and includes 15 interconnected rooms. The size of the earliest settlement is unknown but appears to continue to the northwest under the sand dunes and to the north and northeast under the modern-day agricultural fields. The structure was later artificially divided into two sections by a streambed that cut the Stratum IX residency during the Byzantine period (fig. 3). In the rooms on either side of the wadi, large quantities of broken but largely restorable vessels were excavated.

The majority of the vessels, both Egyptian- and Canaanite-style, were locally made (Goldberg et al. 1986; Yellin, Dothan, and Gould 1986; see Yellin, Dothan, and Gould 1990 regarding evidence for imported Egyptian vessels), with the Egyptian-style vessels comprising approximately 50 percent of the assemblage (based on the representative sample of diagnostic vessels and sherds appearing in the final report, approximately 50 percent of the vessels are Egyptian in style). Several of the rooms located to the west of the streambed belonged to a potters' workshop (figs. 3 and 13; see below). Other remains of the potters' industry at Deir el-Balah include four kilns located to the south of the workshop (fig. 3). Two of the kilns were constructed on top of the debris inside the crater. The two other kilns were located

⁴A detailed stratigraphic analysis of the site, including a locus-by-locus reassessment and reevaluation, is not possible until the publication of the final excavation report.

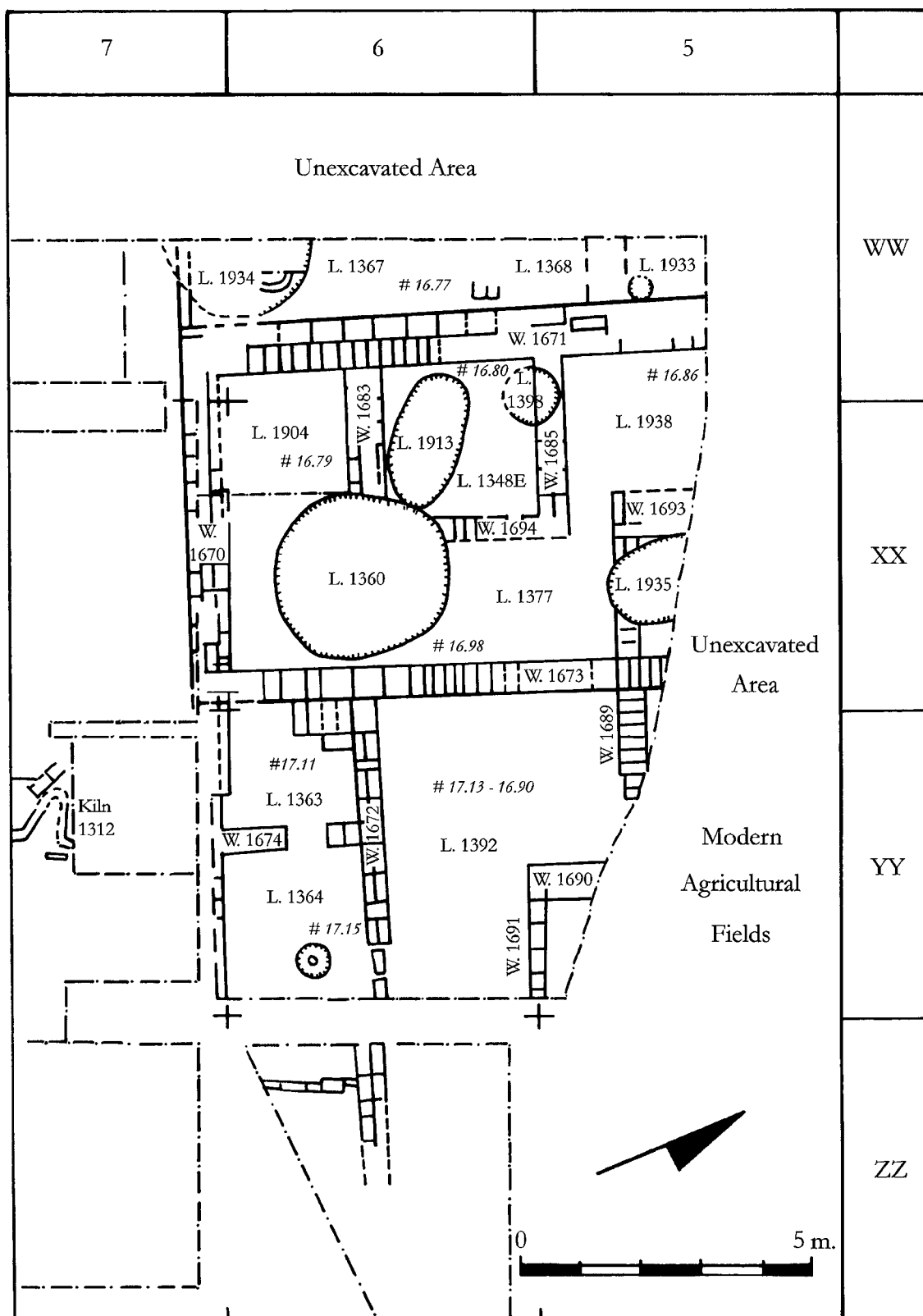


Fig. 13. Detailed plan of potters' workshop at Deir el-Balah. Redrawn after Killebrew 1999: ill. II:34.

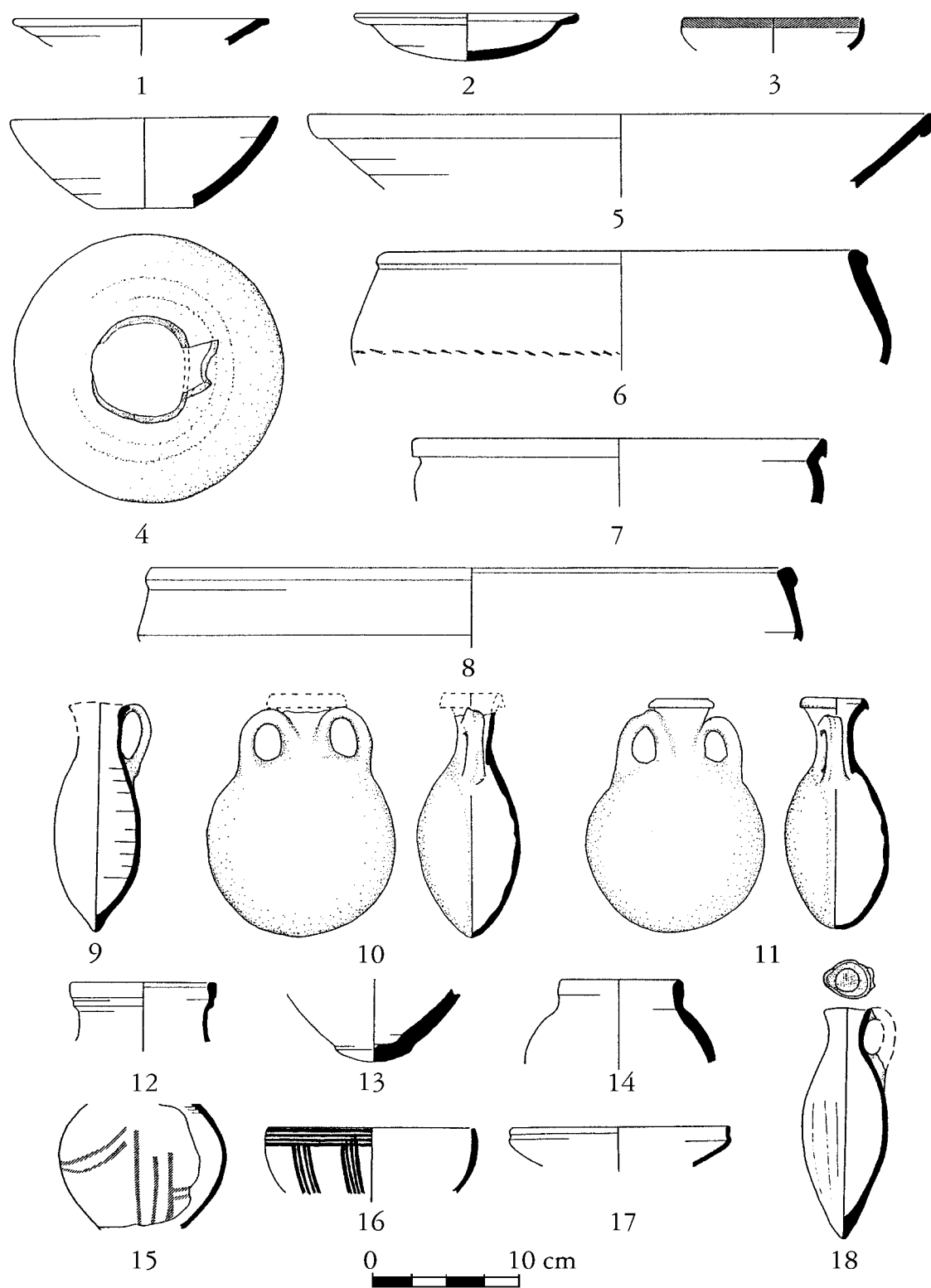


Fig. 14. Representative pottery assemblage from Floors 1348E and 1904 at Deir el-Balah. See table 2 for descriptions.

TABLE 2. Representative Pottery Assemblage from Floors 1348E and 1904, Illustrated in Figure 14

<i>No.</i>	<i>Object</i>	<i>Reg. No.</i>	<i>Locus</i>	<i>Level</i>
1	Bowl EG 1a	6183/1	1348E	16.77
2	Bowl EG 3	6089/2	1348E	16.99/16.91
3	Bowl EG 4	6101/6	1348E	16.91
4	Bowl EG 5b	6103/2	1348E	16.91
5	Bowl EG 6	6101/2	1348E	16.91
6	Krater CA 9c	6237/1	1904	16.81/16.79
7	Cooking Pot CA 18a	6211/1	1904	16.93/16.81
8	Krater CA 9c	6101/3	1348E	16.91
9	Juglet CA 15a	6213	1348E	16.72
10	Flask CA 29a	6199	1348E	16.79
11	Flask CA 29a	6200	1348E	16.77
12	Storage Jar CA 21a	6101/1	1348E	16.91
13	Storage Jar CA 21a	6101/7	1348E	16.91
14	Beer Bottle EG 19	6158/3	1904	16.92/16.83
15	Imitation Cypriot Jug CA	6205	1348E	16.91
16	Cypriot White Slip II Bowl	6103/1	1348E	16.91
17	Cypriot Base Ring II Bowl	6158/1	1904	16.92/16.83
18	Cypriot White Shaved Juglet	6108	1348E	16.88

outside the northernmost corner of the crater (see Killebrew 1996 for a detailed description of these kilns). It should be noted that the ash from one of the kilns (1313—the larger kiln between the workshop and crater in fig. 3) was dumped from the kiln into the crater fill.

The potters' workshop is especially relevant to this article (figs. 3 and 13; see Killebrew 1999: 52–60 for a detailed description). The workshop is located in the northern corner of the excavations. It includes a complex of rooms with clear signs of pottery production: moulds, several pits containing large quantities of raw materials such as ocher and levigated clay, in addition to potters' tools such as grinding vessels. The 70 m² workshop is bordered by Wall 1671 in the west and Wall 1670 in the south, continuing under the unexcavated areas. This structure is divided into two subareas by Wall 1673, with a series of rooms to the west and east. Most of the potters' activities took place in rooms to the west of Wall 1673.

The focus of activity associated with the potters' craft was in Room 1348E (fig. 13). Two later disturbances were discerned: Pit 1360 cut the southern corner of Room 1348E, and Pit 1398 cut the northern area of the room, damaging Wall 1685.

Remnants of plaster were found on the floor. In the western half of Room 1348E, an elliptical pit, L. 1913, was cut from the original floor of Room 1348E but did not disturb any of the room's walls. This pit is contemporary with the use of Room 1348E as a potters' workshop, as evidenced by mends between pottery from the pit and the floor and the similarity of the artifacts and their industrial nature. An additional locus that provides important information regarding the pottery production process is Room 1938 with its remnants of a plaster floor. During the final use of Room 1938, a 20- to 25-cm-thick layer of brown clay, L. 1930 (table 1), covered the entire portion of Room 1938 which was bordered to the northwest by Wall 1671 and to the southwest by Wall 1685. This room has been interpreted as a levigation room for clay preparation. Room 1392 was apparently a large open area (courtyard?) and is bordered by Walls 1689, 1673, and 1672. Two smaller rooms, L. 1363 and 1364, are located to the southwest of Room 1392. This complex of rooms was cut by the Byzantine wadi to the east and continues under the unexcavated area to the northeast.

The series of rooms to the southeast of the potters' workshop and the wadi are a continuation of the Stratum IX "residential complex" (fig. 3). These

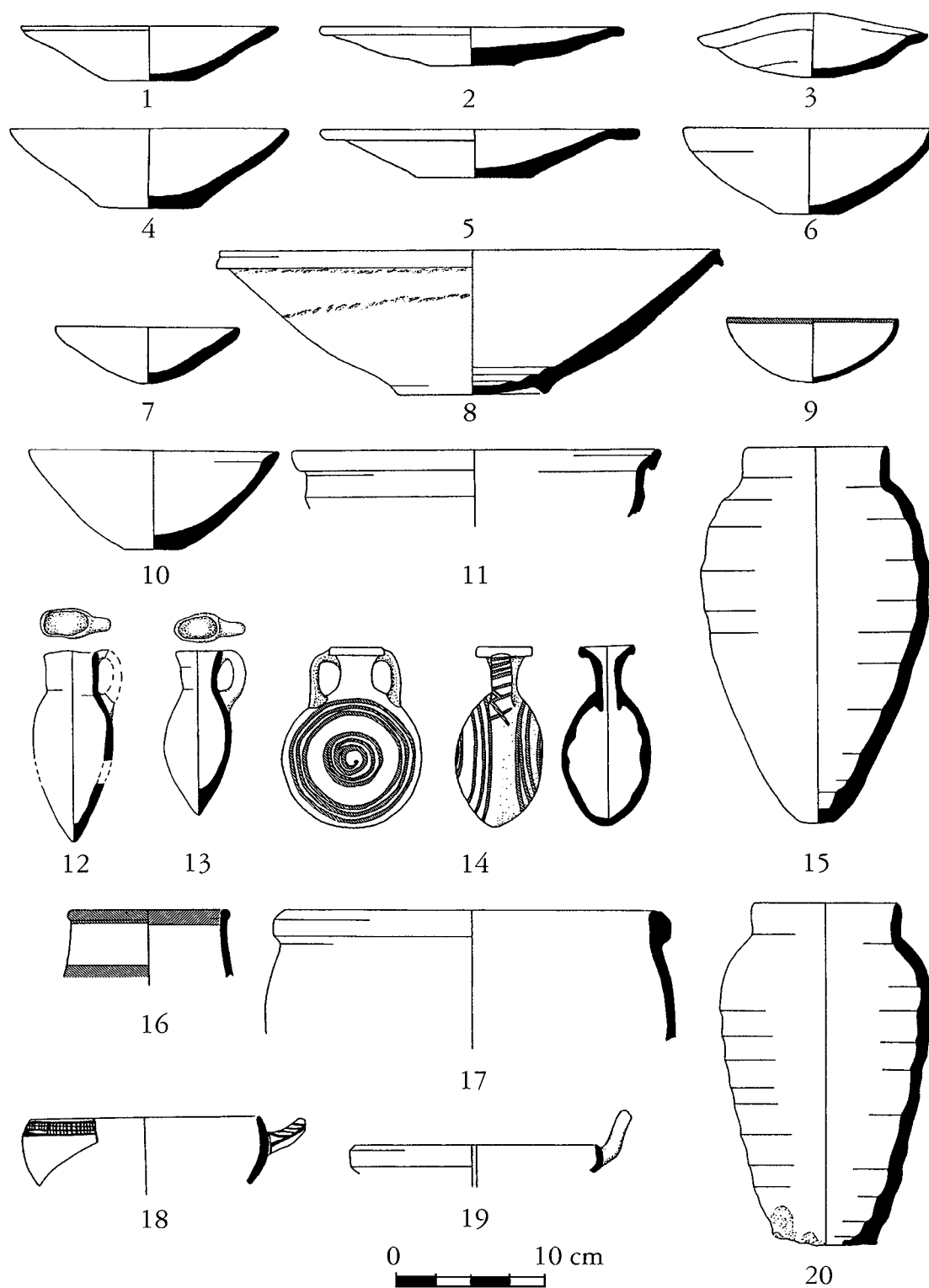


Fig. 15. Representative pottery assemblage from Pit 1913 (contemporary with the potters' workshop) at Deir el-Balah. See table 3 for descriptions.

TABLE 3. Representative Pottery Assemblage from Pit 1913, Illustrated in Figure 15

<i>No.</i>	<i>Object</i>	<i>Reg. No.</i>	<i>Locus</i>	<i>Level</i>
1	Bowl EG 1a.	6318/11	1913	16.60/16.53
2	Bowl EG 1b	6116/5	1913	16.91/16.86
3	Bowl EG 3	6347/6	1913	16.30/16.23
4	Bowl EG 1a	6112/1	1913	16.90
5	Bowl EG 1b	6318/6	1913	16.60/16.53
6	Bowl EG 5a	6366/2	1913	16.35/16.30
7	Bowl EG 4	6112/1	1913	16.90
8	Bowl EG 6	6366/1	1913	16.35/16.30
9	Bowl EG 4	6107/1	1913	16.94
10	Bowl CA 1	6363	1913	16.28
11	Cooking Pot CA 18b	6318/2	1913	16.60/16.53
12	Juglet CA 15a	6339/2	1913	16.62/16.51
13	Juglet CA 15a	6113	1913	16.91
14	Flask CA 28d	6109	1913	16.84
15	Handleless Container EG 10	6364	1913	16.37
16	Handleless Container EG 13	6116/4	1913	16.91/16.86
17	Handleless Container EG 14	6069/2	1913	17.10/16.99
18	Cypriot White Slip II Bowl	6354/6	1913	16.30/16.23
19	Cypriot Base Ring II Bowl	6347	1913	16.30/16.23
20	Beer Bottle EG 19	6365	1913	16.24

rooms were destroyed suddenly, as evidenced by the signs of destruction and the rich assemblage of restorable vessels found on their surfaces. The character of the ceramic assemblage demonstrates a mixture of Canaanite and Egyptian-style pottery, similar to that found in the potters' workshop and cemetery. However, due to the nature of the pottery and small finds, the functional use of this part of the residency was most likely administrative and/or domestic, rather than industrial.

A representative sample of pottery vessels resting on the floors of rooms associated with the potters' workshop (L. 1348E and 1904), Pit 1913, and the cemetery is presented in figures 14–16 and tables 2–4 (see Killebrew 2004; 2005: 67–79; 110–36 for a detailed description of these types, parallels, and dates). These include locally produced Egyptian-style bowls EG 1a (figs. 14:1 and 15:1, 4), EG 1b (fig. 15:2, 5), EG 3 (figs. 14:2 and 15:3), EG 4 (figs. 14:3 and 15:7, 9), EG 5a (figs. 15:6 and 16:1), EG 5b (fig. 14:4), EG 6 (figs. 14:5 and 15:8), Canaanite-style bowls CA 1 (fig. 15:10) and kraters CA 9c (fig. 14:6, 8), Canaanite-style cooking pots CA 18a (fig. 14:7) and 18b (fig. 15:11), Canaanite-style juglet CA 15a (figs. 14:9; 15:12, 13; and 16:2), flasks CA 28d

(fig. 15:14) and CA 29a (fig. 14:10, 11), Egyptian-style handleless containers EG 10 (fig. 15:15), EG 13 (fig. 15:16), EG 14 (fig. 15:17), Egyptian-style beer bottles EG 19 (figs. 14:14 and 15:20), and Canaanite storage jars CA 21a (fig. 14:12, 13), CA 21b (fig. 16:5), and CA 22 (fig. 16:4). Common imported Egyptian vessels found in small numbers in both the settlement and cemetery include white-slipped juglets EG 8 (fig. 16:3) and white-slipped storage jars EG 16 (fig. 16:6). Cypriot imports are typical of those found in Late Bronze IIB 13th-century B.C.E. contexts (figs. 14:16, 17, 18 and 15:18, 19). One especially diagnostic type that appears only in 13th- and early 12th-century contexts is the four-handled Canaanite storage jar (CA 21b)⁵ recovered from the

⁵This vessel is found in 13th- and 12th-century contexts, mainly in southern Canaan. See, e.g., Petrie 1930: pl. 19, Tomb 552, no. 43 P5; Starkey and Harding 1932: pl. 86:43 P6; Tufnell 1958: pl. 87:1020; M. Dothan 1971: pls. 82:9; 83:1–3; Aharoni 1975: pl. 49:12, no. 43 P5; T. Dothan 1979: ill. 22, 81, 89, 124, 130; Beck and Kochavi 1985: 34; Mazar 1985: fig. 26:14; Dever 1986: pls. 26:3; 27:1, 2; 30:31; Finkelstein 1986: 76–77, Type 20: fig. 7:20; Edelstein and Auran 1992: fig. 101. Examples imported from Canaan are also known from Cyprus. See, e.g., Karageorghis and Demas 1988: pls. 81:545; 194:545.

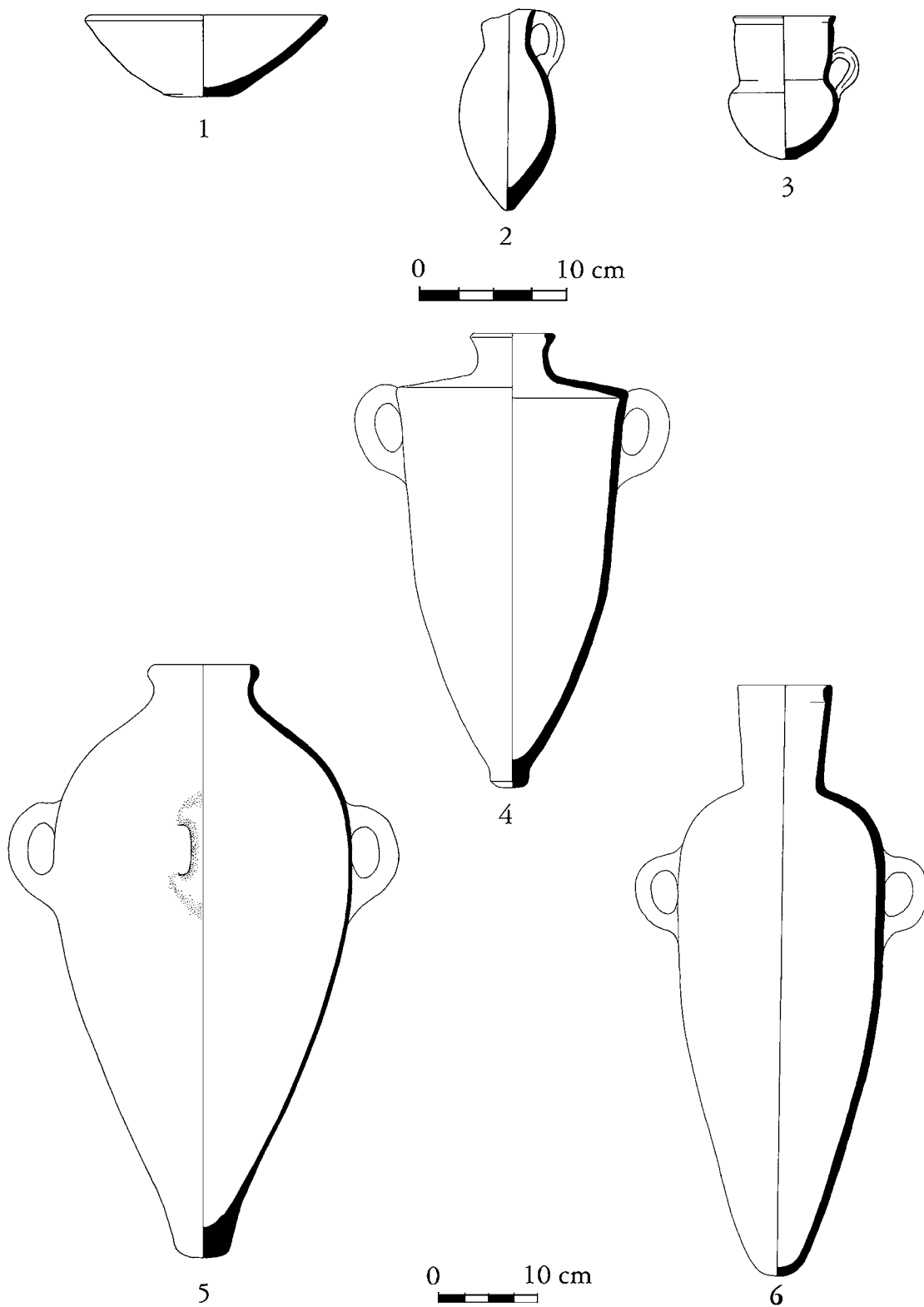


Fig. 16. Pottery from the Deir el-Balah cemetery (T. 114). See table 4 for descriptions.

TABLE 4. Pottery from the Deir el-Balah Cemetery, Illustrated in Figure 16

<i>No.</i>	<i>Object</i>	<i>Tomb</i>	<i>Dothan 1978</i>
1	Bowl EG 5a	114	Ills. 21, 27
2	Juglet CA 15a	114	Ills. 23, 26
3	Imported White-Slipped Juglet/Mug EG 8	114	Ills. 24, 29
4	Storage Jar CA 22	114	Ills. 17, 18
5	Storage Jar CA 21b	114	Ills. 22, 28
6	Imported White-Slipped Storage Jar EG 16	114	Ills. 14, 16

Deir el-Balah cemetery (fig. 16:5). A second complete example was found standing against Wall 1670, contemporary with the use of the potters' workshop. Taken as an assemblage, the Deir el-Balah repertoire of Stratum IX pottery is typical of those from other 13th-century B.C.E. contexts in Canaan (see Killebrew 2005: 67–79, 110–36).⁶

The second main architectural phase, designated in the preliminary excavation reports as Stratum VII, is a square-shaped monumental mudbrick structure (fig. 17b) that served an administrative or possibly military function (Higginbotham 2000: 284–90; Killebrew 2005: 60–64; see also Oren and Shershevsky 1989: 18). Stratigraphically, this building was partially constructed on top of the southeastern part of the residency, proving conclusively that it post-dates the Stratum IX structure (see, e.g., T. Dothan 1993: 343–44; fig. 3). The structure measures ca. 20 × 20 m and contained 14 rooms, with a tower at each of the four corners. The outer walls are 2.4 m in width, indicating that this monumental building probably stood several stories high. Only the foundations of the building were preserved. Several Egyptianizing features are evident, including construction techniques such as sand laid along the base of the foundation walls and a foundation deposit consisting of two bowls and a lamp (T. Dothan 1981: 127; for a discussion of the lamp-and-bowl foundation deposits dating to the end of 13th and early 12th centuries, see Bunimovitz and Zimhoni 1993). None of

the floors of this building were preserved. Due to the poorly preserved state of this structure, it is difficult to date it. Thus, the excavator's dating of the building to the Egyptian reign of Seti I is based on largely circumstantial evidence—the assumption that the crater remained in use as a pool during Stratum VII, and that reliefs commemorating Seti I's campaign to Asia decorating the walls of the Temple of Amon at Karnak include as well depictions of similar structures with “pools” along the Ways of Horus (T. Dothan 1982: 758–62; 1985b: 40; 1987). However, as E. Morris (2005: 516) observes regarding the association of the Stratum VII fortress with this relief, Deir el-Balah is located between Raphia and Gaza where no fort is indicated on the relief.⁷ Thus, Deir el-Balah is not listed in the Karnak relief or in Papyrus Anastasi I. Based on its stratigraphic relationship to the 13th-century Stratum IX residency and comparisons with similar structures at Building 1104 at Aphek (Kochavi 1990), Tel Mor (Strata VIII–VII; M. Dothan 1960: 124), and Tel Beth Shean (Late Level VII [fig. 17a]; Mazar 2003) that date to the end of the Late Bronze Age, we date the Deir el-Balah Stratum VII administrative building to the late 13th and/or early 12th centuries B.C.E., contemporary with the end of the 19th and early 20th Dynasties.

The Deir el-Balah cemetery provides an additional key piece of evidence regarding the major period of occupation at the site. The dominant element in the cemetery is its Egyptian character, both in the burial customs and in the artifacts that date to the 13th century B.C.E. (T. Dothan 1972; 1973;

⁶The complete assemblage of Canaanite-style pottery was analyzed by A. E. Killebrew and submitted for publication in 1989. This analysis indicated that the Canaanite pottery assemblage from Deir el-Balah should be dated to the 13th or 13th/early 12th centuries B.C.E. It should be noted that a few examples of blue painted Egyptian-style ceramics were recovered from the Deir el-Balah settlement. In Egypt, this decorative feature on pottery appears in 18th through 20th Dynasty contexts (e.g., Aston 1996: 79–80).

⁷For a detailed discussion, see Hasel 1998: 98–99, Cavillier 2001; and Morris 2005: 402–47. See also Hoffmeier and el-Mak-soud 2003 regarding the recent excavations at Tell el-Borg in northern Sinai and the discovery of a new military site on the Ways of Horus.

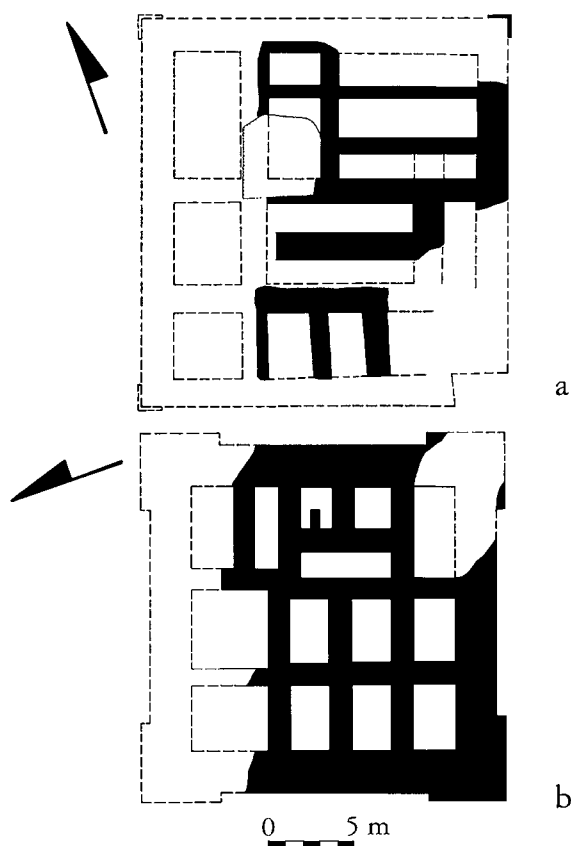


Fig. 17. Comparative plans of Egyptian-style administrative buildings at Beth Shean (late Level VII) and Deir el-Balah (Stratum VII). Redrawn after Mazar 1994: 80.

1979; 1985a; 1985b; 1993: 345–47; Beit-Arieh 1985; Gonen 1992: 28–30). Thus far, no burials dating to the 14th century B.C.E. have been excavated. Although the majority of the burials are simple graves dug into the Pleistocene sediments,⁸ approximately 50 clay anthropoid coffins recovered mainly from illicit excavations at the site testify to the Egyptian influence at the site. The coffins are often found in groups of three or more, with simple graves interspersed between the anthropoid coffins. A rich assemblage of burial gifts is deposited both inside and outside the coffin. Storage jars, found at the head of the coffin, mark the burial (fig. 18). This was a common burial practice for both anthropoid and simple

⁸These simple graves, or “pit burials” as termed by R. Gonen (1992: 15–20), are a burial custom known sporadically from the Middle Bronze II period; however, this custom only becomes prevalent in the coastal and valley regions of Canaan during the Late Bronze II. Gonen (1992: 18, 34–40) attributes the increasing popularity of the individual inhumations in pit burials during the Late Bronze II period to the rise of Egyptian influence in the coastal and valley areas.



Fig. 18. Excavated anthropoid coffin from Deir el-Balah. (Courtesy of Trude Dothan)

burials. The anthropoid burials often contained more than one individual and were oriented to the west. It is noteworthy that none of the burials date to the 18th Dynasty.

REVISED CHRONOLOGY AND REASSESSMENT OF DEIR EL-BALAH AND ITS HISTORICAL IMPLICATIONS

In conclusion, the results of this study confirm that the large pit or crater at Deir el-Balah served as a quarry to obtain material for the manufacture of bricks, anthropoid coffins, and pottery. Furthermore, these natural “nazaz” sediments would not retain water for any extended period of time, and consequently the crater never functioned as a water reservoir. As an open pit used as a quarry, the crater slowly filled with refuse and sedimentation by runoff. The large amounts of layered ash debris and massive quantities of pottery fragments and laminated fill from rainwater runoff indicate that the crater fill is

TABLE 5. Suggested Chronology for Late Bronze Age Deir el-Balah

<i>Stratum</i>	<i>Hebrew University Chronology T. Dothan 1993; 1998</i>	<i>Revised Chronology Proposed Here</i>	<i>Chronological Indicators for Revised Dating</i>
Stratum IX	14th century B.C.E. (Amarna period)	13th century B.C.E. 19th Dynasty (Phases IXa and b)	Pottery; scarabs of Ramesses II; contemporary with 13th century B.C.E. cemetery
Stratum VIII	14th century	Post-Stratum IX	Stratigraphic position
Stratum VII	13th century (Seti I–19th Dynasty)	Late 13th/early 12th centuries, probably Ramesses III; end of the 19th and early 20th Dynasties	Stratigraphic position and comparison with similar structures dating to the 13th/12th centuries B.C.E.
Stratum VI–IV	13th century	Mainly combined with Stratum IX (Phase IXb)	Crater did not serve as a reservoir and was filled in during Stratum IX; kilns and architectural remains form part of the potters' workshop and represent a later phase of Stratum IX

contemporary with the ongoing activities in the Stratum IX potters' workshop. Based on this reanalysis of the crater, its function, and date of its fill, we offer a new interpretation of the site stratigraphy. Most of the structures and installations, previously attributed to Strata VI–IV based primarily on the interpretation that the crater remained open and was used as a pool during Strata IX–VII, should now be considered contemporary with the Stratum IX workshop and residency and the 13th-century cemetery (table 5). Although a few artifacts have been attributed to the 14th century, the overwhelming majority of pottery and artifacts date to the 13th century B.C.E.

A final point should be noted against an Amarna-period date for Stratum IX at Deir el-Balah. During the 14th century B.C.E., very few imported Egyptian or Egyptian-style artifacts appear in the archaeological record in Canaan. The small quantities of Egyptian-style material culture during the 18th Dynasty is especially noteworthy at key Egyptian strongholds such as Beth Shean, Tell el-Far'ah (S), and Tel Mor. However, the 13th and 12th centuries witnessed a marked increase in the percentage of Egyptian-

style artifacts at sites in the southern Levant which directly corresponds to 19th and early 20th Dynasty activities in Canaan (for a detailed discussion of the evidence, see, e.g., Weinstein 1981; McGovern 1989; Morris 2005: 101–8, 177–80, 293–310; contra North Sinai where the evidence for 18th Dynasty settlements is more abundant). This more “formal” implementation of Egyptian imperial policy represents a shift, from one mainly of absentee economic and political expansion during the 18th Dynasty to one of more active exploitation which coincided with the stationing of military troops at garrison cities and administrative Egyptian personnel at several administrative centers or “residencies” in Canaan. This phenomenon is reflected in a noteworthy increase in the amounts of Egyptian-style material culture at several sites, especially in the southern coastal plain (Killebrew 2005: 51–92). Deir el-Balah should be interpreted within the context of an expanding imperialistic Egyptian presence that characterized 19th and early 20th Dynasty New Kingdom Egyptian policy in Canaan.

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