A STRATIFIED SEQUENCE OF EARLY IRON AGE EGYPTIAN CERAMICS AT TEL DOR, ISRAEL

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Introduction

We present in this paper a sequence of early Iron Age Egyptian-made ceramics unearthed during the last three decades at the port site of Tel Dor, a mound on Israel's Carmel coast. This is the largest such assemblage ever found outside of Egypt. This paper concentrates on the presentation of the data: the chrono-stratigraphic sequence, quantities, depositional issues, fabrics and typology.

Dor and its Early Iron Age Sequence

Tel Dor (Arabic Kh. el-Burg; Figs. 1, 2) is an eight-hectare mound located about mid-way between Haifa and Tel Aviv on Israel's narrow Carmel coastal strip. This plain is bounded on the north and east by the Carmel ridge (ca. 500 m ASL) and on the south by the wider Sharon plain. The *tell* is flanked by two natural anchorages – a bay in the north and a large lagoon protected by a chain of islets in the south. Such safe havens are a rarity along the southern Levantine coast, and were of crucial importance in periods preceding the construction of artificial harbors. Sailing from Dor to the Egyptian Delta – ca. 150–180 nautical miles depending on the exact route – would have taken one or two days (for some calculations, e. g. Marcus 2007, 146). Three decades of excavations have revealed a detailed Iron Age architectural/artifactual sequence, portraying a densely-built and forti-

Fig. 1 Aerial photo of Dor, looking north.

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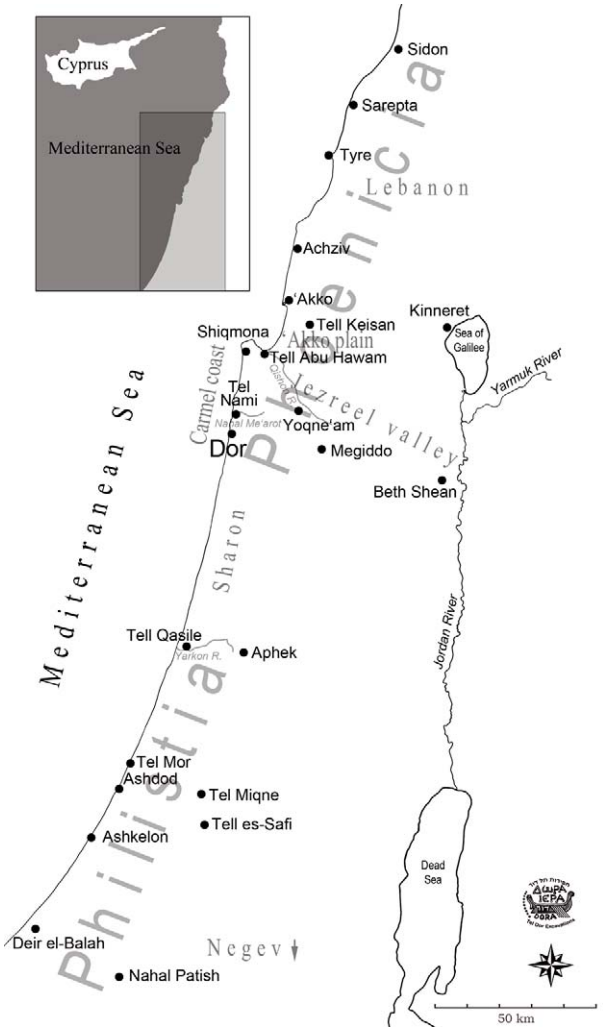

Fig. 2 Location map of Dor and main sites mentioned in the text.

fied Phoenician town, comprising both domestic and public structures and apparently extending over the entire mound (on Dor's association with Phoenicia, see Gilboa 2005; 2012; Sharon and Gilboa 2013). The site, its early Iron Age sequence and cultural characteristics have been discussed in several publications (see below) and a full bibliography is available in http://dor.huji.ac.il/bibliography.html). Here, therefore, we offer only a very short summary of the site's early Iron Age sequence as a framework for the presentation of the Egyptian pottery.

The latest Late Bronze Age deposits known to date at Dor are not later than ca. 1200 BCE (Stidsing and Salmon 2011). Deposits datable to the first half of the 12th century BCE (roughly the first 50 years of the 20th Egyptian Dynasty) are currently unknown and it is yet unclear if the site was inhabited then at all. In contrast, the early Iron Age at Dor is well known, mainly in four large excavation areas: B, D2, D5 and G (map in Sharon and Gilboa 2013). This period has been divided, by stratigraphical and ceramic considerations, into six horizons, and because current subdivisions of the early Iron Age in the southern Levant are not detailed enough, the following chronological nomenclature was devised for Dor, and for Phoenicia in general: Ir1a *early*, Ir1a *late*, Ir1a|b, Ir1b, Ir1|2, Ir2a, the symbol | denoting transition). The rationale for these divisions, the ceramic and other characteristics of these horizons and the way they correlate with other sequences around the Mediterranean have been discussed in length (Gilboa and Sharon 2003; Gilboa, Sharon and Boaretto 2008; Sharon and Gilboa 2013); below we return to the issue of chronology. This entire sequence should be understood as one cultural continuum, and therefore these six horizons are subsumed here under the term 'early Iron Age' (Gilboa 2005; Gilboa and Sharon 2008; Sharon and Gilboa 2013; for a different view see Stern 1990; 2000). At the outset it should be explained that this chronological epithet *does not* equal the term "Iron Age I" as customarily employed in the southern Levant (e. g., Mazar 1990, 296). It indeed encompasses Iron Age I, but our Ir1|2 and Ir2a parallel the periods which in other sub-regions of Israel have lately been defined, respectively, as "Early Iron Age IIA" and "Late Iron Age IIA" (Herzog and Singer-Avitz 2004; 2006; Mazar 2011, 107).

Dor's Iron Age occupation persists to about the mid-7th century BCE, when the Assyrians withdrew from western Asia. However, since horizons that are later than the 'early Iron Age' hardly produced Egyptian ceramics, they are not discussed in this paper.

The Egyptian Pottery of Dor

Absolute Chronology

Reputably, the absolute chronology of the early Iron Age in the southern Levant (and in the Mediterranean in general) has been the topic of extensive debates and in recent years research has focused on the interpretation of radiometric data to solve this dilemma. When we embarked on the study presented here we were hopeful that Dor's stratified Egyptian ceramics would be instrumental in correlating the site's chrono-typological horizons and ^{14}C determinations emanating from Dor and from elsewhere in the Levant with Egyp-

tian historical and radiometric data. This, however, proved impossible, since Dor's Egyptian chrono-typological vista is still not extensive enough; since ceramic typological developments for the Third Intermediate Period (TIP)[1] in Egypt itself have not been charted yet with high enough resolution (Aston 2009a, 19, 317–319); and since quantitative data – a pre-requisite for such a detailed comparison – are unavailable both at Dor and in Egypt (for Dor, see further below). Consequently the correlation of specific ceramic horizons at Dor with Egyptian chronology remains for the time being an unattainable goal. Below, therefore, we define only the beginning and end of Dor's Iron Age 'Egyptian phenomenon'.

The earliest Iron Age Egyptian ceramics are attested on the lowermost floors of the Iron Age town (the Ir1a *early* horizon). Unfortunately, no ^{14}C dates are available for this horizon at Dor and radiometric data for this particular horizon from other Levantine sites is insufficient. By its local wares, Philistine ceramics and according to typological correlations with Cyprus–this horizon, and the following one (Ir1a *late*) parallel the main 'Philistine Bichrome horizons' in Philistia (such as Tell Qasile Strata XII and XI) and Late Cypriot IIIB in Cyprus (Gilboa and Sharon 2003, 25–27; Sharon and Gilboa 2013). The best chronological anchors are the Philistine Bichrome potsherds. In order, however, not to elaborate here on the vexed issue of dating the decorated Philistine wares, let us just say that we side with those who claim that the local Myc IIIC/"Philistine Monochrome" phenomenon in the Levant starts in the second quarter of the 12th century BCE (e. g., Dothan and Zukerman 2004). Allowing for about two generations for the typological developments exemplified by this pottery in the Levant before Philistine Bichrome develops, the initial production of the latter should date ca. 1140 BCE. Therefore the Ir1a *early* horizon at Dor probably starts in the late 12th or early 11th centuries BCE. In Egyptian terms this could be anywhere between Ramesses VI and the beginning of the 21st Dynasty (e. g., Kitchen 1986, 465–466; Wente 2003, 116; Aston 2009a, 20–22; Bronk Ramsey *et al.* 2010; Hornung, Krauss and Warburton 2006, 493).[2] Regrettably no better precision is currently possible.

The latest significant attestation of Egyptian ceramics at Dor (including vessels in primary deposition) is in the Ir2a horizon. This horizon, as mentioned above, parallels the period termed in Israel (and more roughly so in Judah) Late Iron IIA. In familiar ceramic terms, this is the first horizon in which Cypriot Black-on-Red wares appear in the Levant; it parallels most of the CG III period in Cyprus (Gilboa and Sharon 2003).[3] Though no consensus has yet been reached regarding the interpretation of Levantine radiometric data pertaining to this horizon, the disagreement between proposed 'high' and 'low' chronologies has contracted. Amihai Mazar, the chief advocator of a higher chronology (the so-called 'Modified Conventional Chronology') dates the beginning of Late Iron Age IIA in the late 10th and sees this period as 'occupying' most of the 9th century, till ca. 830 BCE (e. g., Mazar 2011, 107, fig. 3). Advocates of a lower chronology, including one of the above-signed (e. g., Sharon *et al*. 2005; 2007; Finkelstein 2011, 52, fig. 3) start this horizon rather similarly, only somewhat later, between 920 and 890 BCE, and they too claim that this horizon largely falls in the 9th century (but in Finkelstein 2011, 50 it is prolonged into the first half of the 8th century). Another important factor to consider is that the Ir2a stratum at Dor that produced the latest Egyptian pottery *does not* represent the latest Ir2a occupation at the site. The occupation overlying it still dates to Ir2a, but did not produce any such pottery.

Taking all this into consideration a date in the first half of the 9th century BCE is our best approximation for the latest meaningful attestation of Egyptian pottery at Dor. In Egyptian terms, this means the mid-22nd Dynasty, but no better accuracy is possible. Osorkon II's days are the most probable, possibly slightly later (ca. 875/872–850/830; e. g., Kitchen 1986, 467; 1995, xxiii–xxiv; 2006

[1] TIP as used in this paper starts with the 21th Dynasty and we do not use "Libyan" or any other terminology (e. g., Jansen-Winkeln 2006; Broekman, Demarée, and Kaper 2009; Ritner 2009: 1–6; Snape 2012).

[2] In contrast, Ben-Dor Evian (2011, 99) placed the earliest Egyptian store jars in the southern Levant around the late 21st /early 22nd Dynasties transition, which is too late.

[3] And therefore Ben-Dor Evian's (2011, 112) conclusion that Egyptian jars are not attested in the Levant during Late Iron IIA should be amended. Even some jars cited in her paper (such as the ones from Dor Phase G/6a and Kadesh Barnea 4) belong to this horizon.

with references; Aston 1989, 149; 2009b with references; Jansen-Winkeln 2006, 240–243; Hornung, Krauss and Warburton 2006, 493).[4] For a similar conclusion regarding the end of the import of Egyptian Iron Age pottery in the Levant, see Ben-Dor Evian 2011, e. g., 109, 111).[5]

Egyptian pottery appears in all the early Iron Age horizons (Pls. 1–8) and therefore attests to a phenomenon enduring minimally for about two and half centuries, roughly between 1140/1100–850 BCE. As mentioned, after a certain point within Ir2a, Egyptian ceramics are no longer in evidence at Dor, though Iron Age occupation continues till about the mid-7th century BCE. Very few exceptions to this statement are the jars in Pl. 9:19–22, which are both typologically late and found in later (but mixed) contexts.

Quantities and Deposition

No significant assessment of the frequency of Egyptian pottery in the various chronological horizons at Dor is possible, since most of the excavation areas have not undergone a final ceramic analysis yet. In Pls. 1–9 and Figs. 3–10 about 100 items are presented, comprising most of the morphologically significant vessels/fragments. The lion's share of the Egyptian pottery at Dor naturally consists of body sherds (mostly of jars and amphorae, see below; there are also many jar handles). Their existence has been recorded in the Dor data-base during 'pottery readings' in the field, but they were not always kept. Also, when more than one Egyptian body fragment was identified in a pottery 'basket', no attempt was made to assess how many vessels were in fact represented. In these (quite common) cases only one 'EGY' entry was inserted to the data-base.

This notwithstanding, the following figures may provide some quantitative notion: 480 'EGY' entries are recorded for the early Iron Age sequence in Area D2, 110 for D5, and about 100 for Area G. We do not possess such data for the fourth large Iron Age area (B), since in that area – the first Iron Age area excavated at Dor in the 1980's – it is uncertain whether these wares were recognized, recorded, or kept (and the same is true for the Ir2a levels in Area G).

Regarding deposition: the assemblage comprises mostly fragments in fills with material that cannot be demonstrated to be primary. Primary vessels are known mainly from destruction deposits of the Ir1a late horizon (Pl. 2) and in abandonment contexts of Ir2a (Pl. 8: 2, 10, 12). This raises of course the question of the chronological integrity of all the other contexts. Regarding this we note that in all the areas producing the pottery (B, D2, D5, G), deposits of the different horizons were usually well-segregated on stratigraphical grounds, and even in these dense chrono-stratigraphic sequences, the typological development of local and other wares faithfully reflected the stratigraphic sequence. In addition, with the exception of Area G, there are no Bronze Age levels underlying the Iron Age sequence, and therefore no Bronze Age residuals should be expected. Plates 1–4, 6, 8 present material from contexts which, on the basis of both stratigraphic and typological considerations could be assigned to a specific early Iron Age horizon,[6] while Pls. 5, 7 include material where this was less straightforward. Pottery from possibly mixed contexts (but still within the early Iron Age) and from altogether unclear stratigraphical association is presented in Pl. 9. All this notwithstanding, re-depositions, even in the better contexts, cannot be entirely ruled out.

Fabric

Fabric analysis was conducted in order to ascertain the Egyptian origin of the vessels, and the reliability of the hundreds of EGY entries in the Dor data-base. We did not attempt to provenance the items within Egypt since comparative data for the TIP is practically non-existent.[7]

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[4] Based on the above, the claim that the Dor chronology is based on a postulated correspondence with the Wenamun report is mystifying (Winand 2011, 544, relying on long dated assertions regarding Dor in Nibbi 1996).

[5] The question how the same chronological conclusion was reached by Ben-Dor Evian and by us, despite the fact that she employs a slightly different framework for both relative and absolute chronologies is beyond our scope here.

[6] *Early* and *late* Ir1a have been clustered in Pls. 1, 2.

[7] Optical mineralogy analysis has been conducted mainly on Middle Bronze Age ceramics at Tell el-Dab'a (Cohen-Weinberger and Goren 2004); on Egyptian ceramics in Nubia of the NK and Late Period (Carrano *et al*. 2009, fig. 3a), and on NK Egyptian jars in Crete (Day *et al*. 2011). INAA, for example, has been applied to late NK ceramics from different sites (e. g., McGovern 1997; Bourriau *et al*. 2006; Newton *et. al* 2007; Day *et al*. 2011).

The information regarding fabrics is offered here in two ways. First we analyzed fresh breaks under a stereomicroscope. For the purpose of this paper we refrained from employing for the features observed this way the 'Vienna System' terminology (e. g., Bourriau 2007 with more references therein), since we were unsure that such observations indeed unite identical fabrics over broad geographical zones. In other words, by using visual descriptive terms such as "Nile B" (to which most of the pottery under discussion could be vaguely classified), we could not decipher with certainty that this ware was indeed identical to other wares described on such basis as belonging to the same category at other sites in Egypt or in the Levant. Second, since we further employed Optical Mineralogy (OM) analysis using thin sections, we preferred using the terminology that is

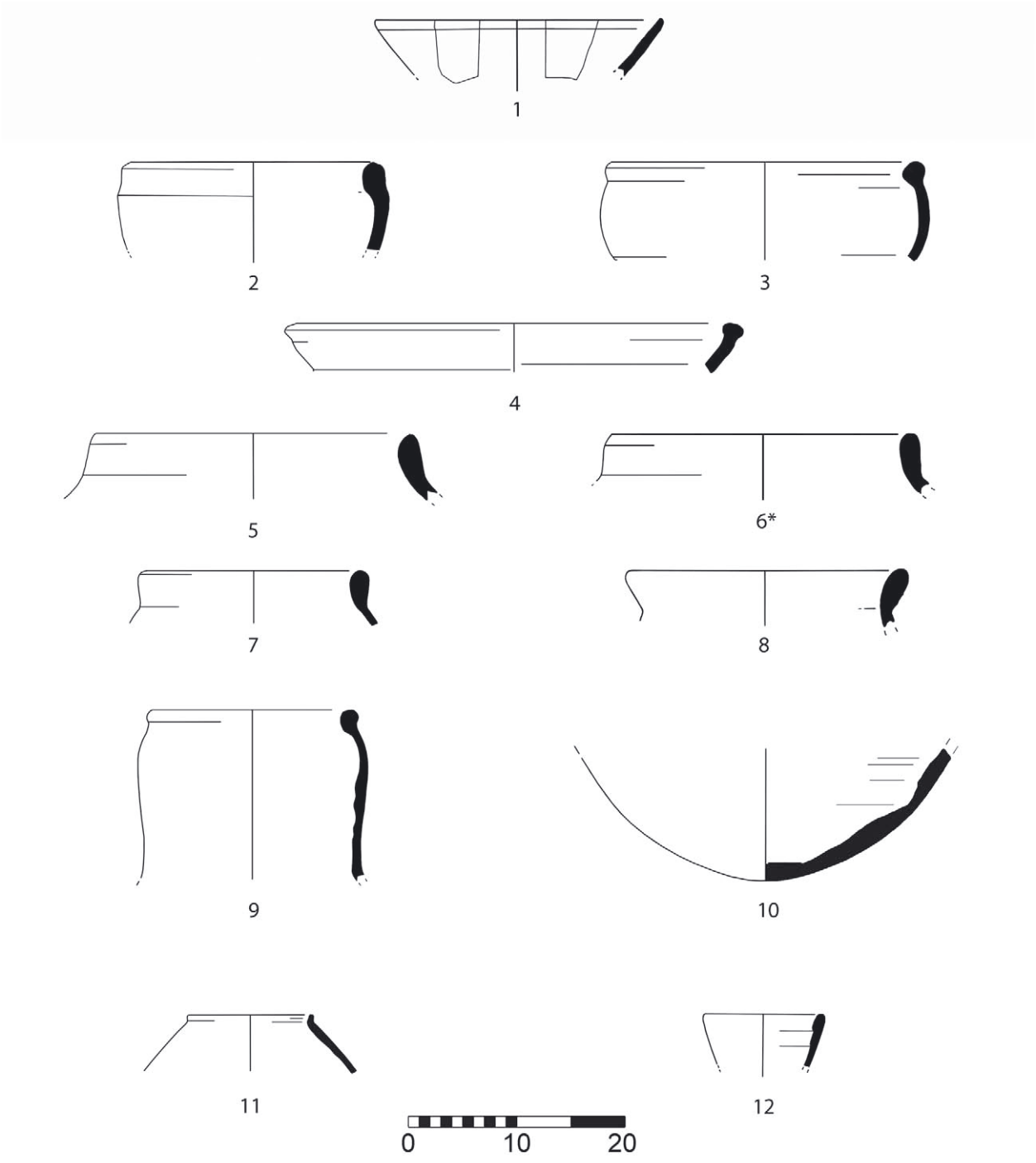

Plate 1. Ir1a *early* and *late.*

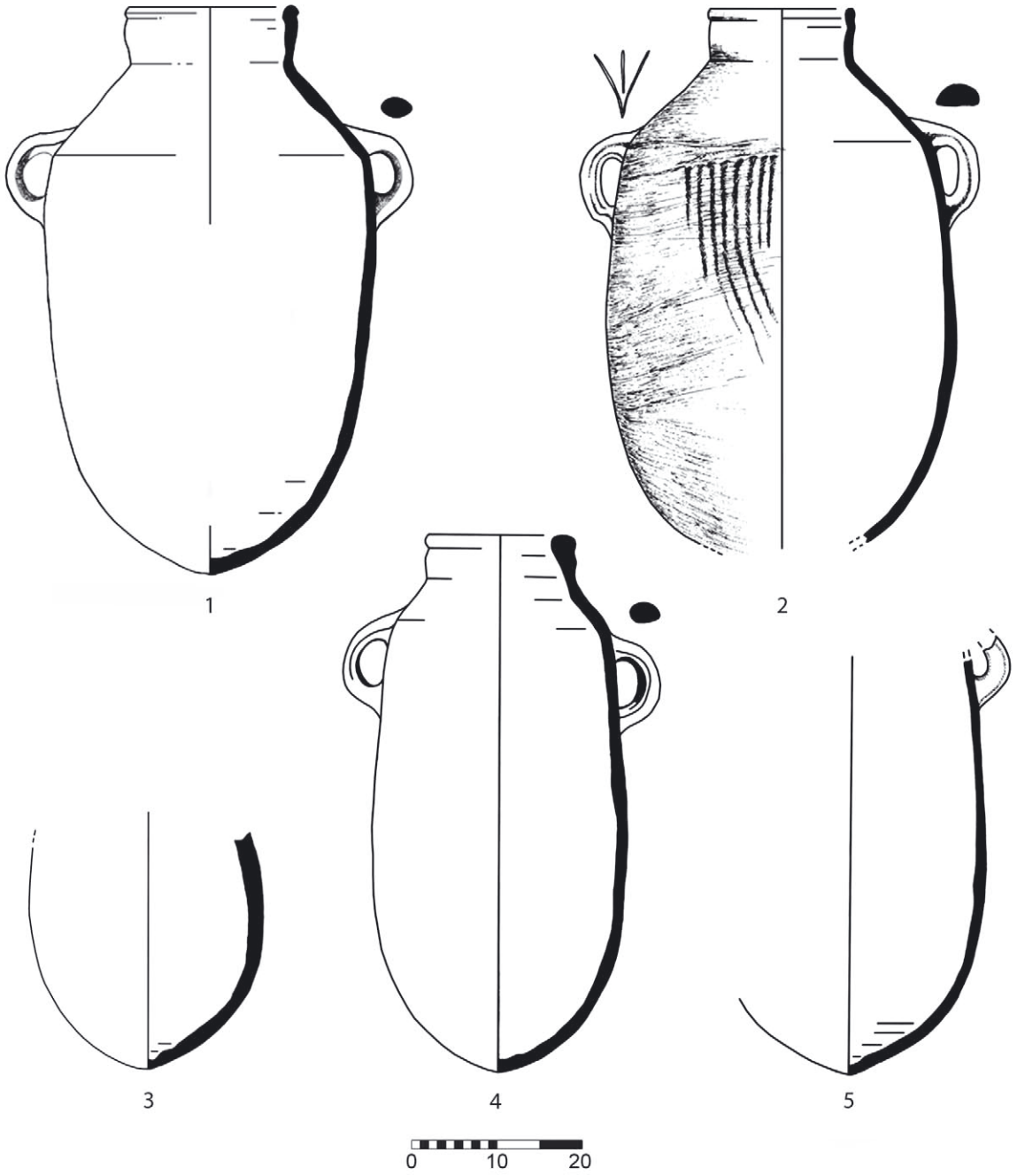

Plate 2. Ir1a *early* and *late* (cont).

related with it. Figures 3–8 present photographs of the analyzed objects (see below for the selection), a freshly broken cross-section, and two photomicrographs of thin sections under cross polarized light (XPL) using X40 and X100 magnifications. We hope that these data will prove useful for future investigations of TIP ceramics.

Stereomicroscopy

Using a zoom stereomicroscope (up to X20) we analyzed and recorded the fabric and surface treatment of most of the items in Pls. 1–9 and of 100 body fragments that were selected randomly from among those recorded in the field as 'EGY' – altogether about 180 examples.[8]

[8] Items in Pls. 1–9 marked with an asterisk were drawn prior to this study but subsequently could not be located and therefore lack fabric descriptions.

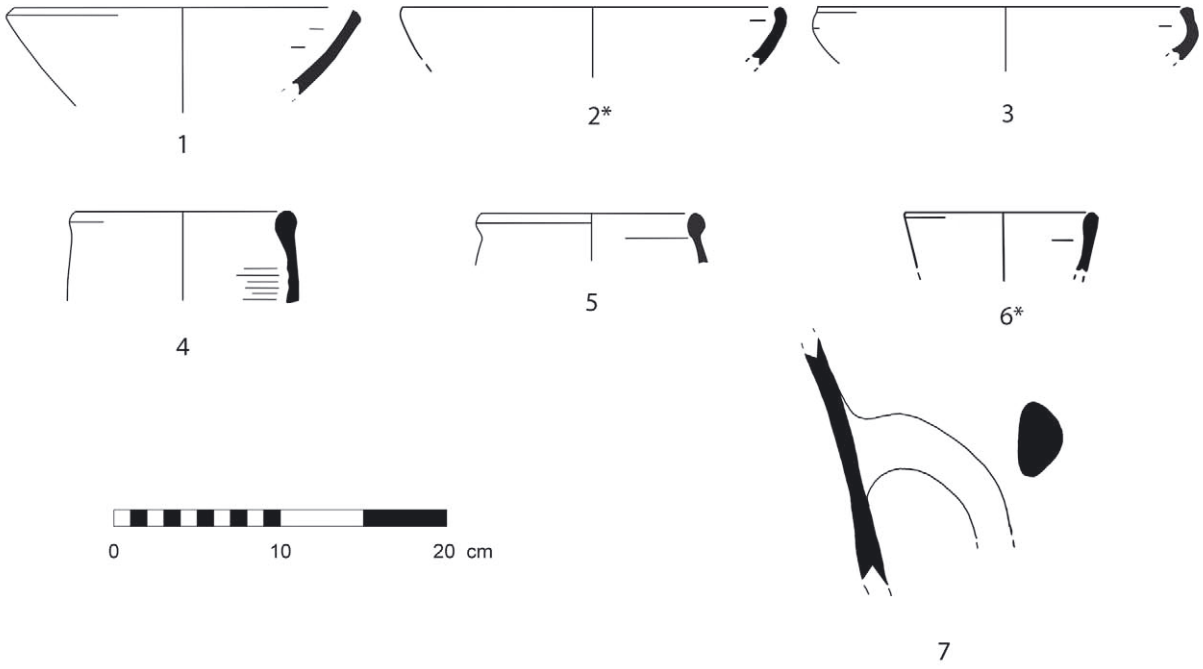

Plate 3. Ir1a/b

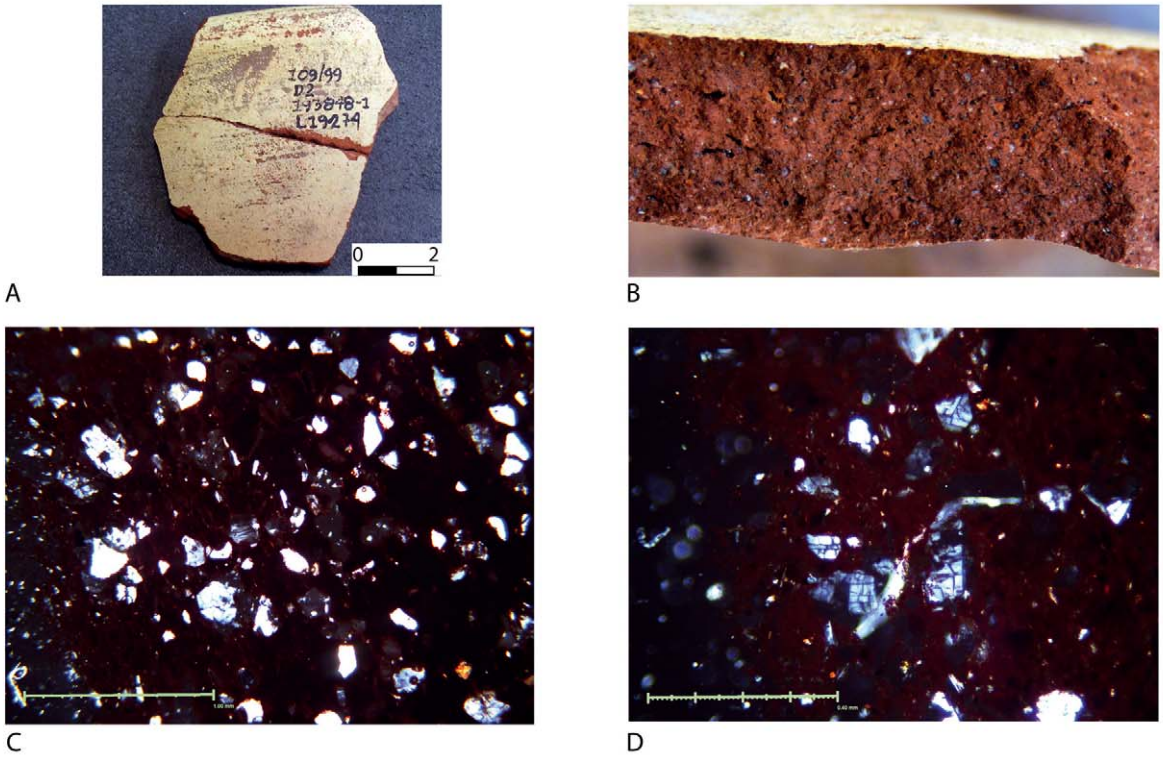

Fig. 3 Amphora Pl. 3:4. (a) photo of sherd; (b) fresh cross-section under USB microscope; visible are the quartz inclusions and the thick white slip on the outer surface; (c, d) photomicrographs (XPL) of the thin section showing the red hue of Nile clay with quartz, iron oxides and heavy minerals in the silt. The inclusions are mainly sub-angular quartz sand (~200 µm), fractioned by the heat.

The results (Figs. 3–6) show an almost exclusive use of Nile clays, often rich in detrital mica minerals, and often including organic inclusions. One carinated bowl/cooking pot (Fig. 7) is made of coarser fabric. It has a 'sandwich' core, caused by fluctuating temperatures in the kiln during firing. This happens when open vessels are positioned close to air ventilations or to the fuel supply (Orton *et al*. 1993, 126–134; Nicholson 1993, 113–116); the same effect was evident on other Egyptian open vessels at Dor. No marl clays were identified. This is not surprising since in Egypt itself the types of vessels attested at Dor (see below) are usually also made of Nile clays (e. g., Aston *et al*. 1998, 138; Aston 2009a, 319). Only one of the items analyzed (Fig. 8) is not Egyptian made (see further below).

Optical Mineralogy

This well-established method (often dubbed "petrography") is extensively employed for prove-

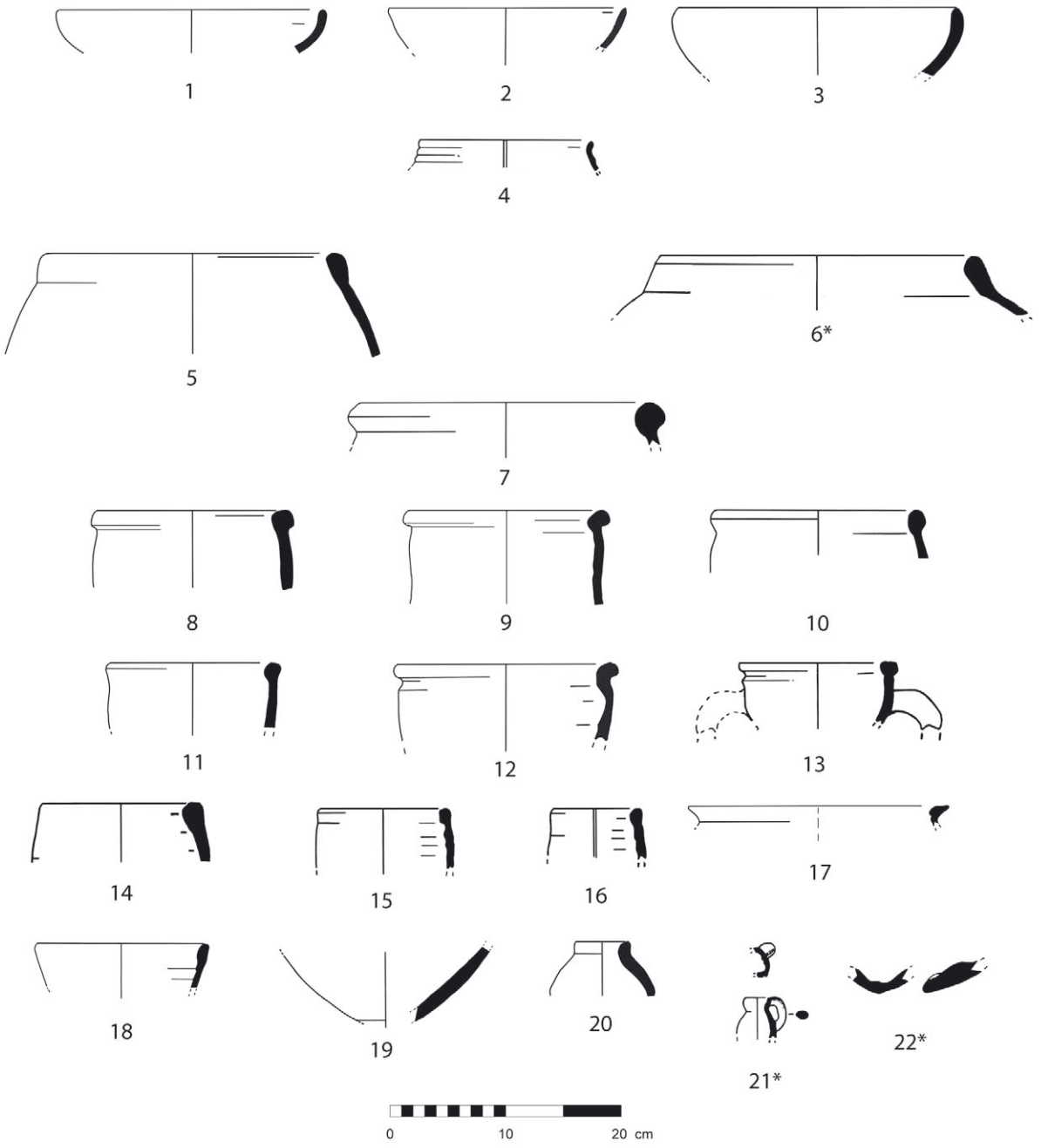

Plate 4. Ir1b

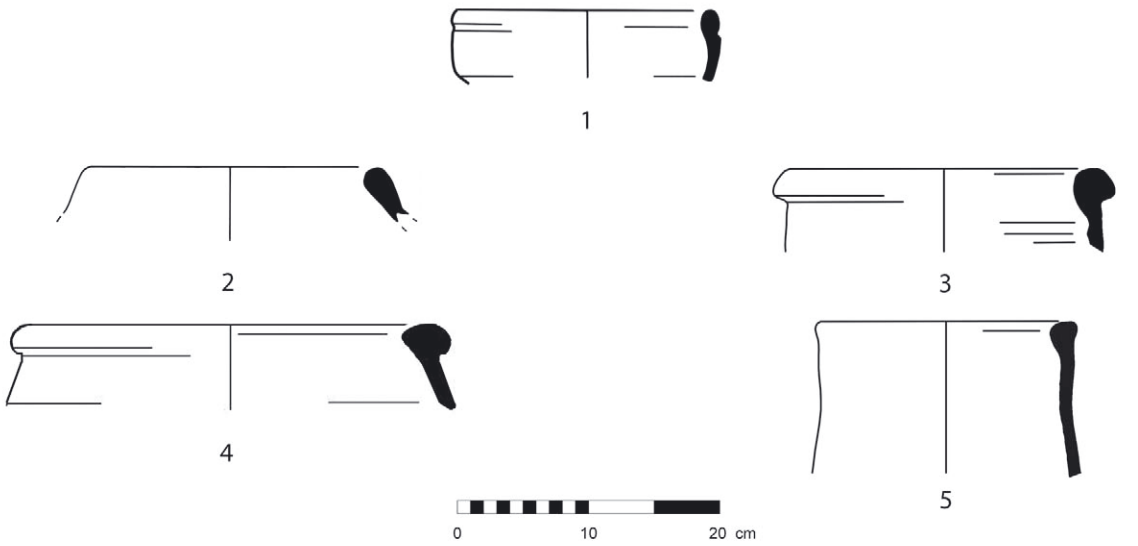

Plate 5. Ir1b–Ir1/2

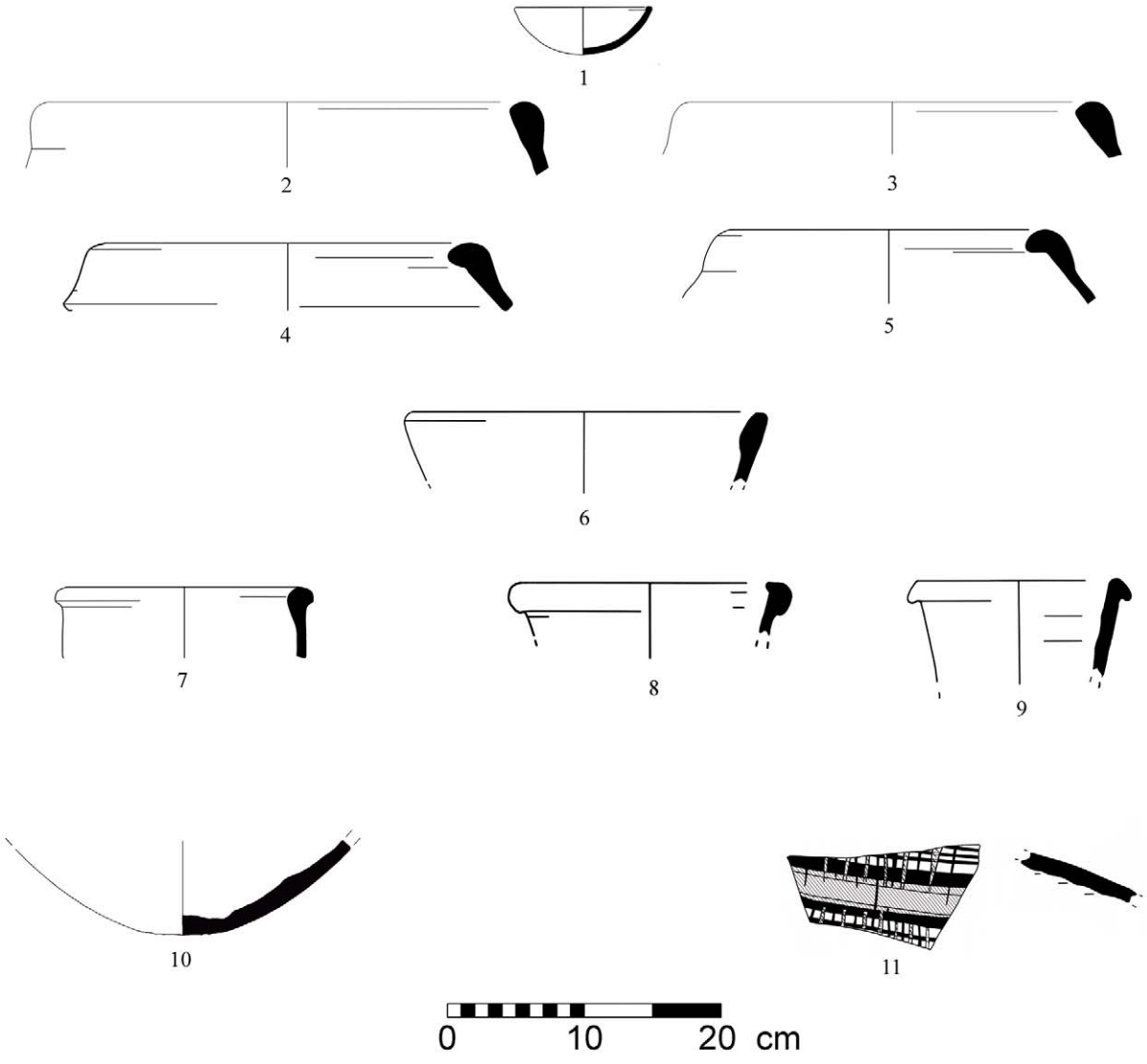

Plate 6. Ir1/2

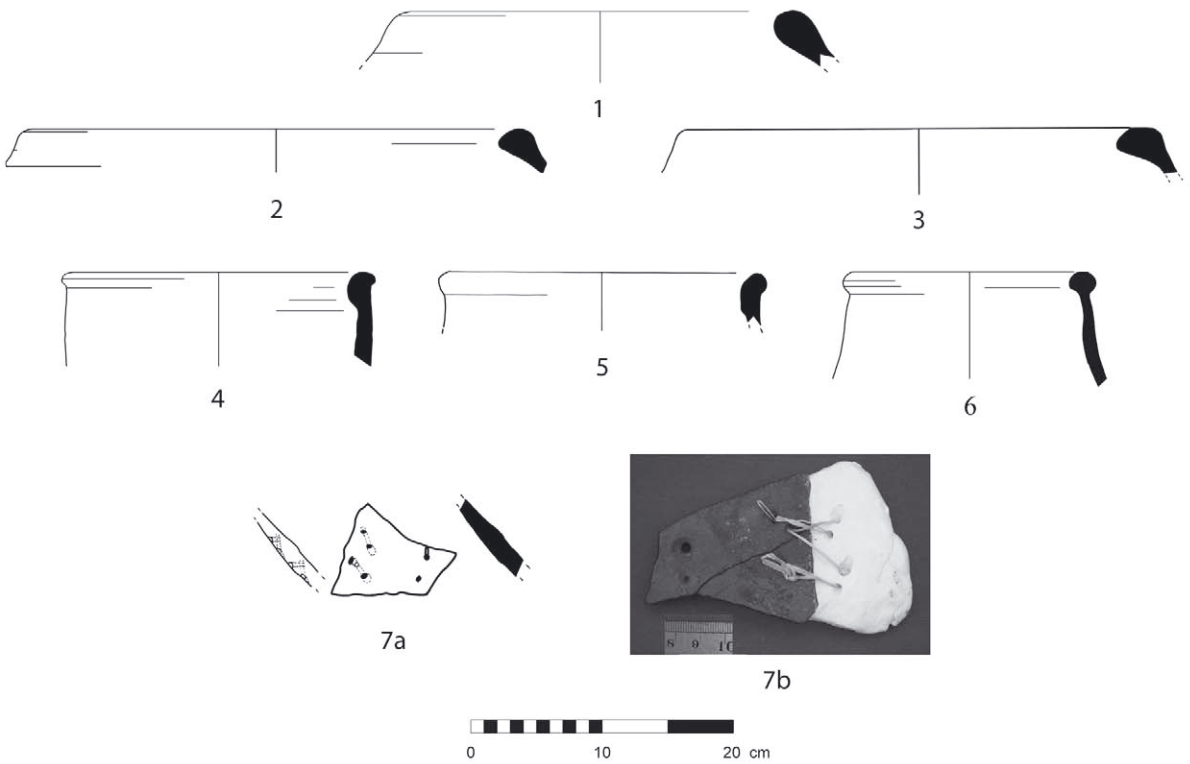

Plate 7. Ir1/2–Ir2a

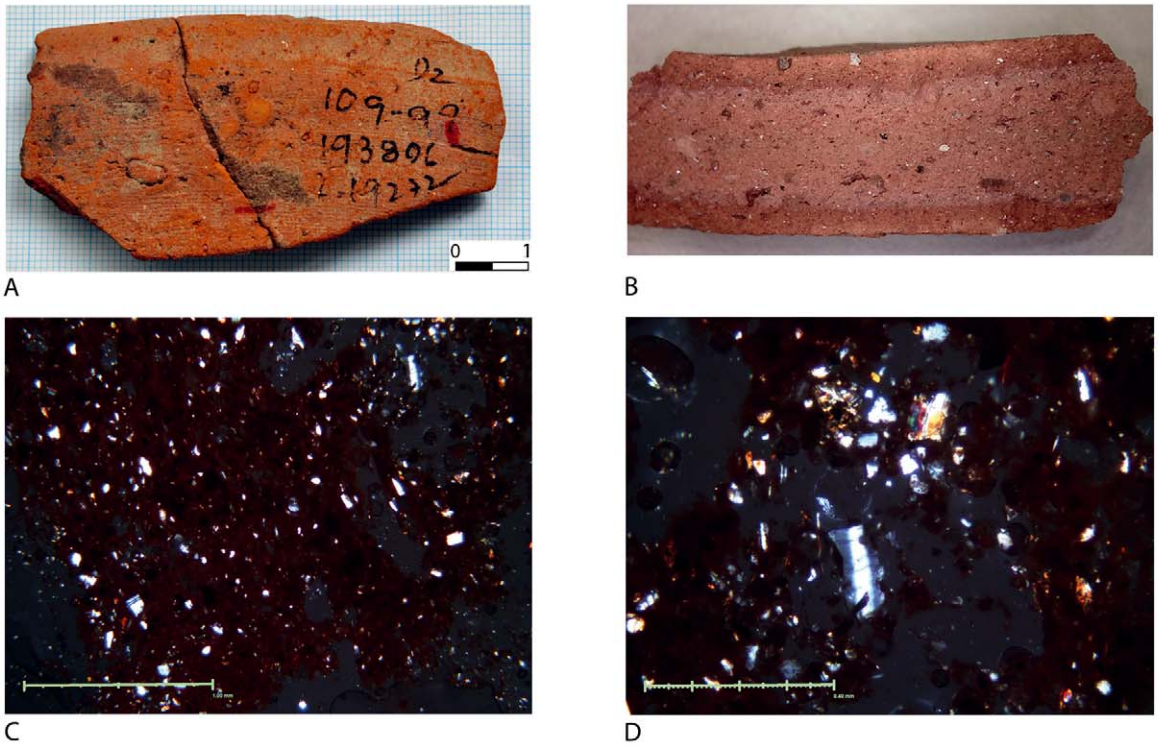

Fig. 4 Bowl Pl. 3:1. (a) photo showing external wet smoothing; (b) fresh cross-section under USB microscope showing pale pink core; visible are the small white quartz inclusions and the small black heavy minerals; (c, d) photomicrographs (XPL) of the thin section showing red Nile clay with quartz, iron oxides and heavy minerals in the silt. The inclusions are mainly sub-rounded to angular fine sand-sized quartz (~150 µm). Also visible are feldspars, pyroxenes and other heavy minerals.

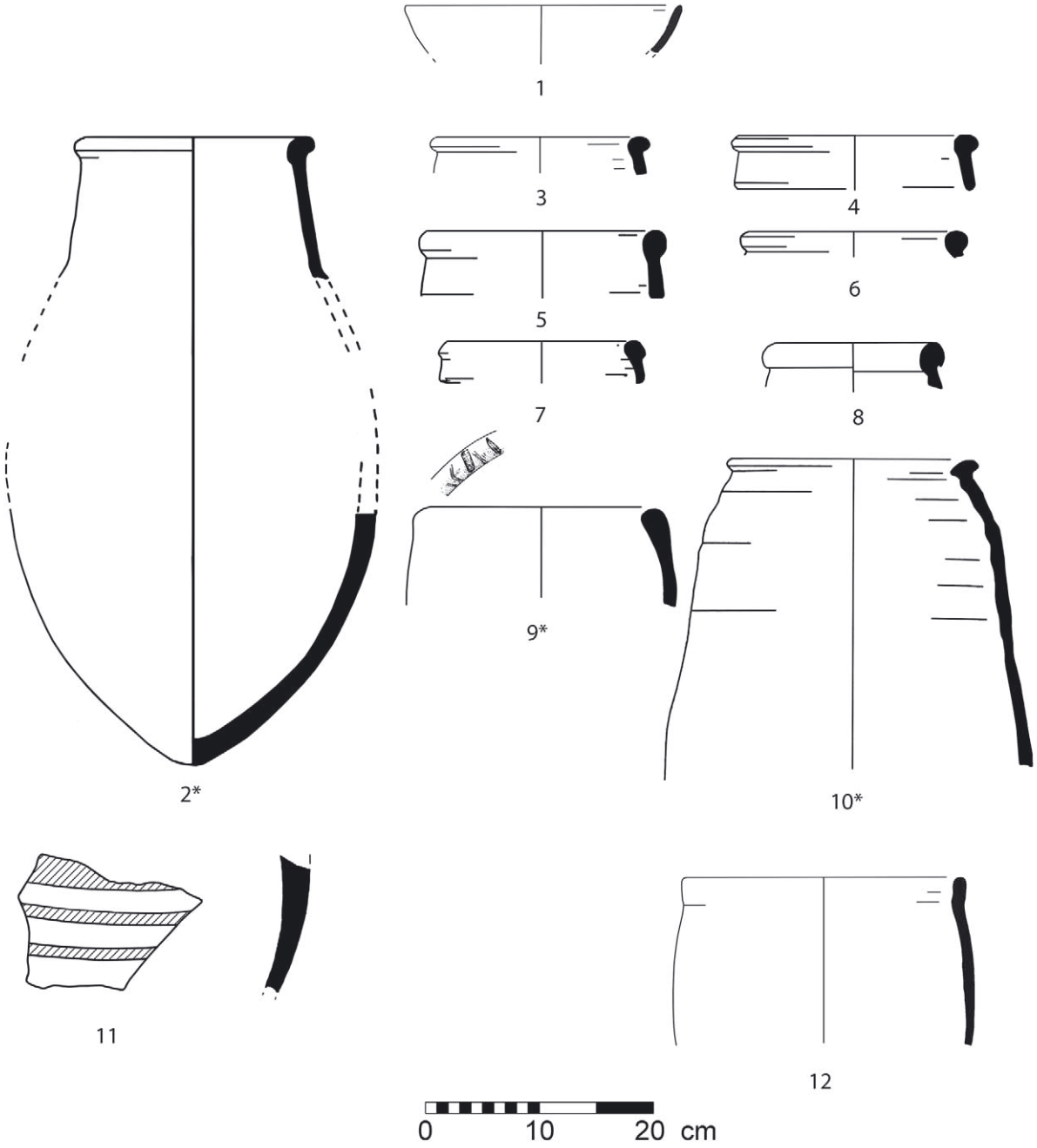

Plate 8. Ir2a

nience purposes by recording and identifying components of ceramic fabrics according to their optical features, as observed in thin sections under a polarizing microscope (e. g., Porat 1989; Goren 1991; Orton *et al*. 1993; Goren *et al*. 2004; Tite 2008; Quinn 2013). Conventional classifications rely on characterizations of microscopic features such as the size, shape and quantity of the quartz minerals; ratio, size and shape of heavy minerals, etc. In the case of the Dor Egyptian ceramics, however, this creates groups of one or two. There are so many microvariations that without comparative data for contemporaneous ceramics in Egypt clustering of petrofabrics is hardly possible.

Twenty five vessels were analyzed, representing all chronological horizons and the main types. Apart from one vessel (see below, 'group' 2) they are all made of Nile clays (group 1).

Group 1: Nile clays (Figs. 3–7). As mentioned, all but one of the samples belong to this group. The matrix is argillaceous, ferrous, deep red in plane polarized light (PPL) apart of the inner

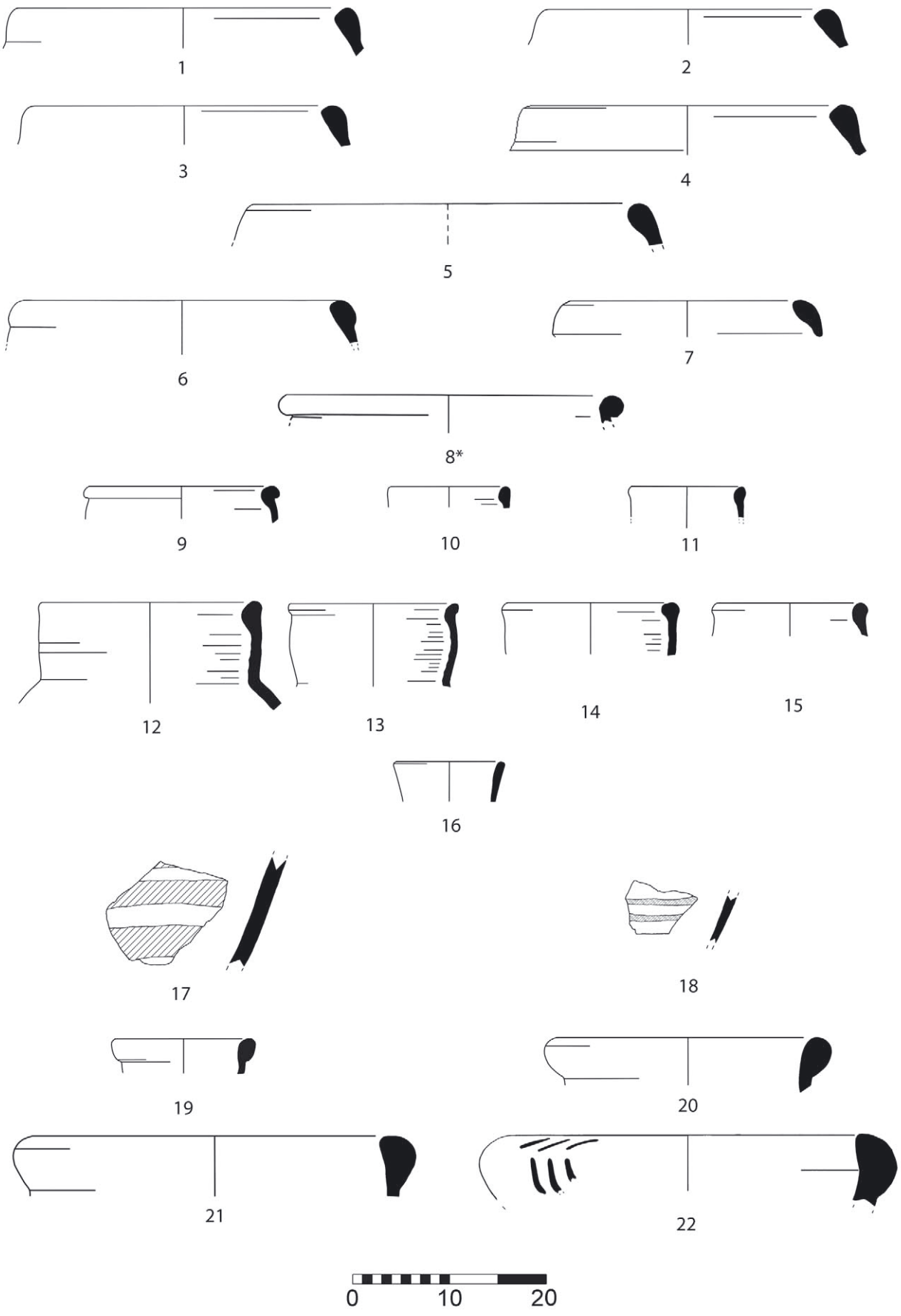

Plate 9. Unclear contexts, mixed deposits Ir1a–Ir2a and later material.

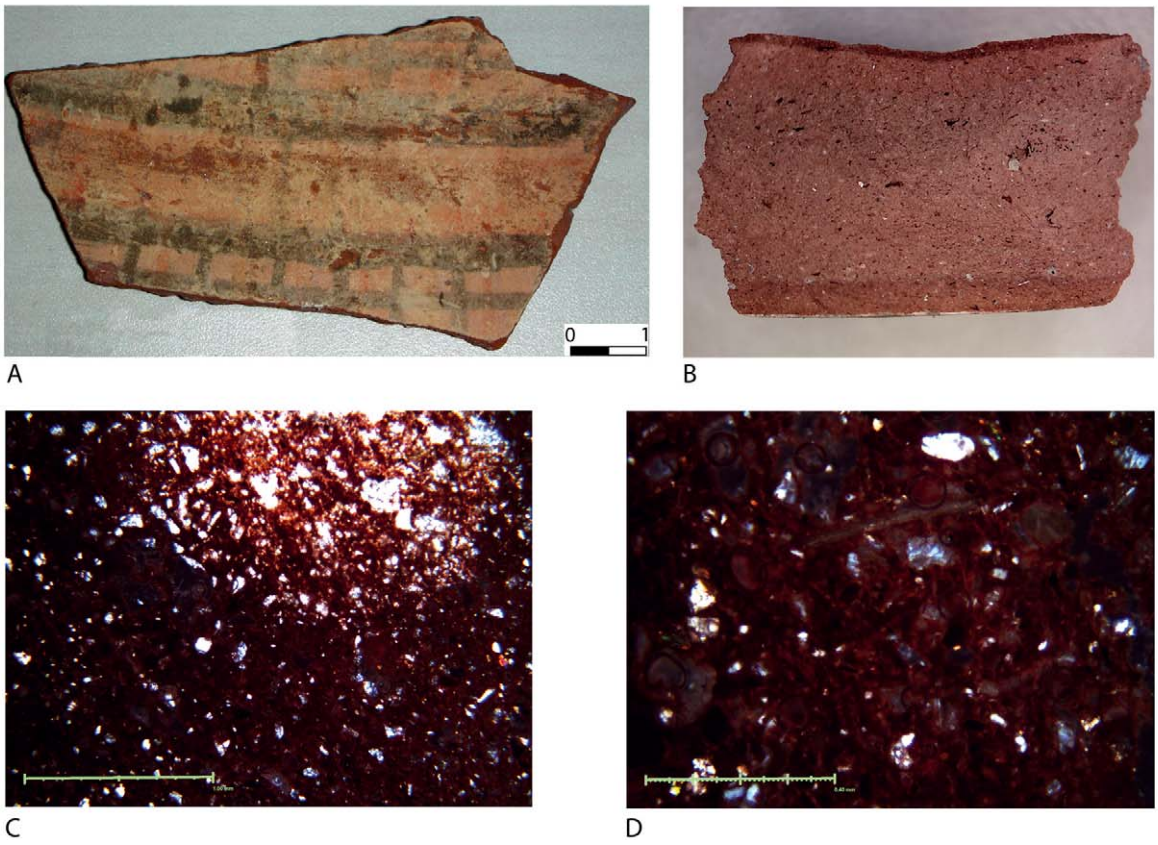

Fig. 5 Decorated sherd Pl. 6:11. (a) photo showing white slip and red and blue decoration; (b) fresh cross-section under USB microscope showing pale pink core; visible are the small white quartz inclusions and the small black heavy minerals; the slip and paint are visible on the external (lower in picture) face; (c, d) photomicrographs (XPL) of the thin section showing red Nile clay with quartz, iron oxides and heavy minerals in the silt. The inclusions are mainly sub-rounded to sub-angular quartz (up to ~200 µm). Also visible are eroded mica minerals and heavy minerals.

reduced area, homogeneous and with varying levels of porosity. The clay is silty (10–30 %), occasionally with spherical and rounded iron-rich minerals (up to 50 µm). The silt includes mainly quartz, with secondary feldspars and heavy minerals such as zircon; pyroxenes such as augite; and amphiboles such as hornblende. The inclusions consist mainly of well-sorted angular quartz sand (~30 % 150–200 µm), mica minerals (~20 % ~100 µm), feldspars (up to 5 % ~200 µm), organic inclusions and occasional other heavy minerals.

Firing temperature: The firing temperature varied. In some cases it was probably below 750˚C (for example Figs. 4, 6). This is suggested by the red hue of the fabric and by the presence of Hornblende (which alters into Oxyhornblende at about 800 ˚C), as well as by the lack of isotropism of the iron-rich matrix that often occurs at higher temperatures (cf. Porat 1989, 29–30; Shoval 1994; Tite 2008; Lund Rasmussen 2012, table 2).

In other cases there are indications that vessels were exposed to temperatures above 800˚C (Figs. 3, 5). This is suggested by the dark color of the matrix; by the color of the mica minerals that have changed into deep red; and by the fractured quartz that shows signs of explosion (Goren and Biton 2010). The most obvious factor is the complete meltdown of parts of the matrix to the point that it is as isotropic as glass. One vessel (possibly a cooking pot, Fig. 7) shows evidence for re-carbonated calcite. This attests to the de-carbonization of the clay, which is typical to clays exposed to temperatures between 850–900ºC; it may also be due to repeated heating (e. g., Shoval 2003, 120; Thér and Gregor 2011, 133).

Group 2: Wetlands of the Carmel coast (Fig. 8). A single amphora has calcareous, silty clay (~10 %), tan in PPL with some iron oxides. The silt is mostly quartz but also contains some feldspars and shell fragments. The inclusions consist mainly of well-sorted sub-angular quartz sand (~30 % up to 200 µm), poorly-sorted limestone, which ranges from sand size to 250 µm. Also seen are eroded *kurkar* (local term for aeolianite) fragments, algae

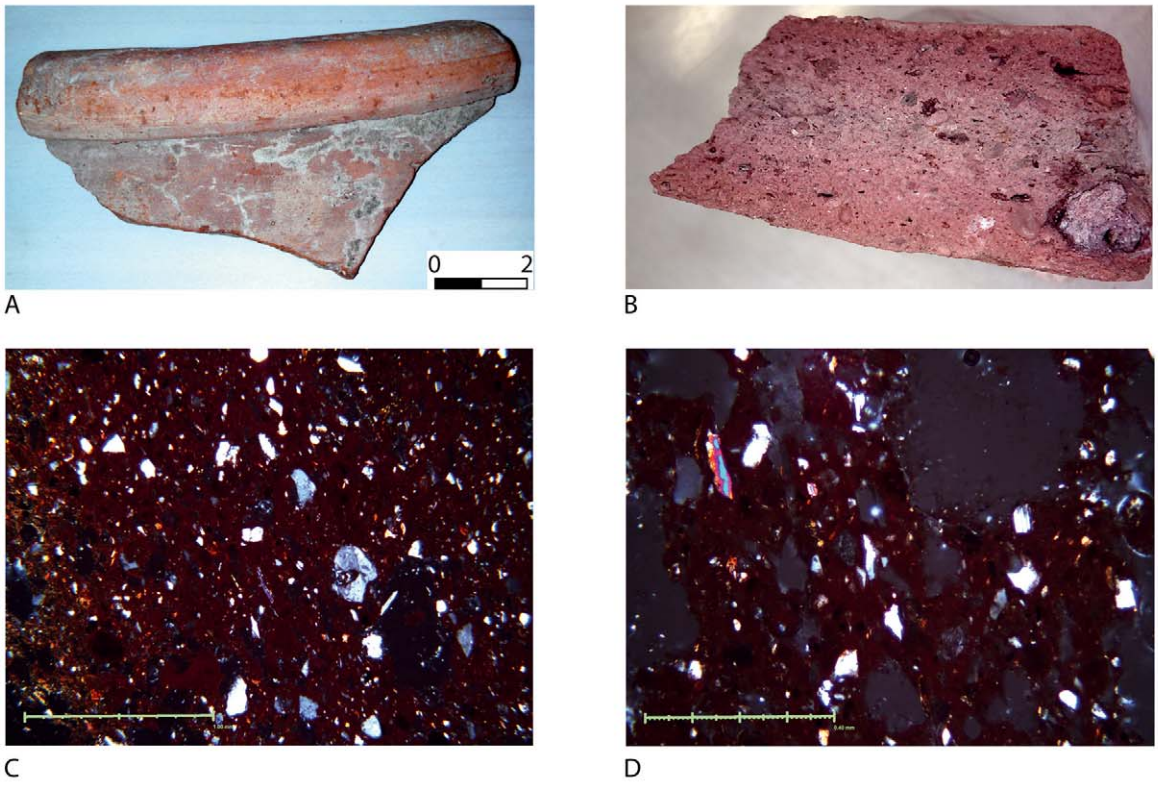

Fig. 6 Jar Pl. 5:3. (a) photo showing wet-smoothing outside with pale white slip; visible are the marks of a fine brush and patina typical to Dor ceramics; (b) cross-section under USB microscope; visible is a large limestone (?) piece on the bottom right, quartz sand and mica; (c, d) photomicrographs (XPL) of the thin section showing red Nile clay with quartz, iron oxides and heavy minerals in the silt. The inclusions are mainly sub-rounded to sub-angular sand of quartz (200–300 µm). Also visible are mica minerals, pyroxenes and other heavy minerals.

fragments, foraminiferal chalk, eroded chert, sea shells and other micro-fauna. This petrofabric group typifies Carmel coast ceramics (e. g., Goren *et al*. 2004, 253–254) and most probably points to production at Dor. It is therefore, the only 'Egyptianizing' vessel identified.

Firing temperature: Unclear since the vessel was exposed to high temperatures post-production (Fig. 8a).

Shapes

Since the Dor assemblage is very fragmentary, we did not presume to construct a typology. The morphological/functional definition of vessels in Tables 1–9 were drawn mainly from David Aston's works on TIP pottery from tombs and from the stratified sequence at Elephantine (Aston 1996; 1999; 2009a). In addition we refer to the excavation report of Heracleópolis Magna (Lopez Grande *et al*. 1995),[9] to the 1987–1997 Tanis excavations (Defernez and Isnard 2000); to Neil Spencer's detailed report of the Ramesside Temple and site survey at Kom Firin in the Delta (2008); to Sabine Laemmel's (2008) work on Qantir; and to the ceramics form Tell el-Retaba (Rzepka *et al*. 2009). To a certain extent we also used Anna Wodzinska's (2010) manual.

In Pls. 1–9 about 100 morphologically-diagnostic examples are illustrated, which comprise most of those that could be presented graphically. The 'parallels' cited in Tables 1–9 are not exhaustive and are mainly intended to provide a reference to the shapes in Egypt from Aston's Phases I and II– the late NK to the 21st Dynasty and the 10–8th centuries BCE (Aston 1996, 60), respectively (in Aston 2009a, 317, these phases are dated 1200–1000/950 and 1000/950–800/750 BCE). We tried to select parallels that conform not only in shape but also in fabric and surface treatment. Since, as

[9] Another publication dealing with TIP ceramics from this site (Aston 2010) was not available to us.

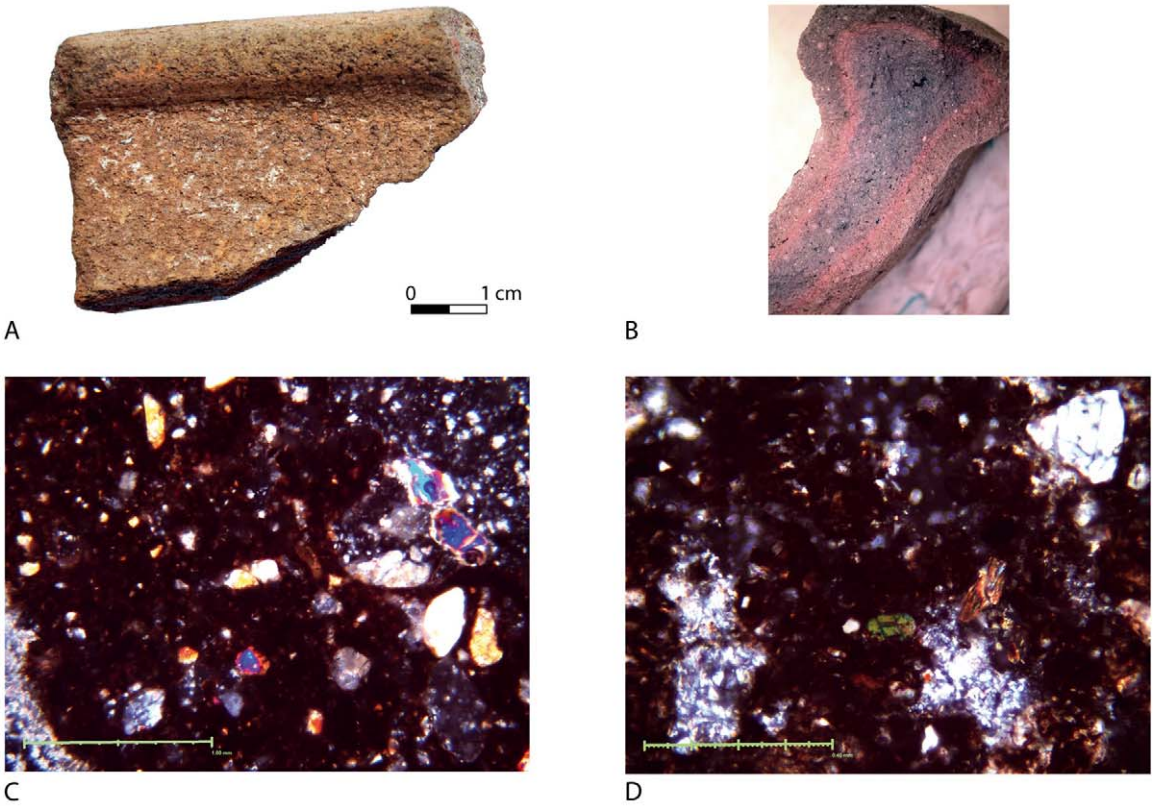

Fig. 7 Carinated bowl/cooking pot Pl. 1:4. (a) photo of sherd with rough inner surface; (b) fresh cross-section under USB microscope showing 'sandwich' core; (c, d) photomicrographs (XPL) showing a very dark Nile clay with eroded silty components. The inclusions consist mainly of fractioned and eroded quartz and heavy minerals.

underscored by Aston, even in Egypt the chronotypology of TIP ceramics is still in its infancy, we did not draw any chronological or regional inferences from the contexts/dates of the parallels.

It is readily evident that the lion's share of the Egyptian vessels at Dor are large containers – with both narrow apertures (mainly amphorae and long ovoid jars; the complete amphorae are in Fig. 9) and wider ones (mostly hole-mouth jars and 'meat jars'). Open shapes, only bowls, are rare (e. g., Pls. 4:1–3; 6:1) and other shapes, such as funnel-neck globular jugs and juglets, are represented by very few examples (e. g., Pls. 1:12; 9:16; 4:21[10], 22). One vessel may be a cooking pot (Pl. 1:4; Fig. 7).

Most of these vessels are common and well-known in TIP contexts throughout Egypt. The only shapes which are more geographically restricted are the wide carinated jars (Pl. 2:1, 2), defined by Aston (1996, 107, fig. 6:3) as typifying Tell el-Yahudiyeh. For some fragments we could not find parallels at all.

The relatively large variety of closed shapes indeed echoes the variation at TIP sites in Egypt, but their predominance over open shapes presents an inverse situation vs. habitation sites there. This indicates that Egyptian ceramics reached Dor mainly as containers for some commodities and their presence should be interpreted along 'commercial' lines (see more below).

[10] The juglet in Pl. 4.21 could not be located and analyzed and we are not entirely sure that it is Egyptian. It is included here since it was defined as made of 'EGY' fabric by the excavators in the field, and in the nearly all cases this definition proved to be correct.

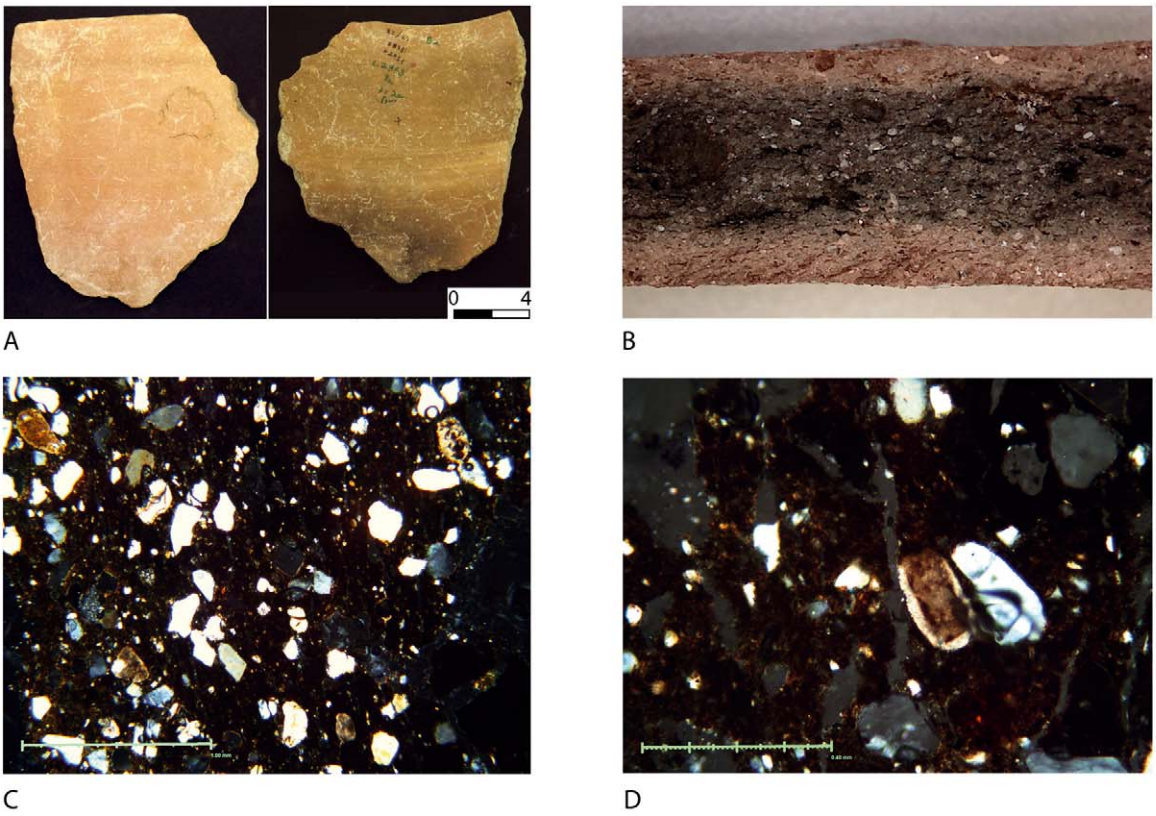

Fig. 8 High-walled Amphora Pl. 8:12. (a) photos of inner and outer faces, with wet smoothing inside and out; (b) fresh cross-section under USB microscope; visible are the brown-reddish clay, black core, and quartz and limestone inclusions; (c, d) photomicrographs (XPL) showing the dark clay with quartz and a few heavy minerals in the silt. The inclusions are mainly sub-rounded quartz, limestone and chert (~200 µm), with one *Polychaeta* worm skeleton in (c) top right.

Fig. 9 Amphorae Pl. 2:1–2, 4.

Fig. 10 Examples of surface treatment: 1, 2 (Pls. 1:5, 9): Ir1a with thick oily slip; 3–5 (Pl. 4:1, 3, 9): Ir1b with wet smoothing, without slip; 6, 7 (Pls. 5:5; 7:7): Ir1b–Ir1/2 with thin watery slip applied roughly. Not to scale.

Surface Treatment

Most of the vessels are wet-smoothed by fingers or by a fine brush, the smudges of which are easily discernible (details in Tables 1–9). In addition, many closed vessels were coated to various degrees with a white or pink slip or wash. Rarely do closed vessels bear painted decoration (Pls. 6:11; 8:11, 9:17, 18; Pl. 6:11 also has blue pigment). Only 2 fragments (of jars) have engraved decorations (Pls. 2:2; 9:22). With all due caution due to the relatively restricted size of our assemblage, the surface treatments may portray a chronological trajectory, as follows.

In the Ir1a (*early* and *late*) and subsequent Ir1a|b horizon (Pls. 1–3) nearly all the jars ('indicatives' and body sherds alike) are typified by a thick and oily, buff, pink or white slip, applied on the outer surface and on the rim (Fig. 10:1, 2). Next, in the Ir1b horizon (Pl. 4), slips are very rare (Fig. 10:3–5; exceptions are, for example, Pl. 4:6, 7). Slips are attested again on most of the vessels in the Ir1b–Ir1|2 mixed contexts (Pl. 5) (so possibly only during Ir1|2) and they become a predominant feature in the Ir1|2 and Ir2a horizons (Pls. 6, 7). As opposed to the earlier thick coatings, however, slips now are diluted, thinner, and applied irregularly (Fig. 10: 6–8).

Table 1. (Pl. 1) Ir1a *early* and *late.*

No.	Vessel type	Area/ phase, locus	Reg. no.	Surface treatment	OM group	Parallels			Comments
						Site	Date	Reference	
1	Bowl	G/9, 18033	180454/2	Red paint on rim					
2	Deep carinated bowl	D2/13, 09D2-372	09D2-6571	Thick white/ pink slip	1	Gurob	19–20 Dyn., Seti II or later	Aston 1996, 15–16, fig. 1:7	
3	Large storage jar or bowl with wide neck and ball rim	G/9, 18034	130621-31	Brush smoothing while wet inside and out; pale pink slip	1				
4	Carinated bowl/ cooking pot	D5/12, 07D5-221	07D5-2201	Wet smoothing, no slip	1	Kom Firin	Dyn. 20–21	Spencer 2008, C025	
5	Large meat Jar	G/10a, 18302	183555/11	Thick white slip outside					
6	Large Meat Jar	G/10, 18387	183833/2			Thebes, Tomb of Ramesses VI	Dyn. 20	Aston 1996, 19, fig.18:6	
7	Small meat jar	G/10b, 18317	188833/2	Thick white slip outside and on the rim			Dyn. 20	Aston 1996, fig. 12:253	Each parallel is slightly different
						Elephantine, Phase IIb	Dyn. 22–24	Aston 1999, pls. 22:643; 32:980	
8	Ovoid Jar	G/10c, 18322	184010	Thick white slip outside		Valley of the Kings, Tomb of Ramesses VI	Dyn. 20	Aston 1996, fig. 18:534	
9	Slender drop-shaped amphora with ball rim	D5/11, 08D5-629	08D5-7293/50	Wheel marks, thick white to pink slip outside		Karnak	Dyn. 20–21	Aston 1996, fig. 199c	
10	Base of closed vessel	D5/11, 08D5-629	08D5-7293/51	Thick pink slip outside					
11	Ovoid Jar?	G/10c, 18322	184030/11	Thick pink slip					
12	Funnel neck jar	D2/13, 10D2-516	10D2-5222	Buff uneven pale white slip		Tell el Yahudiyeh, Ramesses III-IV	Dyn. 20	Aston 1996, fig. 5:6	

Table 2. (PL. 2) Ir1a *early* and *late* (cont).

No.	Vessel type	Area/ phase, locus	Reg. no.	Surface treatment	OM group	Parallels			Comments
						Site	Date	Reference	
1	Wide ovoid amphora with ball rim and rounded base	G/9, 18265	183505	White slip		Tell el-Yahudiyeh, Ramesses III	Dyn. 20	Aston 1996, 107, fig. 5:3	Lotus engravings on amphorae of other shapes are known from Hillat el Arab (Vincentelli 2006, fig. 6:1; 3)
2	Wide ovoid amphora with ball rim and rounded base	G/9, 18033	180811/23	White slip, imprints of vegetal matter, blackened inside near base. Lotus(?) on handle					
3	Amphora	G/9, 18033	180797						
4	Slender amphora with pointed base	G/9, 18237	181750	White slip		Tell el-Yahudiyeh, Ramesses III	Dyn. 20	Aston 1996, 107, fig. 5: 4	Type also known from Qantir and Saqqara (Aston 1996, 66)
5	Slender amphora?	G/9, 18064	180975/34	White wash outside and on handles					

Table 3. (Pl. 3) Ir1a/b

No.	Vessel type	Area/ phase, locus	Reg. no.	Surface treatment	OM group	Parallels		
						Site	Date	Reference
1	Bowl with plain straight rim	D2/12, 19272	193806/50	Wet smoothed inside and out	1	Elephantine, Phase IIb	Dyn. 22–24	Aston 1999, pl. 26:763
2	Bowl	D2/12, 19272						
3	Carinated bowl with incurved rim	D2/12, 19279	194211	Pale white slip; wet smoothing; brush marks		Kom Firin	TIP?	Spencer 2008, fig. 37 C154
4	Amphora with ball rim	D2/12, 19274	193848/3	Pale white slip outside and in	1	Kom Firin	TIP	Spencer 2008, fig. 40:C064
5	Amphora	D2/12, 08D2-237	08D2-2472	Thick white to pink slip outside		Elephantine, Phase IIb	Dyn. 22–24	Aston 1999, pl. 31:940
6	Funnel neck jar	D2/12, 19279						
7	Jar handle	D2/11–10, 19267	194620	Thick white slip outside				

Table 4. (Pl. 4) Ir1b

No.	Vessel type	Area/ phase, locus	Reg. no.	Surface treatment	OM group	Parallels		
						Site	Date	Reference
1	Bowl with incurved rim	D2/11, 19287	194572	Wet smoothing, no slip	1	Kom Firin	Dyn. 20–21	Spencer 2008, C271, C341
2	Bowl with incurved rim	D2/10–9, 19045	191402	Wet smoothing, no slip		Memphis	11th–10th centuries	Aston 1996, 34, fig. 68:8
3	Bowl with incurved rim	D2/11, 19270	193838/2	Wet smoothing, no slip		Same as nos. 1 and 2		
4	High walled jar?	D2/10, 19232	193506	Wet smoothing, no slip				
5	Jar or large bowl with folded rim	D2/11–10, 19615	300244/1	Wet smoothing, no slip		Heracleópolis Magna		Dyn. 21–22
6	Meat jar	G/7b (+8?), 9923	99334/17	Pale white slip?		Kom Firin		TIP
7	Large ovoid jar	D2/10–9, 19044	191319	Pale white slip		Tell el-Yahudiyeh		11th–10th centuries
8	Long slender Amphora	D2/10–9, 19037	191024	Wet smoothing, no slip		Tell el-Yahudiyeh		11th–10th centuries
9	Amphora with long straight neck	D2/ 10–9, 19205	192608	Wet smoothing, no slip	1	Memphis		Dyn. 22
10	Amphora	D2/11–10, 19689	305522/2	Wet smoothing, no slip		Kom Firin		Dyn. 21
11	Amphora	D2/10–9, 19030	190789	Wet smoothing, no slip				
12	Amphora	D2/10–9, 19106	198428	No slip		Heracleópolis Magna		
13	Amphora with two handles from neck	D2/ 9–10, 19207	192746/30					
14	Amphora?	D2/10–9, 19022	190637					
15	Amphora?	D2/ 10–9, 19045	191270/31					
16	?	D2/10–9, 19030	190743			Qantir		Dyn. 19–21
17	Two-handled wide mouth globular jar	D2/11, 19270	193967/22	Wet smoothing, no slip	1	Elephantine Phase IIb		Dyn. 22–24
18	Funnel neck of globular jar?	D2/10–9?, 19030	190747	No slip		Memphis		Dyn. 22
19	Jar base	D2/11, 19270	192967/5	No slip				
20	Jug with short neck	D2/10, 19275	194004	No slip	1	Tanis		Dyn. 21–22
21	Juglet	D2/11, 19212	192948					
22	Juglet	D2/10–9?, 19044	191063					

Table 5. (Pl. 5) Ir1b–Ir1/2

No.	Vessel type	Area/ phase, locus	Reg. no.	Surface treatment	OM group	Parallels			Comments
						Site	Date	Reference	
1	Deep bowl	G/7, 9816	99847	Thin watery slip applied roughly		Heracleópolis Magna	Dyn. 21–22	Lopez Grande et al. 1995, Pl. X11	
2	Large bowl	G/7, 9816		Thin watery slip applied roughly		Tell el-Dabʻa	Dyn. 21	Aston 1996, 26, fig. 41:9	Type often found with 2 handles
3	Jar with upright rim	G/7, 18301	182855	Pale white slip	1				
4	Ovoid jar with thickened rim	G/7, 9813	980361	Wheel marks, pale white slip outside, finished with brush		Qantir	Dyn. 19–21	Laemmel 2008, 182, fig. 7:2	
5	Amphora	B/9, 13028	130287/1	Finger smoothing marks and uneven pinkish slip outside and on rim	1	Kom Firin	Dyn. 21	Spencer 2008, fig. 40:C135	

Table 6. (Pl. 6) Ir1/2

No.	Vessel type	Area/ phase, locus	Reg. no.	Surface treatment	OM group	Parallels		
						Site	Date	Reference
1	Small bowl	D2/8c, 17333	190260	None, poorly finished, many unsmoothed straw imprints				
2	Large ovoid jar	D2/8c, 17758	177396/3	Traces of pale white slip and wet smoothing		Mendes	TIP	Aston 1996, 24 fig. 28:7
3	Large ovoid jar	D2/8c, 17753	177342	Pale white slip		Mendes	TIP	Aston 1996, 24, fig. 28:8
4	Large ovoid jar	B/9a, 3296	32264/35	Pale white slip	1	Qantir	Dyn. 19–21	Laemmel 2008, 177, pl. 9:1
5	Hole-mouth/ meat jar	B/9a 3823	37522	No slip				Spencer 2008, fig. 42:C077
6	Globular jar?	G/6b, 9657		Pale white slip		Memphis	Dyn. 22	Aston 1996, 33, fig. 64:414
7	Amphora with straight neck	B/9a, 2396	32300/2	Wet smoothing, no slip	1	Memphis	Dyn. 22	Aston 1996, 33 fig 61:397
8	Jar with flared rim	G/6b, 18044	180763	Pale white slip		Kom Firin	Dyn. 21	Spencer 2008, fig. 41:C369
9	Funnel neck jar	G/6b, 18074	181118	Pale white slip		Heracleópolis Magna	Dyn. 21–22	Lopez Grande et al. 1995, pl. Ia, type XXA
10	Jar base	G/6b, 9657	97121	Pale white slip				
11	Jar	D2/8c?, 17158	178887	White slip, checkered pattern in red and blue	1	Tomb of Ramesses IV	Dyn. 20	Aston et al. 1998, pl. 26:230

Table 7. (Pl. 7) Ir1/2–Ir2a

No.	Vessel type	Area/ phase, locus	Reg. No.	Surface treatment	OM group	Parallels			Comments
						Site	Date	Reference	
1	Hole-mouth/ meat jar	D2/8, 08D2-2471	08D2-2471	Pale white slip; wet smoothing	1	Elephantine	Dyn. 22–24	Aston 1999, pl. 24:676	
2	Hole-mouth/ meat jar	G/6, 18287	182680	Pale white slip	1	Kom Firin	TIP	Spencer 2008, fig. 42:C077	
3	Hole-mouth/ meat jar	G/6, 9755	97519/2	Pale white slip	1				Not an exact parallel
4	Amphora	G/6a+b, 18030	180521	Pale pinkish slip applied with a fine brush		Memphis	Dyn. 22	Aston 1996, 33, fig. 61:397	
5	Amphora	G/6a+b, 18030	180931			Kom Firin	TIP	Spencer 2008, fig. 40: C064	Not an exact parallel
6	Amphora	B1/9?/8?, 3827	37524/51	Finger smoothing marks and uneven pinkish slip outside and on rim		Saqqara-surface debris	TIP	Aston 1996, 35 fig. 73:1	
7	Closed vessel	D2/8, 08D2-2471	08D2-2471	No slip					Mended in antiquity, holes do not penetrate outer surface of vessel

Table 8. (Pl. 8) Ir2a

No.	Vessel type	Area/ phase, locus	Reg. No.	Surface treatment	OM group	Parallels			Comments
						Site	Date	Reference	
1	Rounded bowl	D2/8a-b, 09D2-370	09D2-6813	Pale white slip, wet smoothing	1	Elephantine, Phase IIb	Dyn. 22–24	Aston 1999, pls. 22:643; 32:980	
2	Jar with thickened rim	B/8, 2670	27590			Heracleópolis Magna	General TIP	López Grande et al. 1995, 66–68, pl. XXIII:b	Parallel has slightly shorter neck
3	Jar with thickened rim	B/8, 2771	27566/7	Pale white slip, wet smoothing					
4	Jar with thickened rim	B/8b, 2771	2760	No slip					
5	Jar with thickened rim	G/6a, 9693	96657	Pale white slip, wet smoothing	1				

No.	Vessel type	Area/ phase, locus	Reg. No.	Surface treatment	OM group	Parallels			Comments
						Site	Date	Reference	
6	Jar with thickened rim	G/6a, 9889	98962/4	Pale white slip, wet smoothing					
7	Jar with thickened rim	B/ 8, 3233	32081/8	Pale white slip, wet smoothing					
8	Jar with thickened rim	B/8?, 3107	30375/1		1	Qantir	Dyn. 19–21	Laemmel 2008, 177, fig. 9:3	Not an exact parallel, rim is slightly different
9	Amphora?	B1/8, 2762	27563/2						
10	Neckless jar	G/6a, 9679	96803			Elephantine, Phase IIb	Dyn. 22–24	Aston 1999, pl. 37:1161	
11	Jar?	D2/ 05D2-512	05D2-0204	No slip, white bands		Thebes	Dyn. 21	Aston 1996, 53, fig. 165:C3	
12	High-walled amphora	B2/8, 2953	28381	White slip, burnt, Carmel coast fabric	2	Kom- Firin	General TIP	Spencer 2008: C017	
						Qantir	Dyn. 20–21	Aston et al. 1998, 608–609, fig. 2487	

Table 9. (Pl. 9) Unclear contexts, mixed deposits Ir1a–Ir2a and later material

No.	Vessel type	Area/ phase, locus (chronological range)	Reg. No.	Surface treatment	OM group	Parallels		
						Site	Date	Reference
1	Hole-mouth jar	B/7+8a, 3376 (Ir2a–Ir2b)	33380/4	White slip outside	1			See pl. 6:1, 2
2	Hole-mouth jar	B1/8–5, 2754 (Ir2a–Persian)	27523/5	Pale white slip outside				
3	Hole-mouth jar	G/6 and later, 9702 (Ir1|2 or later)	98139	Pale white slip outside				
4	Hole-mouth jar	B1, 3329 (unstratified)	32321	White irregular slip outside	1			
5	Hole-mouth jar	G/6 and later, 9796 (Ir1|2 or later)	98073/1	Pale white slip outside	1			
5	Hole-mouth jar	B/9?, 12010 (probably Ir1|2 or Ir2a)	120095/ 12	Rough marks of finger smoothing while wet inside and out, pale white slip		Tell el- Retaba	TIP	Wodzinska 2010, TIP15
6	Hole-mouth jar	B/ 6?/7?, 3282 (Ir2a–Ir2b)	32161/5	Pale white slip outside				
7	Hole-mouth jar	D2, 07D2-069 (Ir1a–Ir2b)	07D2-0597	Pale white slip outside				
8	Bag-shaped jar?	D2, 17999, (Iron Age to Roman)	306804			Thebes-Medinet Habu	Dyn 21	Aston 1996, fig. 165:A1?

No.	Vessel type	Area/ phase, locus (chronological range)	Reg. No.	Surface treatment	OM group	Parallels		
						Site	Date	Reference
9	Jar with thickened rim	D2/baulk, 09D2-302 (probably Ir1|2–Ir2a)	09D2-6178	White slip outside and on inner neck				See pl. 5:3 ?
10	Jar/ amphora?	D2/cleaning, 07D2-010 (probably Ir1|2–Ir2a)	07D2-0328	Pale white slip outside				
11	Jar/ amphora?	B (unstratified)	--	No visible slip				
12	Amphora	D2/7, 08D2-287 (Ir2a with earlier material?)	08D2-2800/1	Thick white slip outside and on inner neck	1			Generally similar to amphorae in pl. 2
13	Amphora	B/baulk (Ir1-Ir2b)	27539/13	No visible slip				Rim generally similar to pl. 4:9, 12
14	Amphora?	B, 7869 (Ir1a-Ir2a)	76568/1	Wheel marks, thick pinkish slip outside and on rim				See pl. 4:11
15	Amphora?	D2 (Ir1a–Ir2a)	194376/7	Thick pinkish slip inside and out applied by fingers				See pl. 3:4, 5
16	Funnel neck of jar	D1/9, 05D1-547 (Ir2a with possibly earlier material)	--	White slip outside	1			
17	Decorated sherd	B, 2754 (unclear stratigraphy)	27523/6	Pale white slip, white bands				
18	Decorated sherd	G/5?4?, 9796 (Late Iron Age–Hellenistic)	98073/1	Pale white slip, white bands				
19	Globular jar?	B/5?, 4?, 7581 (Late Iron Age–Hellenistic)	75684/2	No visible slip		Amarna south tomb	Dyn. 25	Aston 1996, 43, fig. 113, Sj1.7.2
20	Large Jar with thick rim	B2/7, 12011 (Ir2a–Ir2b)	120101	No visible slip		Thebes-Medinet Habu	Dyn. 25–26	Aston 1996, 53–56, fig. 172:N8
21	Jar with thick rim, neck and 2 handles	B/pre-7, 12267 (Ir2b or earlier)	121905	No visible slip	1	Thebes-Medinet Habu	Dyn. 25–26	Aston 1996, 53–56 , fig. 172:F3
22	Jar with thick rim, neck and 2 handles	B, 231 (mixed context)	2289/35	No visible slip		Tanis	8th–7th cent.	Defernez and Isnard, 2000, 161–162, pl. V: group 4

Summary

As mentioned, the dominance of containers at Dor unequivocally attests that they represent an exchange mechanism that should probably be interpreted along commercial lines. It persisted through approximately two and a half centuries (ca. 1100–850 BCE) and in fact may have been of longer duration. Deposits of the second half of the 13th century BCE at Dor also produced a relatively large number of Egyptian-made ceramics, also predominantly large containers (Stidsing and Salmon 2011). However, since, as mentioned, most of the 12th century BCE is not represented in the Dor sequence (whether accidentally or not is unclear at this point), we are unable to determine the degree of continuity between the Late Bronze and Early Iron Age phenomena.

It is also evident that what we have described above stands apart from the Egyptianizing ceramic phenomenon typifying the Empire's strongholds in Canaan till its withdrawal in ca. the mid-12th century BCE. The latter phenomenon, as extensively discussed in recent years by Mario Martin (e. g., Martin 2011; cf. also Killebrew 2004), is indeed attested almost solely in Egyptian centers, with Beth Shean, Aphek, Tel Mor and Deir el-Balah being the best examples. The 'Egyptian' pottery of these sites is mostly manufactured locally, and relatively few vessels actually arrived from Egypt (and very few jars at that). This is true even for coastal sites (e. g., for Tel Mor, Martin and Barako 2007).[11] As well, the latter assemblages are dominated by 'household' vessels such as bowls, 'beer jars' and more, which hardly had any function/meaning beyond the Egyptian centers, in marked contrast to the situation at Dor.

In a follow-up to this paper we will propose an interpretation of the social phenomena exemplified by the Egyptian pottery of Dor, by considering other Egyptian products at the site (mainly fish; Raban-Gerstel *et al.* 2008); by looking at them from regional and diachronic perspectives; and by considering the applicable ancient texts, chiefly, of course the way in which to our understanding the finds reflect on and are reflected by the Wenamun Report.

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[11] But a large assemblage of Egyptian imported storage containers was retrieved from Late Bronze Age Ashkelon (Martin 2011: 195–201).

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