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Abu Tbeirah Excavations I. Area 1

Last Phase and Building A – Phase 1

edited by
Licia Romano and Franco D'Agostino

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In copertina: Modified satellite imagery of Abu Tbeirah site (courtesy of © DigitalGlobe, distributed by e-GEOSx). Logo: Iraqi SBAH

This book is dedicated to Amir Doshi,
whose friendship is the pillar
of our work at Abu Tbeirah

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AREA 1 POTTERY - PART 1
A PRELIMINARY ASSESSMENT ON TYPOLOGY, TECHNOLOGY AND USE

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AREA 1 POTTERY - PART 1
A PRELIMINARY ASSESSMENT ON TYPOLOGY, TECHNOLOGY AND USE

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10.1 Introduction [MZ][1]

The plain ware assemblages and sequence of the ED III/Akk. Transition in southern Mesopotamia continue to be even today not completely defined and understood.[2] The material available for comparison comes mainly from the contexts excavated - with different degree of stratigraphic accuracy - at Ur, Kish, Larsa, Abu Salabikh, Nippur and Diyala. Previous attempts in defining a coherent typological classification of the ED III/Akk. material encountered objective obstacles, the same found in analysing Abu Tbeirah pottery: on one hand the extreme variability of pottery profiles and the differences between entirely preserved grave assemblages and fragmentary household repertoire, and on the other hand the persistence of shapes during the second half of the 3rd mill. BC,[3] a clear sign of cultural continuity in a changing political frame.

In general, previous studies agree in describing the ED III/Akk. ware assemblage as plain and almost totally wheel-thrown. As noticed by C. Glatz, Mesopotamian plain pottery in general has gained less attention than other decorated pottery traditions,[4] being considered the results of a quick specialized mass production. These mass-produced vessels are usually assumed to be realized through wheel-throwing, a technology considered acquired and well established in the second half of the 3rd mill. BC. Notwithstanding this common assumption, other manufacturing techniques are often mentioned in Mesopotamian literature. Woolley describes some small pots as "very roughly made on the wheel and sometimes hand-made or at least scarcely turned".[5] At Abu Salabikh and Larsa some coarse vessels and large bowls are coiled, while some small/medium jars and several miniaturistic vessels are described as hand-made.[6] Flat-based trays at Larsa and Nippur are also realized by hand or slab-built.[7]

In the last decades ethnographic researches and experimental studies have led to a reassessment of pottery technology in the ancient Near East, revaluating the role of the potter's wheel in the 4th-3rd mill. BC: Courty and Roux convincingly demonstrated that the rotative device was used for shaping and refining vessels rather than throwing complete pots.[8] The focus on technology, not new in Near Eastern prehistoric studies, is increasingly spreading in Mediterranean and

[1] We are deeply grateful to N. Laneri, A. McMahon, J. Moon, and M. Ramazzotti for all the helpful comments and suggestions. Of course, all remaining errors are ours. M. Zingale is author of § 10.1, L. Romano of §§ 10.3-5; §§ 10.2 nd 10.6 are common work of the two authors.

[2] The label "ED III/Akk." is here accepted and adopted as suggested by A. McMahon, avoiding more specific chronological indication for our pottery assemblage (McMahon 2006: 59).

[3] Already Delougaz 1954: 87, 105.

[4] Glatz (ed.) 2015.

[5] Woolley 1934: 391 (Types 108-110).

[6] Moon 1987: nn. 169, 198, 204, 207-208, 443-444, 448, 791, 801-803, 806-809, 816; Thalmann 2003: 52 (*Récipients de stockage, types B1 et B2*).

[7] McMahon 2006: 61 and Types O-6a and b; Thalmann 2003: 53 (*Récipients de stockage [?]: terrine*).

[8] Courty - Roux 1995; 1998.

Levantine researches but is presently still limited in Mesopotamian studies.[9] According to C. Glatz, this bottom-up approach, derived by "a post-colonial theoretical framework", is in clear opposition to the classical "top-down perspective of Central State Control, acculturation and enforced culture change".[10]

The technological approach is based on the fundamental concept of *chaîne operatoire*,[11] the sequence of all the operations that lead from the raw material acquisition to the production of an object or instrument. The evolution of the concept and its application from the study of lithic to pottery analysis will not be analysed in depth, referring to the synthesis made by Laneri,[12] and Roux and Rosen for the Levantine region.[13] The concept of *chaîne operatoire* includes also the behavioural sequence, the ensemble of the "phases" of the cultural biography of an object including its use,[14] repairing, re-use, and discard. Moreover, researches on skills involved in the set of potters' practices, on their technical choices and behaviours aim at defining technical identities, seeing potters as individuals acting inside the society and subject to ecological and environmental, as well as cultural, factors and constraints.[15] In reconstructing ceramic production and technical identities both ethnoarchaeology[16] and experimental research provide critical data and a background for reconstructing technological processes.

The present reprise of fieldwork and researches within the modern Iraqi Republic gives the unique opportunity to apply these approaches to the newly excavated Mesopotamian material. The studies on Khaiber pottery by D. Calderbank, for example, focus on one side on the definition of the mechanical and intentional factors in 2nd mill. BC "standardized" production and on the other on the recognition of the actual *versus* intended function of the ceramic repertoire.[17] Similarly, our research at Abu Tbeirah aims at approaching synchronic and diachronic pottery variability not only from a typological perspective but also from the technological and behavioural point of view. In the following paragraphs a preliminary assessment on Abu Tbeirah pottery will be presented, focusing on the typological description of the main shapes and attempting to follow the entire life of the vessel, from clay selection (§ 11) to modelling, firing, use and re-use.

10.2 METHODOLOGY [LR - MZ]

In the 7 excavation campaigns carried out since 2012 a total of 2.681 pottery diagnostic fragments were selected and recorded. Pottery coming from each single US is collected on the field and analysed as a bulk. The collection method, moreover, involves the detailed documentation of the main contexts (pavements, graves etc.) with the annotation on plan of the position of the vessels. The boxes of pottery coming from the field are divided according to fabric[18] and then the diagnostic shapes are selected,[19] described and recorded on the online database, photographed and drawn. Each fragment is denominated with the abbreviation "AbT" followed by the year, the US and the progressive number of fragment (*e.g.*, AbT.15.342.3 where 342 is the US number and 3 the number of the fragment). Attention is also given to the technological aspects, recorded on the online-pottery sheet, including the realization of X-ray analyses made in Nasiriyah medical facilities:[20] the necessity of a focus on the pottery technology became clear after the first campaigns and preliminary studies, thus the radiographic analyses started only in 2014. Traces of use, where present, are recorded too and documented through photo and/or taking impressions with ®Provil paste. Sampling of the content of vessels

[9] Laneri 2009; Armstrong - Gasche 2014; Calderbank 2015; 2017.
[10] Glatz (ed.) 2015.
[11] Leroi-Gourhan 1943; 1945; 1964; 1965.
[12] Laneri 2011.
[13] Roux - Rosen 2009: 11-12.
[14] Ellison 1984.
[15] De La Fuente 2011; Gandon *et al.* 2018.
[16] Costin 2000.
[17] Calderbank 2015; 2017.
[18] Pottery fabrics are assessed through eye-naked observation and the use of ®Dinolite (see § 11).
[19] String-cut bases of drinking vessels, ring and convex bases, plain rims and other very common and chronologically not significant fragments were recorded in their measures but not selected for the complete documentation.
[20] We want to thank Ali Khadem Ghanim, Taher al-Hosseini and our SBAH colleagues for all the help given in the organization and performing of these analyses.

were undertaken, in particular from reliable contexts, and are in course of study. The hand-drawings are always 1:1 scale and in some cases also a 3D-photobased documentation is realized.[21] Hand drawings are copied with a vector graphic software during the didactic activities in Sapienza: the use of a vector graphic software allows to easily study the different shapes, applying for example the envelope method, or to calculate the volume quite accurately and quickly, creating a 3D model in few steps (Fig. 10.1).[22] On the base of the excavation permit, after eventual restoration and study, entire vessels are delivered to the Iraqi Museum in Baghdad. Fragments and not entirely preserved vessels are instead kept in Nasiriyah Museum, available for further studies.

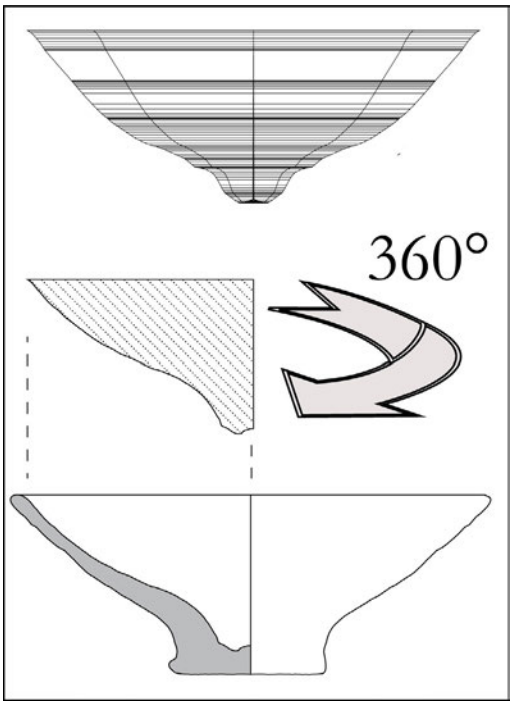

Fig. 10.1 Vessels volume estimation.

[21] The amount of time necessary to process all the vases for 3D is still not compatible with the timing of the mission.

[22] The 3D is realized on the basis of one section: the internal profile of the section is used to construct a curvilinear closed shape that is revolved about the central vertical axis. Then the volume is calculated automatically trough the measuring tools of a CAD program. Given the low profile symmetry of Abu Tbeirah's vessels, the volume obtained in this way should be considered however approximative. In the present chapter, unless differently stated, the volume estimated corresponds to the "total possible capacity" (the "capacity up to the meniscus of the vessel rim…probably not a practical capacity for the vessel, but it is easily replicable between researchers", Senior *et al.* 1995: 320-321).

10.3 Typology [LR]

The present chapter aims at giving a first and preliminary overview of the most common vessels shapes found at Abu Tbeirah. Presently, the great variability in the shape and profiles, clearly due to the 3rd mill. BC serial produced pottery, makes the definition of a reliable typology premature.

The method chosen for the analysis of the different shapes is the "envelope" one:[23] the shards profiles are superimposed at the same scale in order to highlight variations in dimensions that might be connected to differences in the intended uses of the vessels. In the drawings here presented pottery shapes coming from Building A - phase 1 contexts are in blue, in green those from the later graves and in red the shards found in the other later activities.

An example, to be discussed in depth later, will be now used to show the limits of defining a clear typology of Abu Tbeirah pottery shards. In general, both open and closed shapes are realized using four kinds of rims: plain, triangular, band or double ridged.[24] If, for example, the plain rims are considered, these fragments can belong to open shapes (beakers and conical bowls) or to closed ones. In both cases obviously is not simply the rim to describe the shape but also the rest of the body. While in open shapes plain rim is associated only to conical bowls and beakers, apparently no recurrent association in closed shapes is evident. Closed shapes show instead a huge variety of combinations: see, *e.g.*, the trumpet base jars with plain (Fig. 10.14 *sub* c) and the triangular rim one (Fig. 18.16). This variety of association found in in the entire specimens is obviously not visible in the fragments recovered.[25]

10.3.1 Open Shapes

Conical bowls and **Beakers** are the most widespread shapes in both phases and were common also in Ur and other ED III/Akk. sites. The relative frequency of the two kinds at Abu Tbeirah is also similar to that attested in other

[23] Orton 1987.

[24] Sometimes it is difficult to attribute a rim to one of the two categories (especially the decorated ones).

[25] The same problem was noted indeed in Nippur (McMahon 2006: 65 under C-1).

sites of the second half of the 3rd mill. BC: conical bowls are more frequent (70.5%) than beakers (29.5%).[26] Regarding these pottery shapes Woolley states: "the 'saucer', 'cup' and 'goblet' are distinguished by the relation of their height to their rim diameter, but the different types in practice run into each other. They are generally of rather coarse clay and the potting is always very careless, the vessel being lop-sided and the base very often cut off crookedly."[27] Due to the quick shaping procedure, it is often impossible to distinguish the two drinking vessel typologies on the base of the rim (that can vary in the same vessel from plain to slightly triangular) or base fragments: for this reason, only the complete or reconstructed vessels are considered, though also several fragments are published in the catalogue sections of §§ 7-8. Most of the vessels, moreover, are not symmetrical and this asymmetry often make attribution to one of the two classes more difficult.

Conical bowls[28] are usually quickly and poorly made on the wheel and their bases are detached with the use of a string (Fig. 10.2). The clay is of medium quality and usually is low/low-medium fired (though there are some vessels that show a higher firing temperature).[29] The rim diameter of the bowls ranges from 10 cm to a maximum of 18 cm (most of them have a diameter of ca. 14-15 ca. cm).[30] Rim and wall thickness is uneven and can vary from a minimum 0.3 cm to 1-2 cm near the base. The bases seem to be realized with standard measures: 4 cm, 4.5 cm, 5 cm, 5.5 cm and 6 cm.[31] The base should not be considered as a perfect circle: the detachment with a string literally "squeezes" the bottom of the vessel and, thus, the apparently less damaged side of the base is usually recorded. The height of the complete vessels ranges from ca. 6 cm to a maximum of 9 cm, with only one example from the Cemetery (AbT.15.332.9), showing an hight of more than 10 cm. The external angle formed by the walls and a horizontal line passing the bases ranges from 45° to 63°.[32] M. Gruber, analysing the evolution of the conical bowls during the ED, said that "(Nippur) Akkadian graves contained bowls with a base angle less than 40° while the late ED bowls remain above 42°".[33] Abu Tbeirah's conical bowls from the phases here analysed are in the range described and are well connected with the tendency, attested in several sites, toward shallower vessels at the end of the ED:[34] as visible in Fig. 10.3, indeed, it is possible to see how conical bowls from the latest graves and activities are in a way more standardized and shallower on average, if compared to those from Building A - phase 1. Bowls volume is almost always comprised between 0.3 and 0.5 L (see Fig. 10.4), and apparently there is no significant change between the analysed phases. This data is not, thus, on the same line with the noticed conical bowl capacity reduction from the second part of the ED:[35] this could be due to the probable short period that separates Building A last phase from the later graves or to a local peculiarity.

Conical bowls are sometimes attached to a **cylindrical or flared stand** (Fig. 10.5), a well attested and quite standardized shape at Abu Tbeirah (rim diameter mostly ranging from 10 to 14 cm[36] and a rim thickness <1 cm). No complete vessel was found yet but the two different parts (upper conical bowl and cylinder/stand) were recovered from the layers analysed by the present publication.[37] This kind of stand is attested at

[26] Only complete examples were considered. See the comparable data from Larsa (75% for conical bowls and 25% for beakers) in Thalmann 2003: 50.

[27] Woolley 1934: 390 Types 4-7, Pl. 251.

[28] The following number of complete vessels is considered here: 38 complete vessels from the later graves; 4 from other later activities, 51 from Building A - phase 1.

[29] Fabric A-B. See § 11.

[30] In the cases reported in the plates in §§ 7 and 8 the diameter is bigger than the interval quoted here. Nevertheless, this can happen in those cases in which the rim is poorly preserved or belongs to an uneven shaped vase: in these cases the rim should not be reconstructed as a perfect circular one, but rather as an oval one (see for example AbT. 13.170.3 with a diameter of 28 cm).

[31] On the wheel-production at Abu Tbeirah and the "standardized" measures of the bases see Romano 2015b.

[32] See for comparisons the results in Ochsenschlager 2004: 128 Fig. 7.12 (Al-Hiba conical vessels).

[33] Gruber 2015: 161.

[34] This previously noticed tendency in all the sites is well summarized by Gruber 2015 (with previous bibliography).

[35] Gruber 2015: 157.

[36] The only bigger example is AbT.14.242.37.

[37] Inside US 38 (Building A) both the cylinder and the conical bowl were found, while inside the dump pit US 242 a bigger conical bowl was probably connected to a coiled base with triangular rim. This last association is, however, not sure due to the different fabric colors (on the fabrics and the association between color and temperature see § 11).

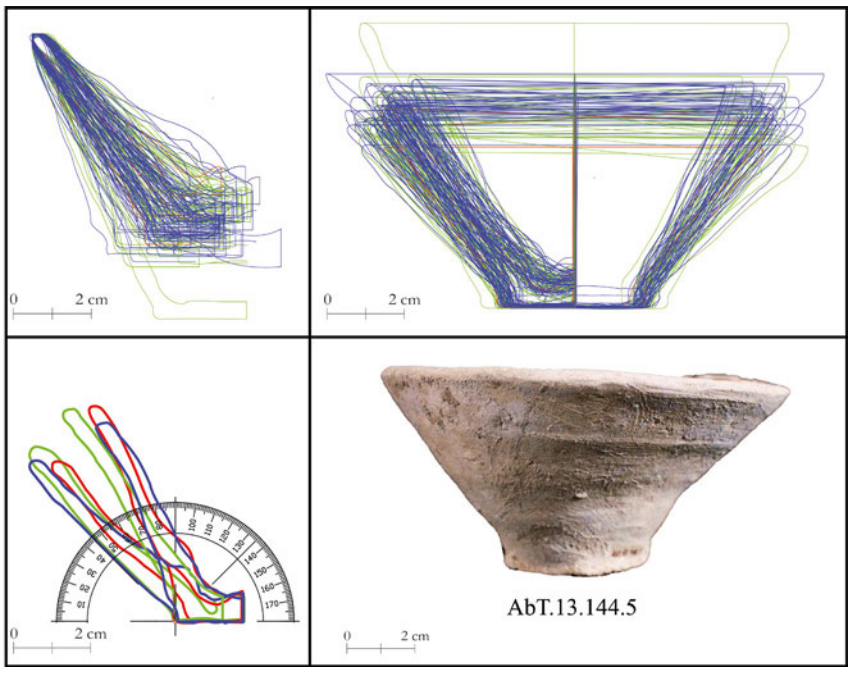

Fig. 10.2 Conical bowls: envelope.

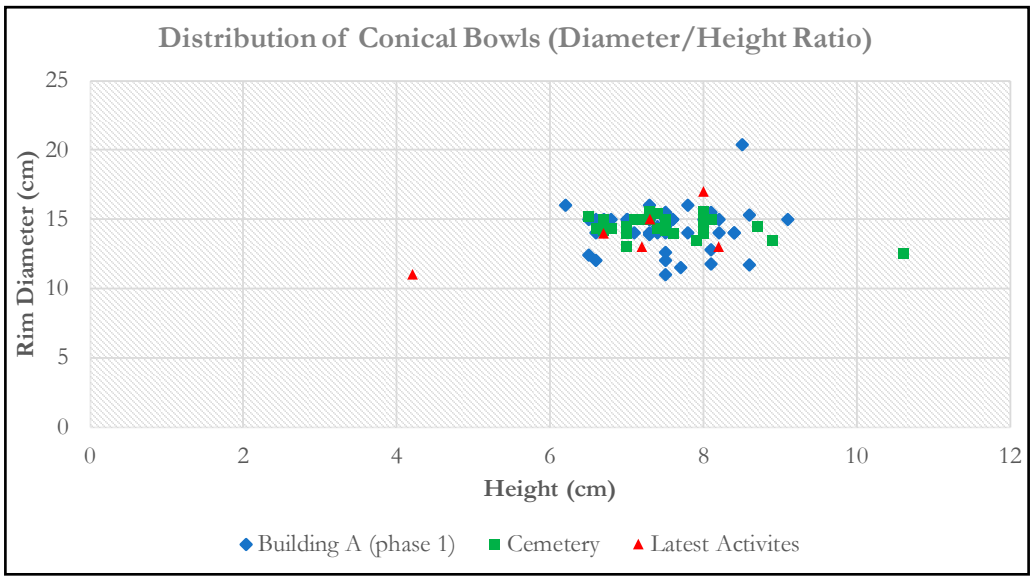

Fig. 10.3 Conical bowls: diameter/height ratio.

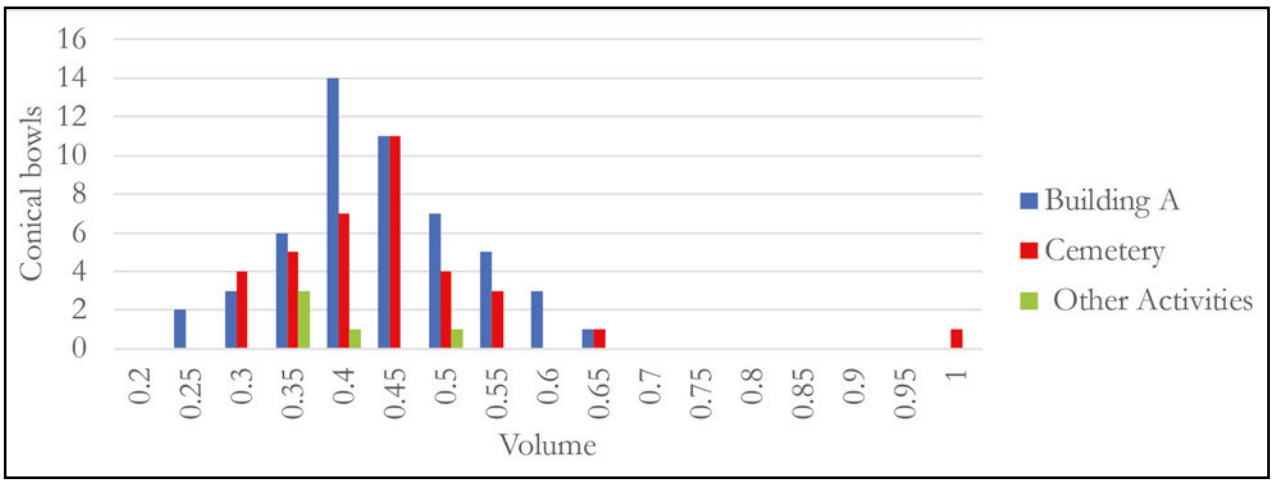

Fig. 10.4 Conical bowls: volume.

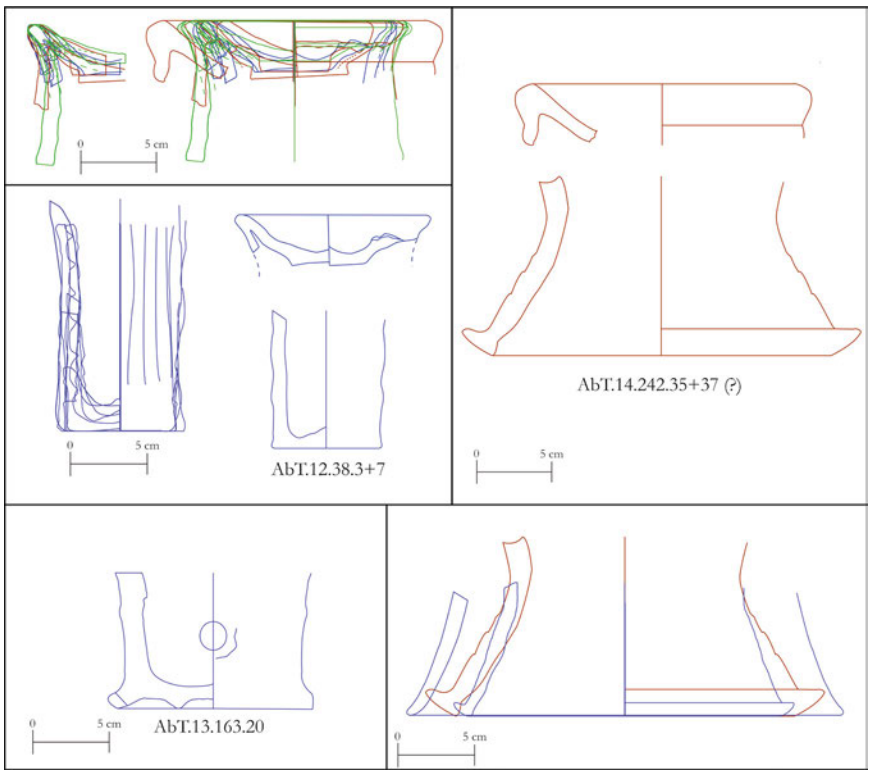

Fig. 10.5 Conical bowls attached to a stem. For a picture of the entire shapes see Fig. 10.25 (conical bowl attached to a stem), Fig. 10.26 (cylinder) and Fig. 10.27 (AbT.13.163.20).

Abu Salabikh, al-Hiba, Fara and Nippur[38] for the ED IIIa-b. However, it cannot be excluded a connection of conical bowls to a more flared stand like in AbT.13.195.17.[39] Cylinders at Abu Tbeirah have a string-cut base of 7-8 cm of diameter, more or less visible rillings inside and are attested only in the layers connected to the last phase of occupation of Building A.[40] AbT.14.194.6 is the better preserved and is almost 15 cm high. The presence of a string-cut base in the stand is in contrast with what is attested in the vessels found at Nippur.[41] In addition, another similar kind of cylindrical stand was found in Building A (AbT.13.163.20): this coarse vessel has three small feet in the middle of the base[42] and a hole in the wall. The second kind of stand can have a plain or triangular rim base and has a diameter ranging from 28 to 21 cm.

Beakers, similarly to conical bowls, are poorly and quickly wheel-thrown and with string-cut bases (Fig. 10.6). The clay is of medium quality and usually is low/low-medium fired (though there are some vessels that show a higher firing temperature). Rim diameter ranges from a minimum of 6 cm to a maximum of 17 cm (the average diameter of the beaker rim is of 11-11.5 cm). Rim and wall thickness is uneven and can vary a lot in the same vessel, like in the conical bowls, reaching a thickness 1-2 cm near the base. Bases seem in general to be realized with the same standard measures of conical bowls (4.5 cm, 5 cm, 5.5 cm and 6 cm) though also bigger and smaller examples are attested (respectively 7 cm and 3 cm). Height ranges from 6 cm to 19 cm ca., with most of the specimens of 10-13 cm. The external angle formed by the walls and a horizontal line passing the bases is always bigger than 70°,

[38] See McMahon 2006: 67 O-8 Pl. 82 (at Nippur fragments of this type come also from late Akkadian layers and can be considered, according to McMahon as a transitional type).
[39] A similar vase can be found in Woolley 1934: n. 244 Pl. 266; Martin 1988: 185 n. 99.
[40] One of them inside Grave 4.
[41] McMahon 2006: O-8 Pl. 82.
[42] The base's edge is broken: it is possible that the vase originally had a ring base. Probably it belongs to a completely different vase typology. The same could be said for AbT.12.42.13.

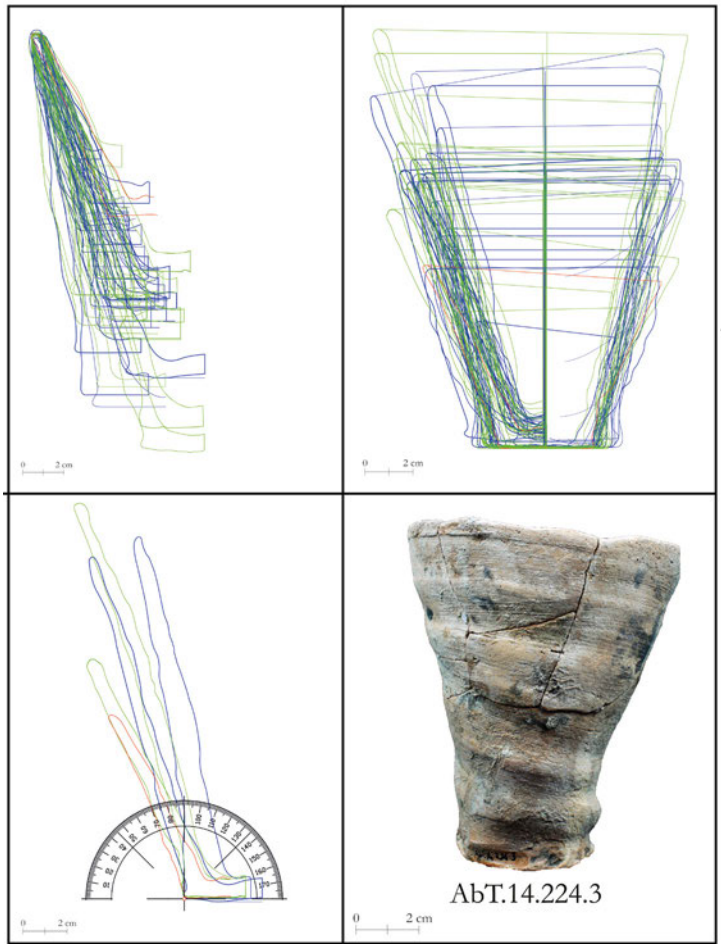

Fig. 10.6 Beakers: envelope.

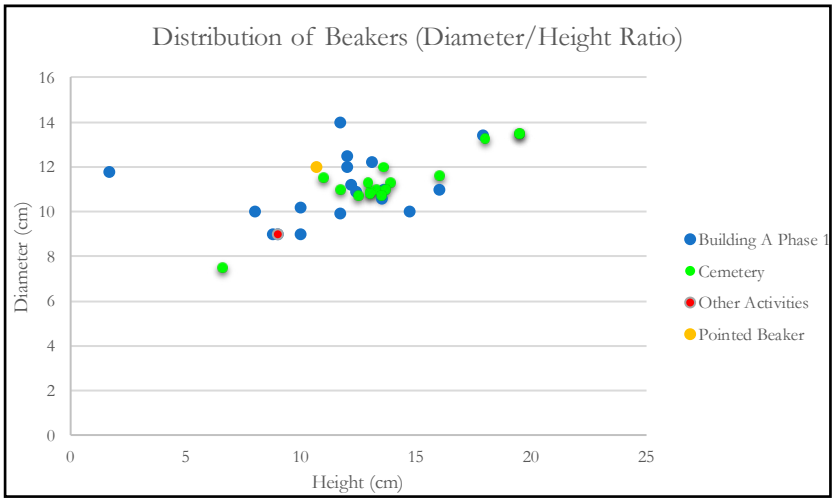

Fig. 10.7 Beakers: diameter/height ratio.

with the setting of some beakers' walls almost perpendicular to the base.[43] In Fig. 10.7 the ratio between height and rim diameter of the complete vessels preserved for each phase is reported: as for the conical bowls, beakers from the latest graves and activities seem more standardized.

On the basis of the volume (Fig. 10.8) it is possible to distinguish at least three dimensional categories (plus the miniaturistic one): the smallest and most

[43] A similar result was obtained for Al-Hiba beaker-like forms (Ochsenschlager 2004: 128 Fig. 7.12).

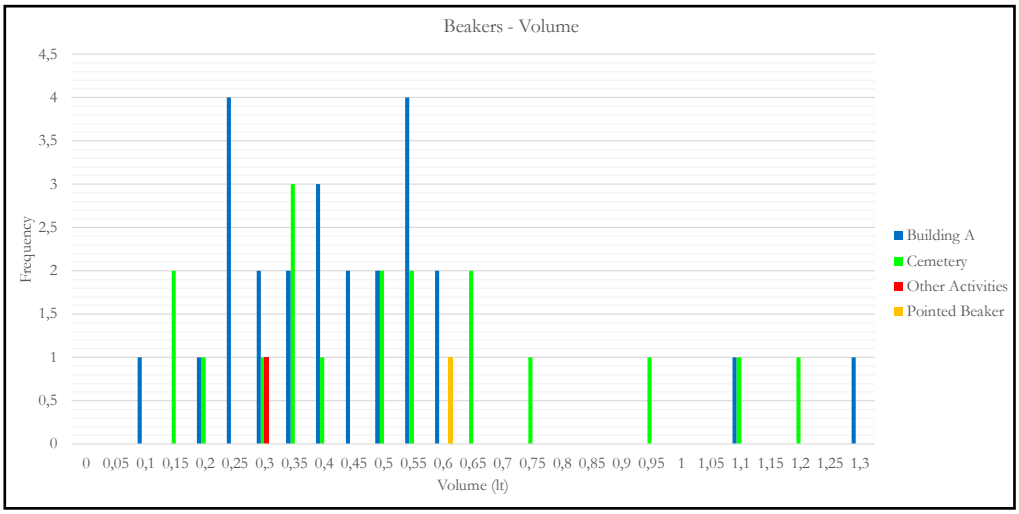

Fig. 10.8 Beakers: volume.

widespread group of 0.2-0.4 L ca.; the medium of 0.5-0.7 L ca.; the biggest of 1 L ca. On average it seems that beakers from the late Cemetery are bigger. While conical bowls are in general poorly shaped, some of the beakers recovered in the Cemetery (like AbT.14.332.10) seem to have been realized more carefully: it is early to determine if this is a difference of chronological importance or if it is linked to the presence of different workshops, or again to a difference in the shape's idea.[44]

A pointed version of the beaker is attested only in few examples both from the later graves and from Building A.[45] The ratio between height and diameter of this vessel fits the results obtained for the beakers (see Fig. 10.7) as well as the volume (Fig. 10.8). Comparisons come from ED III/Akk. contexts at Nippur.[46]

The so-called **trays** or **feed-trays** are generally oval/circular coarse[47] open vessels with plain rim, straight walls and a flat base, and are attested in both the latest activities and the Building A last occupational phase (Fig. 10.9).[48] Tray diameters range from 26 to 52 cm[49] and the rim is always thicker than 1 cm. The volume is around 2.5-3 L. A different version of tray, attested in Building A contexts,[50] distinguishes itself for the presence of some sort of "bridges",[51] departing from the rim toward the centre of the vessel.

Triangular rim deep bowls[52] can have the rim out-turned or overhanging (Fig. 10.10). This kind of rim can be associated to rounded, oblique, or almost straight walls, in all these cases the walls can be decorated with one or more ridges. Flat bases are attested for two vessels from Building A - phase 1,[53] while the ring base is attested in a vase found in the later Cemetery area.[54] The bowls with rounded walls and without ridge, attested only in Building A - phase 1, have a diameter ranging from 20-40 cm and the rim maximum thickness of 1.5 cm in average. When this kind of bowl has a ridge on the walls the diameter ranges from 15 to 46 cm, reaching thus bigger dimensions than the plain ones. The rim maximum thickness in these cases is of 1.5-2 cm in average. This type was found in all the contexts described in the book.

[44] The presence of taller example in later ED or Akk.contexts was already noticed (see Thalmann 2003: 51, 87 type G3).
[45] *E.g.* AbT.15.332.3; AbT.14.259.5-6.
[46] McMahon 2006: 67 Type B-7, Pl. 123 nn. 3+4 (with references to similar findings in late ED III contexts of Kish, Tell Chuera, and Mari).
[47] Usually low fired and with black core section (Fabric D1; see § 10).
[48] It is not clear if also AbT.12.42.103 should be included in this group. Comparisons: Woolley 1934: n. 2 Pl. 251; Moon 1987: nn. 193-201 (ED II-III); McMahon 2006: 65 O-6a Pl.81 (ED III - Akk.).
[49] With the exception of the small example AbT.14.221.39.
[50] AbT.14.242.28.
[51] McMahon 2006: 68 Type O-6b Pl. 81.
[52] It cannot be excluded that some of the pieces attributed to this kind of shape are upper dishes or bases of stemmed dish. As already noted by Thalman (2003: 51) this kind of vessel, not attested in the Diyala, has comparisons from Tell Sabra, Abu Salabikh, Kish, Nippur, Larsa , Fara, Eridu.
[53] AbT.15.397.3+AbT.12.42.60+61 (vol. 13.5 L).
[54] AbT.15.326.1 (preserved volume 11 L).

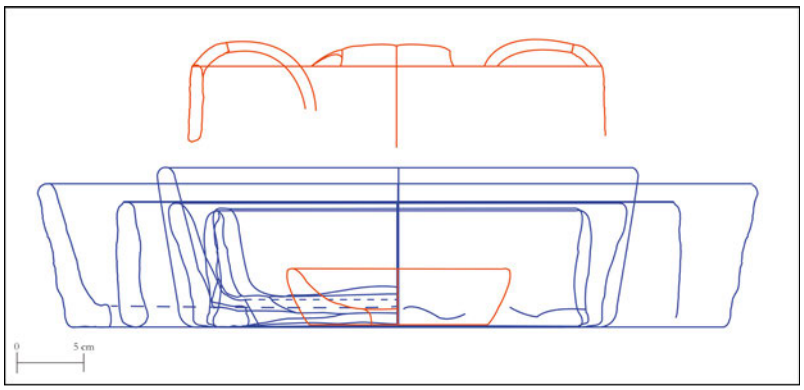

Fig. 10.9 Trays: envelope. For the entire shape see Fig. 10.29.

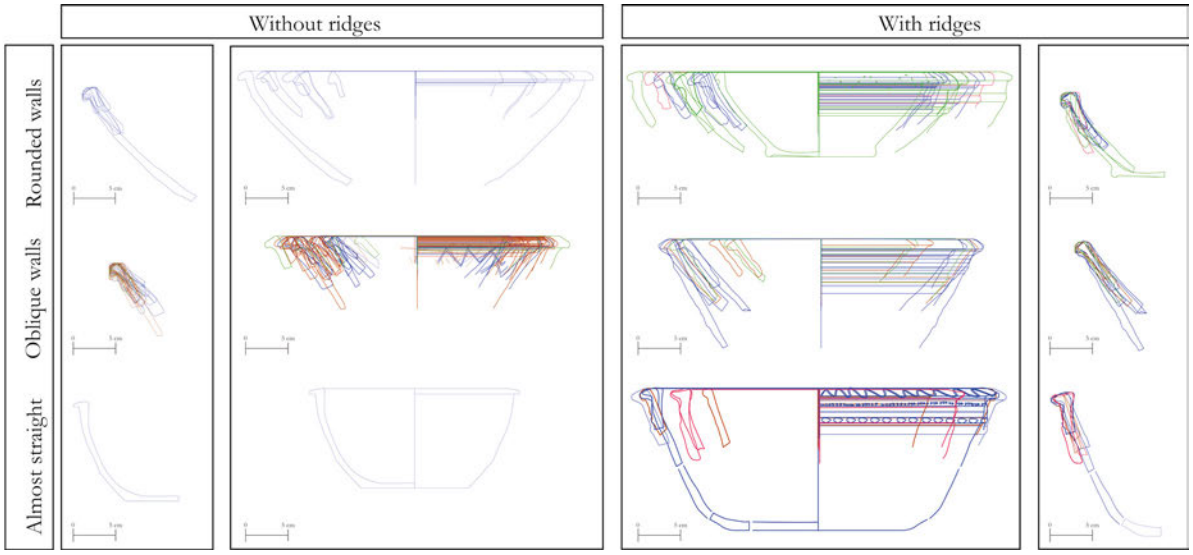

Fig. 10.10 Triangular rim deep bowls: envelope. For the entire shape see Figs 10.30-31.

The bowl with oblique walls is the largest attested, mostly from the domestic contexts or from the other late activities.[55] The rim diameter ranges from 14 to 40 cm: while the shapes without ridge are mostly of 20-32 cm of diameter and with a rim thickness ranging from 2.5-15 cm, the vessels with ridge have a diameter comprised between 33 and 40 cm or 22 and 26 cm[56] and with a rim ranging from 1.5 to 2 cm of thickness. Three specimens of the type without ridge are decorated with incisions.[57]

The last kind of triangular rim bowl has almost straight walls and a flat base, but only few specimens from domestic contexts are attested. The diameter ranges from 25 to 40 cm and the maximum rim thickness from 1.5 to 2 cm. AbT.15.379.3, entirely preserved, has a volume of 2.9 L.

It cannot be excluded that some of the pieces in Fig. 10.10 might originally belong to stemmed dishes.

Shallow plates/bowls appear only in Building A - phase 1 contexts (Fig. 10.11).[58] They can have a triangular, sometimes overhanging, rim or a band rim with a more or less marked profile (almost double ridged in some cases).[59] The best preserved examples show a convex base (AbT.12.53.17) or have a small ridge forming a sort of ring base (AbT.14.287.1). The diameter ranges from 24 to more than 45 cm. Similar shallow bowls, but usually decorated, are those used for the realization of the stemmed dishes: thus, it cannot be excluded that

[55] Only 6 fragments come from the Cemetery contexts and were plausibly in secondary deposition.
[56] This kind of bowl was found only in the Cemetery and in the other late activities.
[57] AbT.14.254.3; AbT.14.242.7; AbT.14.294.1.
[58] Comparisons: Woolley 1934: n. 18a(?) Pl. 252.
[59] Or, on the contrary, almost straight like in AbT.15.395.1 (very similar to McMahon 2006: Type O-4 Pl. 79 n. 2).

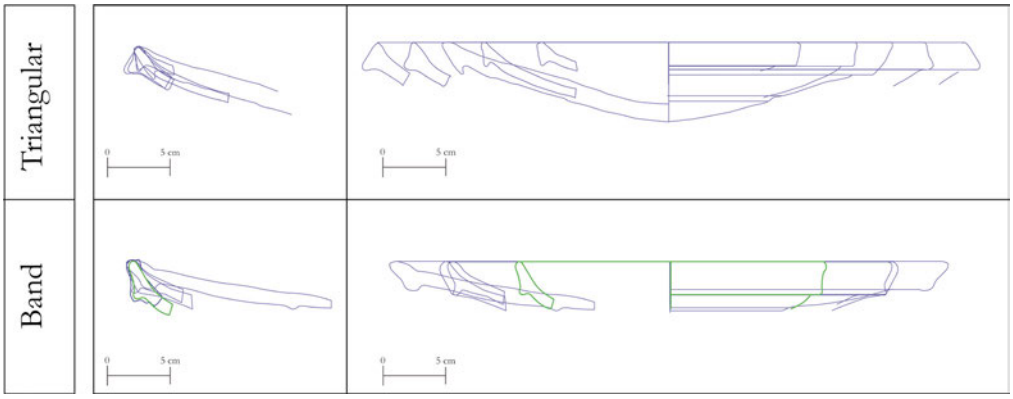

Fig. 10.11 Shallow bowls/plates: envelope. For the entire shapes see Fig. 10.32.

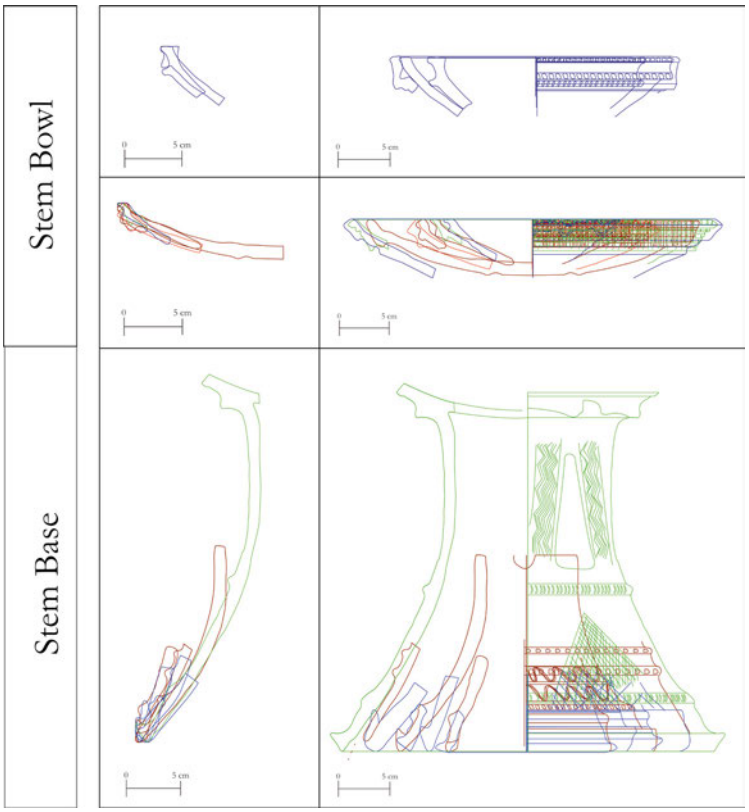

Fig. 10.12 Stemmed-dishes: envelope. For the entire shape see Fig. 10.33.

some of the pieces in Fig. 10.11 could originally belong to stemmed dishes (see below).

Stemmed dishes are a ED III quite widespread kind of vessel[60] and are formed by an upper bowl connected to a stand (Fig. 10.12). At Abu Tbeirah, like in other sites,[61] the upper bowls can be of two kinds: deep bowl with rounded walls or shallower bowls with oblique walls. The bowls can have a more or less marked band-rim[62] or a double-ridged one[63] (in this case also with a particularly elaborate and decorated profile)[64]. The upper bowl rims are often decorated with notches or with wavy/linear incisions. The diameter is comprised between 20 and 27 cm while only two bigger examples have a diameter of 34-36 cm. The stem is essentially

[60] See Moon 1981; 1982.

[61] For example: Moon 1984: n. 234 (deep bowl) and n. 236 (shallower bowl).

[62] See McMahon 2006: Type O-4 (ED III/early Akk.).

[63] See McMahon 2006: Type O-9 (ED III/early Akk.).

[64] In AbT.13.163.13 for example the two ridges of the rim are modelled by hand (pressing with the finger) in order to have a wavy profile.

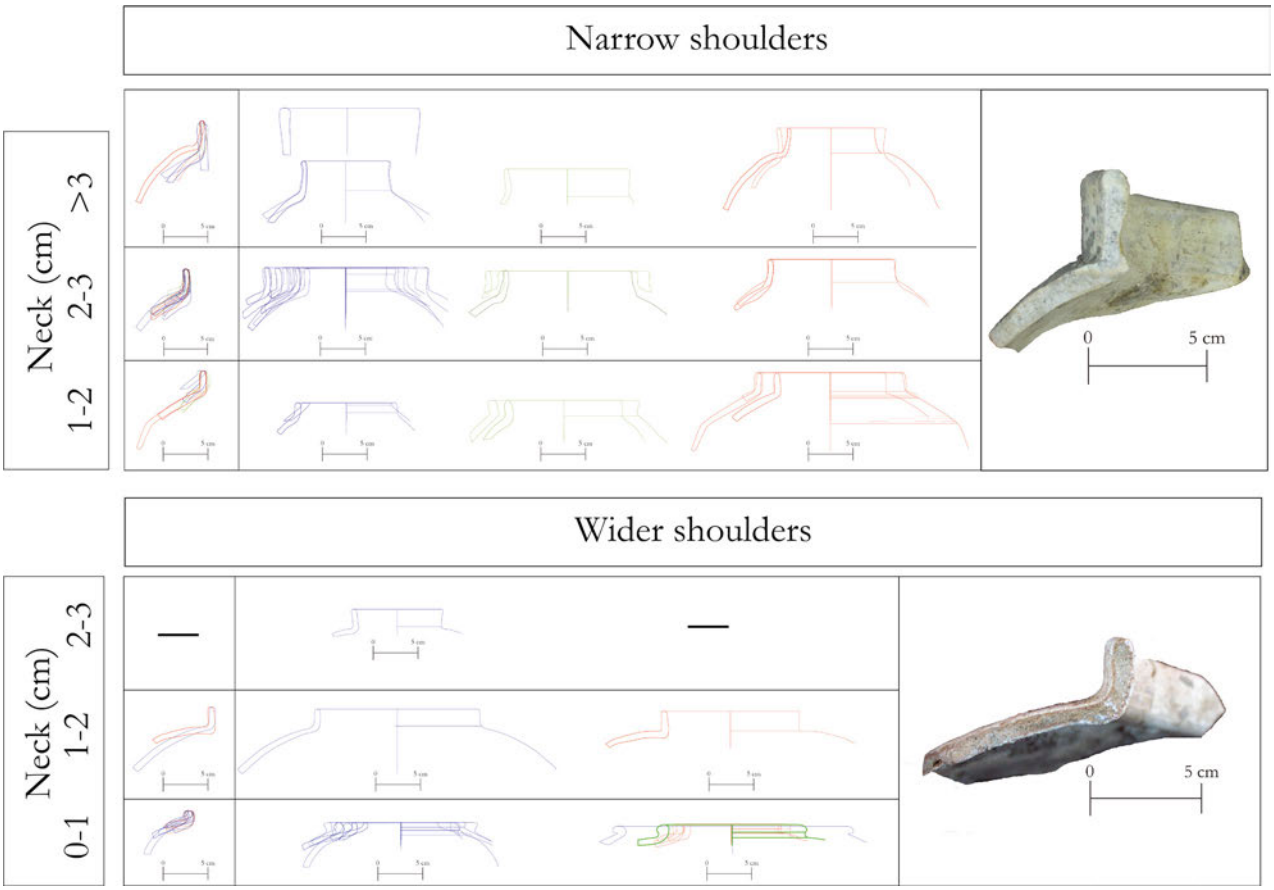

Fig. 10.13 Plain rim jars with straight neck: envelope.

an inverted open shape[65] extended and tapering up. The base has thus several kinds of "rim": triangular, simple or more or less overhanging, and almost plain. The stem can be decorated with incisions and with notched ridges. The base diameter is comprised between 14 and 37 cm. The best preserved and more richly decorated example is AbT.13.177.1 from Grave 17.

10.3.2 Closed Shapes

Plain rim jars can be associated to a great variety of bodies and bases (flat, convex and ring) and can also present a spout or handles. Entire specimens come mostly from later graves and apparently there is a great difference among these types and the shapes found in the domestic contexts. Two main groups can be distinguished (Figs 9.13-14): plain rim jars with flared or straight neck. Each of them can be subdivided in two main sub-groups based on the shoulders (more or less wide). Other internal differences can be identified on the base of neck height, but this last subdivision should be considered as possibly due to the absence of uniformity of 3rd mill. BC pottery production.

Plain rim jars with straight necks on narrower shoulders (Fig. 10.13) have a diameter ranging from 10 to 19 cm: usually the smaller the diameter, the higher the neck.[66] Rim thickness ranges from 0.3 to 0.6 cm. Among the shards with shorter necks only AbT.14.242.10 (a probably later specimen coming from the huge garbage pit US 242) shows a carinature between the shoulders and the body and three combed lines.

Plain rim jars with straight necks and wider shoulders show a diameter ranging from 10 to 18 cm ca., and a rim thickness of 0.6 cm. Also, some kinds of "hole mouth jars" are included in this

[65] This was also previously noted by McMahon (2006: 64 Type O-2): "Some sherds of this type can be difficult to distinguish from the bases of stemmed dishes, which are often very similar in diameter, shape, and decoration; correct orientation in the absence of the whole vessel is often impossible".

[66] With the exception of AbT.12.84.20, a plain rim jar in slightly coarse fabric. Due to the reduced dimension of the fragment it cannot exclude another interpretation of the shape (*e.g.* fragment of trumpet base).

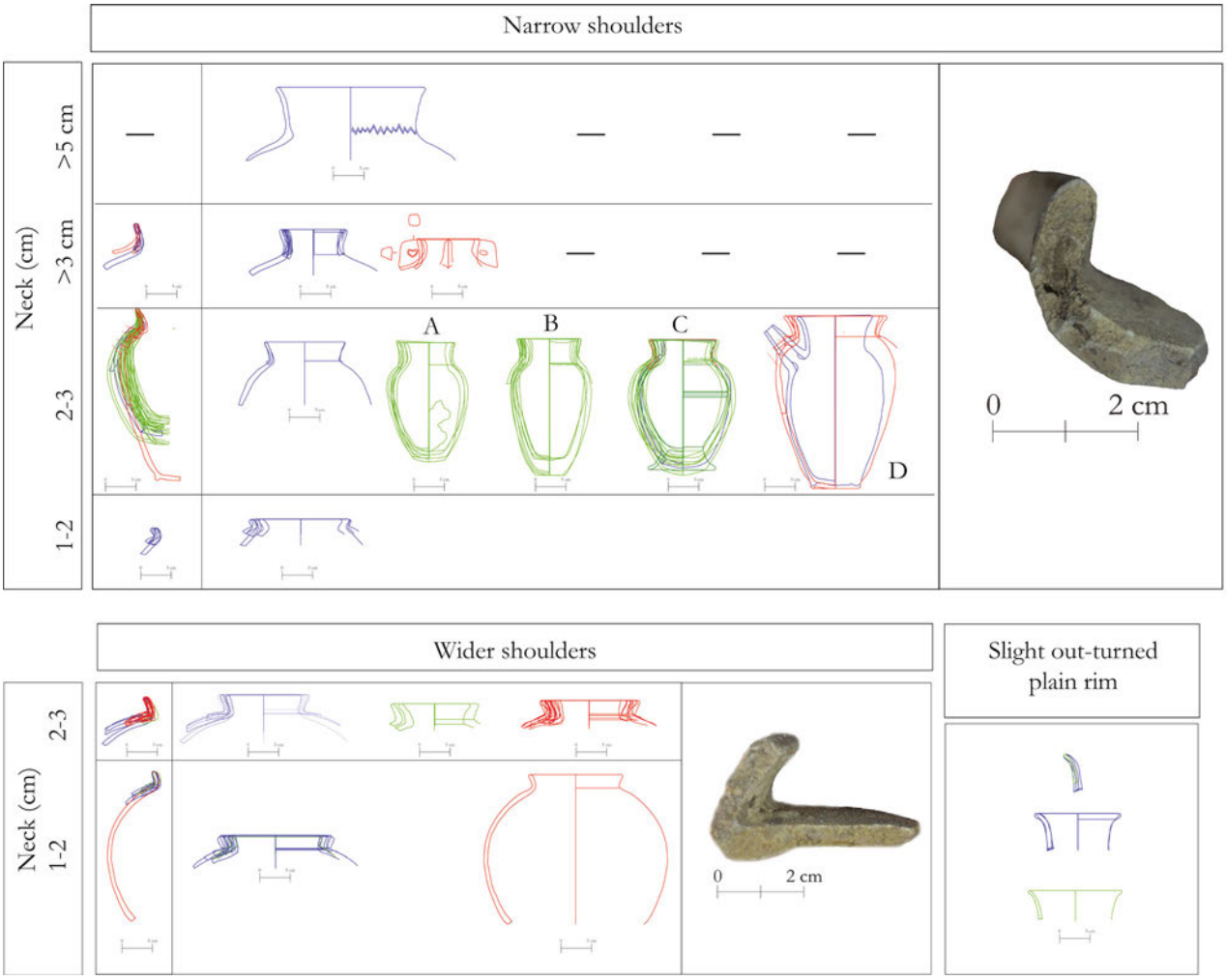

Fig. 10.14 Plain rim jars with flared neck: envelope. See also Figs 10.34 and 10.38.

group (neck 0-1 cm): in these cases, the rims are not always perfectly plain (in some case they are slightly flattened on the top and/or out-turned).[67]

Plain rim jars with flared neck on narrower shoulder (Fig. 10.14) have a diameter that ranges from 7 cm ca. to 17 cm ca.[68] Rim thickness ranges from 0.3 to 0.6 cm and in general the rim is thicker in the pieces with a very short or almost absent neck. Apparently, this kind of jar seems to be more widespread in funerary contexts than in domestic ones. Four different kinds of plain rim jars (Fig. 10.14 *sub* a-d) are attested in Area 1 Cemetery. All of them have usually an irregularl shape, with convex or almost flat bases. Nevertheless the envelope formed by the profiles is thinner than that of the conical bowls or beakers.[69] Type A finds direct comparisons at Ur[70] and Abu Salabikh.[71] The diameter is comprised between 7 and 10 cm and the height between 18 and 19 cm; the rim is around 0.4-0.5 cm thick. The volume ranges from 1 to 1.6 L. Type B has narrower shoulders and a more slender body than type A.[72] Two sizes are attested: the bigger one is 22-23 cm high (with a diameter around 9-10 cm and a rim thickness of about 0.4-0.5 cm), the smaller one is ca. 20 cm high (the diameter is 7-8 cm and the rim around

[67] Presently, the relatively reduced number of pieces did not lead us to the creation of a separate category.

[68] The bigger example AbT.12.42.100 with its decoration clearly belongs to a different kind of vessel but has been included in this group, being at present a *uniquum*. AbT.14.242.32 with handles, instead, is comparable to Moon 1987: n. 328 (ED IIIa, rectangular rim).

[69] This can be obviously due to the reduced number of jars recovered.

[70] Woolley 1934: 391 Type 108(?).

[71] *E.g.* Moon 1987: 86 cat.n. 421 (ED IIIa-b).

[72] Similar to Woolley 1934: 391 Type 110a or to Moon 1987: 83 cat.n. 407 (ED IIIb).

0.4 cm thick).[73] The two sizes contain respectively 1 L and 1.6 L. Type C has a rounded body and is 19-20 cm height, while its diameter is comprised between 9 and 11 cm and the rim 0.4-0.5 cm thick. Only AbT.13.185.5 comes from Grave 14, a sub-pavement inhumation inside Room 5.[74] As for the previous types, this kind of jar is comparable to the vessels found at Ur and Abu Salabikh.[75] The plain rim (though a little bit rounded) trumpet-base jar AbT.15.385.7 belongs to this type: a sort of bigger and thinner version of the ring base is attached to the rounded body of the jar, that is however characterized by a ridge in the middle of the body.[76]

The complete spouted vessel with ring base AbT.14.221.1 probably belongs to the huge dump pit of squares MdXIII5+6+MeXIII5:[77] and has bigger dimensions than the three-footed spouted jar AbT.13.144.2. The latter has almost the same shape but is smaller and was found in association with the sub-pavement Grave 14 inside Building A Room 4.

Plain rim jars with flared necks on wider shoulders have a diameter ranging from 10 to 18 cm and a rim thickness of 0.4-0.7 cm ca. Only 2 shards of this kind were found, out of context, in the later graves. AbT.14.268.3, the better preserved one,[78] finds comparison with the round-based jar (but with triangular rims) of ED IIIa-b from Abu Salabikh[79] and from Tell Razuk.[80]

The last kind of plain rim jar is characterized by a slightly out-turned rim and is attested in only three pieces: probably a version of the triangular rim jar with high neck, that will be described immediately below.

Some miniaturistic vessels often have a plain rim (beveled rims also occur) and flat/string-cut base (Fig. 10.15): as Woolley stated for the miniaturistic vessels from the Royal Cemetery of Ur, also Abu Tbeirah's miniaturistic vessels are "generally small and very poorly made, the types merging into each other".[81] Most of these tiny vessels have a small rim diameter (5-4 cm) and an oval or more globular body (the volume ranges from 0.4 to 0.1 L).[82] A second type of miniaturitic vessel has a larger rim diameter (6-5 cm), flared neck and globular body (vol. 0.14-0.24 L).[83] AbT12.56.2 is a miniaturistic vessel with a plain out-turned rim pierced in 4 points and has a volume of 0.12 L (until the level of the holes).

Triangular rim jars have a slightly flared or straight neck and can be on narrower or wider shoulders, with a more or less convex base (Fig. 10.16). Few complete vases were found in the layers analysed in the present book. The rim diameter of the jars with slightly flared neck ranges from 20 to 18-17 cm. The maximum rim thickness is around 1.1-1.2 cm. The big jars with longer neck have narrower shoulders and find comparisons at Nippur, Abu Salabikh and Ur.[84] The only two complete vessels[85] can contain 5.4 L (AbT.12.56.5) and 1.9 L (AbT.15.391.4). The vases with wider shoulders have a poor shaped and very fragile structure and resemble some vases found always at Ur and Abu Salabikh.[86]

A complete different typology of vessel is the trumpet base jar AbT.13.195.3: this jar has a very small triangular rim and is clearly a variation of the same kind of vessel with plain rim analysed above (AbT.15.385.7).

Triangular rim jars with almost straight neck have a rim thickness of 1-1.2 cm and a diameter of 20-17 cm, with the exception of the complete vessels

[73] Jar AbT.12.5.1 (no rim preserved) was included in the envelope.
[74] This is indeed the only example recovered from this phase of the Building.
[75] Moon 1987: 85 n. 416-417 (ED IIIa-b?); Woolley 1934: 391 Type 108a (?).
[76] For comparisons see Moon 1987: 122-125, in particular nn. 598-600 (with both plain or triangular rim; dating ED IIIa-b).
[77] See § 7.2.3.
[78] Preserved volume 13 L ca.
[79] Moon 1987: 72.
[80] Thuesen 1981: 155 Type 5a n. 2 (liv. 4, Loc. 79) Pl. 64 (ED levels).
[81] Woolley 1034: 391 Types 125-130 Pl. 259.
[82] Woolley 1034: 391 n. 129 Pl. 259; Delougaz 1952: Pl. 158 B.545.220a/b; Pl. 72 1-g; Moon 1987: n. 500 ED IIIa early, n. 507 ED IIIb or later, n. 512 ED IIIb.
[83] Moon 1987: nn. 458-459 (ED III late), 481-484, 491 (ED IIIa-b).
[84] Woolley 1934: Pl. 253 n. 46; Moon 1987: nn. 385; McMahon 2006: Pl. 118 C-24 (ED III/Akk.).
[85] In AbT.13.183.3, AbT.12.56.10 and AbT.13.183.9 the rim is not preserved: it is thus impossible to say if the rim was triangular or plain.
[86] Woolley 1934: Pl. 255 n. 79; Moon 1987: n. 344 (ED).

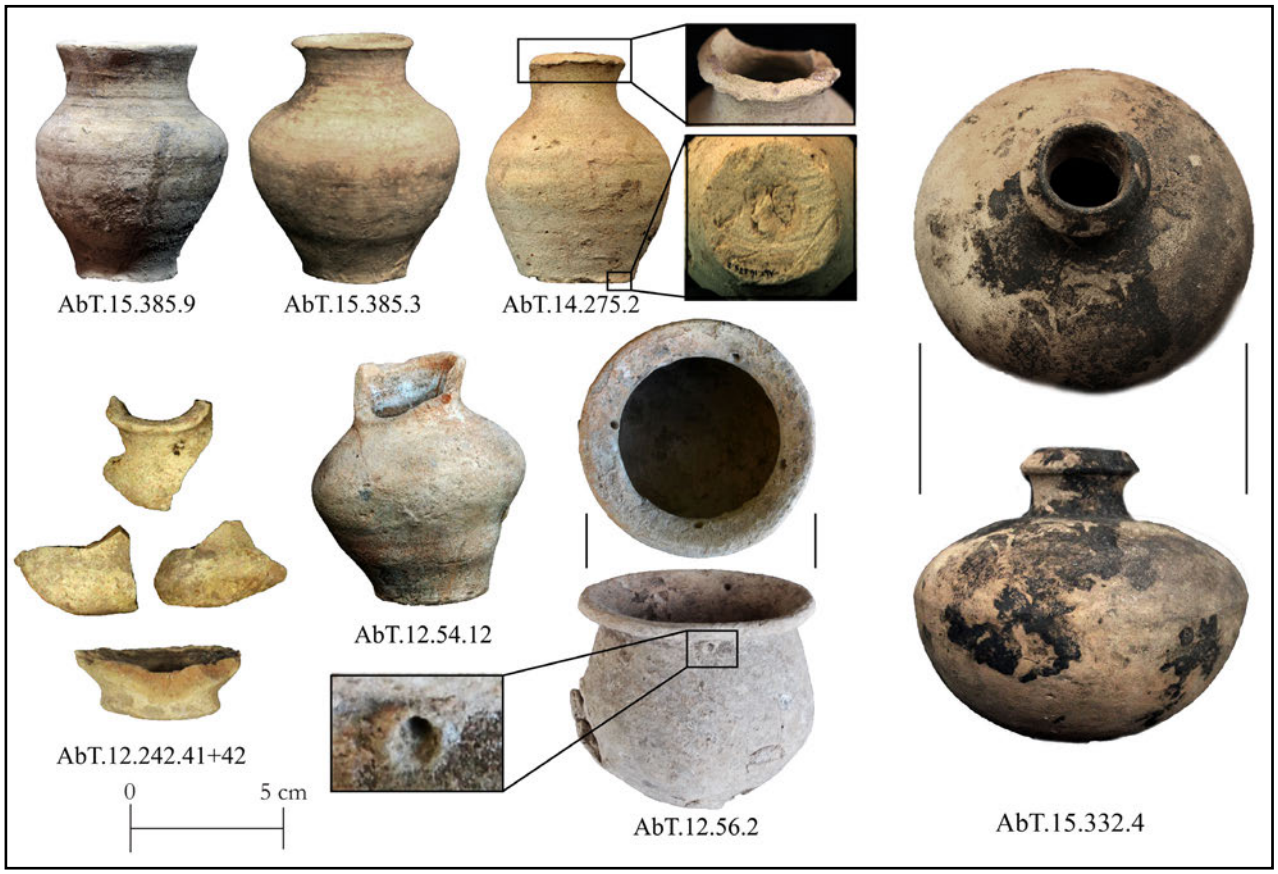

Fig. 10.15 Miscellaneous miniaturistic vessels (AbT.12.54.12; AbT.12.56.2; AbT.12.242.41+42; AbT.14.275.2; AbT.15.332.4; AbT.15.385.3; AbT.15.385.9.

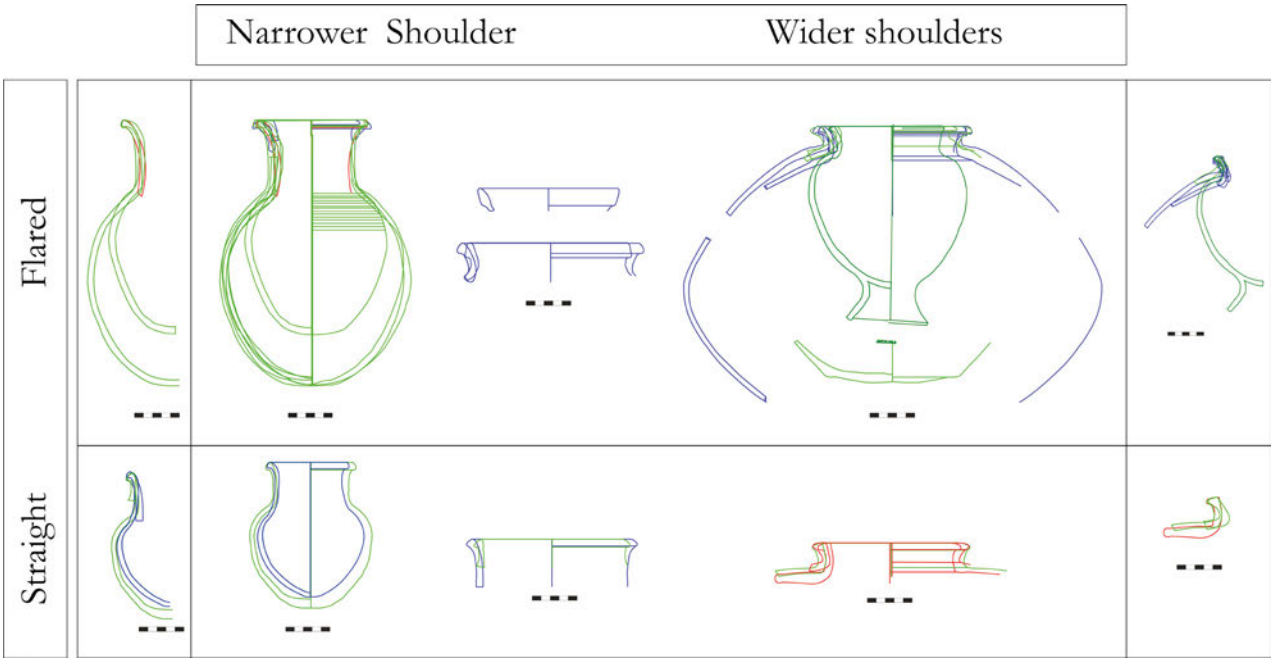

Fig. 10.16 Triangular rim jars: envelope. For the entire shape see Fig. 10.37.

AbT.14.226.9 and AbT.13.144.1[87] that have a diameter of 9-10 cm.

A small bottle AbT.15.332.4 (Fig. 10.15) with triangular rim was found inside Grave 22 and it is chronologically attested from the ED III to the Akk.-Ur III period.[88]

Band rim jars[89] are attested in Building A - phase 1 contexts, in the more recent graves[90] and in the latest activities of Area 1 (Fig. 10.17). The band rim scan be straight or flared. The curves of the rim are more marked in the second case than in the straight band rim jars, sometimes resembling the double-ridged rims[91]. Flared band rim jars are usually on a short neck[92] or without a neck[93]. The minimum rim diameter attested is 12 cm, the average 14-16 cm and the maximum is comprised between 18-20 cm.[94] The thickness ranges from 0.4 to 0.7 cm. Jars with flared band rim can have both wide/rounded or narrow/straight shoulders. The bases, attested only from fragmentary examples, are convex or straight. Straight band rim jars have a longer neck on average[95] and the curves of the rim profile are less marked in general. The rim diameters are comprised between 10-14.5 cm[96] or 18-20 cm. The thickness ranges from 0.5 to 0.8 cm. A variant of this kind of rim is AbT.14.242.20 with a ridge in the middle of the band. AbT.14.179.1 is probably an upright-handled jar found in secondary deposition inside a tannur in Room 7.[97]

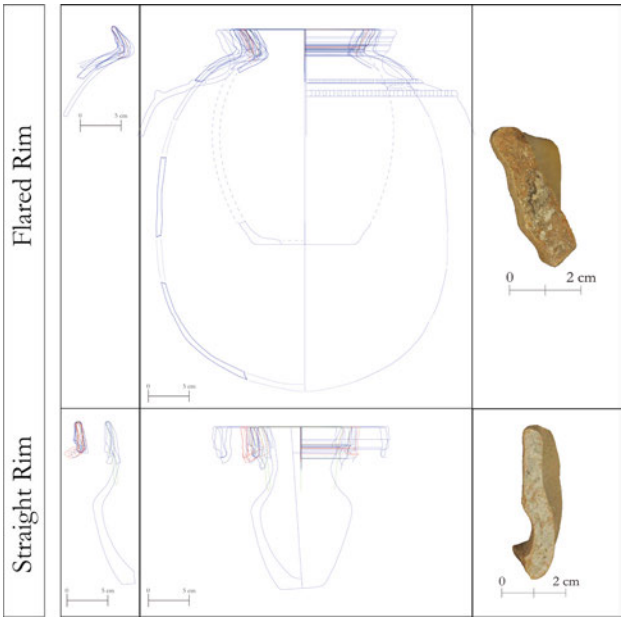

Fig. 10.17 Triangular rim jars: envelope.

Double-ridged rim jars, a more marked version of the band rim, are also attested in connection to a short straight or flared neck and to oblique or wider shoulders (Fig. 10.18). It must be stressed that it is not always easy to distinguish between a band rim and a double ridged jar: in the same vessel the rim is not uniformly shaped and can be more or less marked. The diameter ranges from 14 to 18 cm, except the smaller complete jar AbT.15.366.1 (diameter 10 cm ca.). The maximum rim thickness is of 0.7 cm ca.

10.3.3 Miscellaneous Vessels (Fig. 10.19)

Jars without preserved rims were added, when possible, to the already analysed envelopes but some vessels at present do not resemble any of the already analysed complete shapes. Some of them are too poorly preserved or cannot find any clear and direct comparison inside or outside Abu Tbeirah.[98] AbT.15.332.2, the globular bodied jar with disk base (Fig. 10.19 *sub* 8), finds comparisons at Abu Salabikh[99] and perhaps could be a more rounded version of AbT.14.226.9 and AbT.13.144.1.[100] Big containers at Abu Tbeirah are rarely attested. The huge jar AbT.12.278.1 (Fig.

[87] Similar vases of the ED IIIa-b or Akk. period come from Abu Salabikh (Moon 1987: 78-79 *e.g.* nn. 354-355 or 381) and Nippur (McMahon 2006: Types C-11 or C-24, Pl.136).
[88] McMahon 2006: 73 Type C-19 Pl. 114.
[89] McMahon 2006: 65 Type C-2 Pl. 97 (ED II-III and later).
[90] Only fragments were recovered.
[91] Like in AbT.13.163.17.
[92] The average angle between the shoulder and the rim is of 40°.
[93] AbT.13.152.5.
[94] The fragments coming from the upper graves and from the latest activities have a diameter comprised between 14.5 and 16.5 cm.
[95] *E.g.* the small jar AbT.14.275.1 (Building A, Room 9, Grave 20 - § 8.9) or in AbT.15.365.6 (filling of Grave 24 - § 7.7.1). AbT.14.275.1 is similar to McMahon 2006: Type C-17 Pl. 133 (ED-Akk).
[96] In Building A contexts the rims are comprised between 10-13 cm and in the later phase 10.5-14.5 cm.
[97] Moon 1987: 151 (ED III-Akk.).
[98] See for example AbT.12.12.5 (preserved volume 3 L ca.), AbT.12.56.13 and AbT.14.226.3.
[99] Moon 1982; 1987: n. 351 (ED IIIb).
[100] See above under "triangular rim jars".

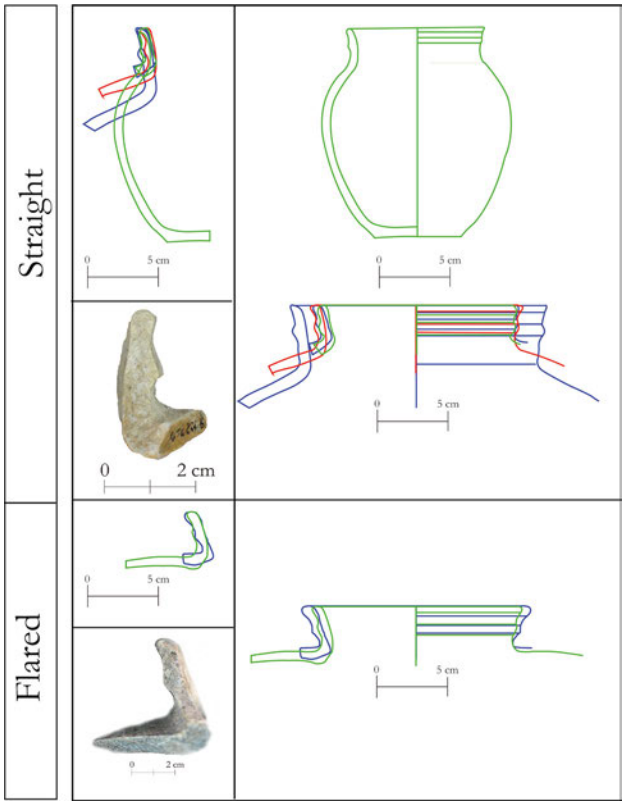

Fig. 10.18 Double ridged rim jars: envelope.

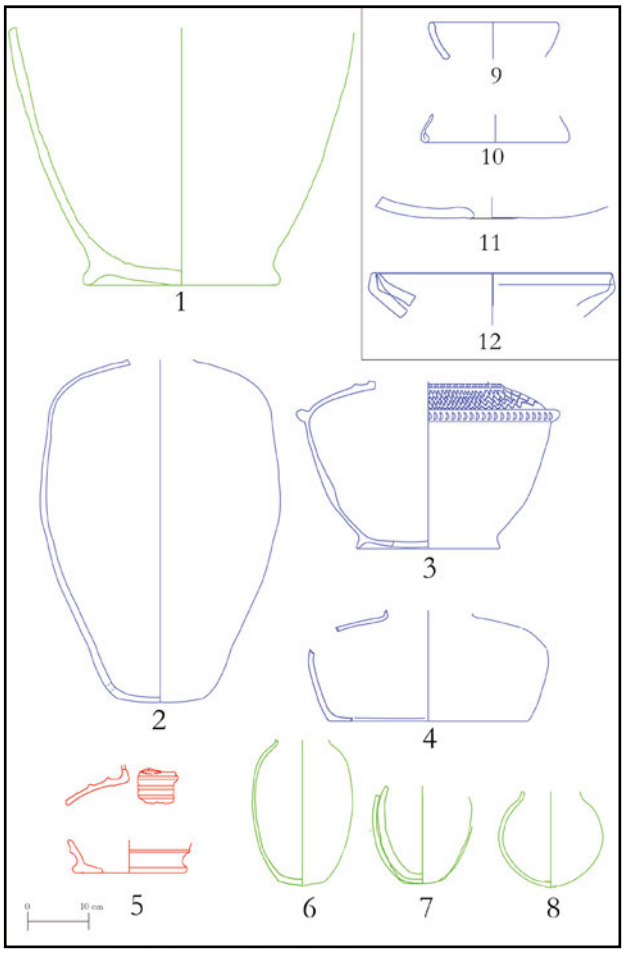

Fig. 10.19 Miscellaneous vessels. 1. AbT.15.326.2; 2. AbT.12.278.1; 3. AbT.13.143.1; 4. AbT.12.36.15; 5. AbT.14.242.13 + 14; 6. AbT.12.12.5; 7. AbT.14.226.3 +A bT.12.56.13; 8.AbT.15.332.2; 9. AbT.14.254.6; 10. AbT.15.331.2; 11. AbT.15.331.4; 12. AbT.15.338.23 and AbT.12.84.8.

10.19 *sub* 2) has a volume of 39 L ca.[101] and might be considered a misshaped version with almost flat base of a jar from Abu Salabikh.[102] Ring base jar AbT.15.326.2 from the Cemetery, can be compared to a huge jar from Larsa, with spout and band rim;[103] the volume of the half preserved part is of 50 L ca. AbT.14.259.1 from Room 8, with rounded body, small neck and out-turned rim, has a volume of 1.9 L ca.

AbT.13.143.1 (Fig. 10.19 *sub* 3) is a squat jar (preserved volume 20 L ca.), from Building A external area that, with its decoration, resembles an upright-handled jar.[104] However, no handle or sign of the handle attachment is preserved and thus a comparison with decorated squat vessels attested in Tell Razuk ED IIIb/early Akk. contexts cannot be excluded.[105] AbT.12.37.15 (Fig. 10.19 *sub* 4), a fragile sort of squat flask with flat base does not find any easy comparison.

From the chronological point of view, it is important to also analyse the fragments of a ridged jar (shoulder and base area preserved, respectively AbT.14.242.13 and 14 - Fig. 10.19 *sub* 5), found inside the late dump cut by Graves 15 and 16. This kind of jar is usually considered an Akkadian type (multiple-ridged jar), but the particular context in which has been found led us to date this vessel to the ED III/Akk. Transition.[106]

[101] In this case the volume was calculated only on the preserved part of the vessel.

[102] Moon 1987: 94 n. 446, with band rim and ring base (ED IIIa). Conical bowl can be used as a lid too (as in the case of AbT.13.144.2 inside Grave 12 - see § 7).

[103] Thalman 2003: 51-52 R1, 97 Fig. 36 (ED III and ED III/Akk. Transition).

[104] Moon 1987: 162 n. 752 (ED IIIa).

[105] Gibson - Sanders - Mortensen 1981: 76, Uc 327 Pl. 95 (Burial 17), on the dating to the ED IIIb/early Akk. see page 80 (with also Diyala *comparanda*).

[106] For comparisons see also Moon 1987: n. 706 (ED IIIa); McMahon 2006: 73, Pl. 110 Type C-16b.

AbT.15.331.2 (Fig. 10.19 *sub* 10) is a small rim folded inside: vessels with similar rims were generally interpreted as lids.[107] Other unusual rim fragments, such as AbT.14.254.6, AbT.15.331.4, AbT.15.338.23, and AbT.12.84.8 (Figs 10.19 *sub* 9 and 11-12) could be interpreted as original parts of strainers.[108]

Big containers (jars, vat and coffins), realized with a coarse and vegetal tempered clay (Fabric D - see § 11), are rarely entirely preserved due to their fragile nature. The four coffins[109] from the later graves of the Cemetery are all very similar: all of them have the walls characterized by applied ridges and usually a ring base (only Grave 2 coffin has a flat base). Other fragments come mostly from the open spaces of Building A, where coarse flat or ring bases are frequently attested together with several kinds of rims. It is not always easy to categorize the kind of rim of these big vessels and containers because it can vary in the same vessel (plain, triangular, band or double-ridged). These kinds of big vats and containers are quite uniform in shape and in fabric (due probably to the physical limits imposed by dimensions) and are not chronologically diagnostic. [110]

10.3.4 List of Pottery Vessels Considered in the Envelopes

Conical bowls: Building A: AbT.12.37.19; AbT.12.37.13; AbT.12.37.14; AbT.12.37.33; AbT.12.42.1; AbT.12.42.2; AbT.12.42.38; AbT.12.42.85; AbT.12.42.101; AbT.12.51.1; AbT.12.51.2; AbT.12.51.3; AbT.12.51.4; AbT.12.53.16; AbT.12.84.1; AbT.12.147.1; AbT.13.152.8; AbT.13.163.1; AbT.13.185.1; AbT.13.185.2; AbT.13.395.5; AbT.13.395.6; AbT.14.297.1; AbT.13.163.1; AbT.13.185.1; AbT.16.346.1; AbT.16.346.2; Cemetery: AbT.12.12.3; AbT.12.12.1; AbT.12.12.7; AbT.13.183.4; AbT.13.183.6; AbT.13.183.8; AbT.13.195.1; AbT.13.195.2; AbT.13.195.7; AbT.13.195.9+10; AbT.14.224.1; AbT.14.224.3; AbT.14.224.4; AbT.14.226.1; AbT.15.332.1; AbT.15.332.10+11; AbT.15.385.4; Other activities: AbT.14.242.5; AbT.15.336.1; AbT.15.336.2.

Conical Bowls attached to a stem: Building A: AbT.12.37.1; AbT.12.38.3; AbT.12.38.7; AbT.13.147.3; AbT.13.163.15; AbT.13.163.20; AbT.13.167.1; AbT.14.194.6; AbT.14.254.7; AbT.14.256.4; AbT.14.281.2; AbT.14.297.3; AbT.15.338.1; Cemetery: AbT.13.177.7; AbT.13.195.16; AbT.13.195.17; AbT.15.326.9; AbT.15.365.5; Other activities: AbT.12.4.2; AbT.14.221.30; AbT.14.242.35+37; AbT.14.268.13.

Beakers: Building A: AbT.12.37.13; AbT.12.37.14; AbT.12.37.19; AbT.12.37.33; AbT.12.42.1; AbT.12.42.2; AbT.12.42.38; AbT.12.42.101; AbT.12.51.1; AbT.12.51.2; AbT.12.51.3; AbT.12.51.4; AbT.12.53.16; AbT.12.84.1; AbT.13.147.1; AbT.13.152.8; AbT.13.163.1; AbT.13.185.1; AbT.13.185.2; AbT.14.297.1; AbT.15.339.5; AbT.15.395.6; Cemetery: AbT.12.12.1; AbT.12.12.3; AbT.12.12.7; AbT.1.183.4; AbT.13.183.6; AbT.13.183.8; AbT.13.195.1; AbT.13.195.2; AbT.13.195.7; AbT.13.195.9+10; AbT.14.224.1; AbT.14.224.3; AbT.14.224.4; AbT.14.226.1; AbT.15.332.1; AbT.15.332.10+11; AbT.15.385.4; Other activities: AbT.14.242.5.

Trays: Building A: AbT.12.42.16; AbT.12.42.96; AbT.13.163.14; AbT.14.297.9; AbT.14.297.10; AbT.15.382.5; Other activities: AbT.14.221.39; AbT.14.242.28.

Triangular rim deep bowls: Building A: AbT.12.37.20; AbT.12.38.1; AbT.12.38.11; AbT.12.42.42; AbT.12.42.60+61; AbT.12.42.81; AbT.12.52.19; AbT.12.77.1 (more rounded); AbT.13.134.9; AbT.13.134.11; AbT.13.144.13; AbT.13.152.1; AbT.13.152.2; AbT.13.152.3; AbT.13.152.9; AbT.13.163.7; AbT.13.163.8; AbT.13.163.10; AbT.13.163.11; AbT.13.163.12; AbT.13.169.2; AbT.13.170.1; AbT.14.254.3; AbT.14.254.4; AbT.14.254.5; AbT.14.256.7; AbT.14.256.8; AbT.14.270.1; AbT.15.331.5; AbT.15.343.1; AbT.15.345.2; AbT.15.379.3; AbT.15.395.2; AbT.15.395.3; AbT.16.346.4; AbT.16.480.1; Cemetery: AbT.12.56.24; AbT.13.177.2; AbT.13.177.3; AbT.13.183.21+22; AbT.13.195.18; AbT.13.195.19; AbT.15.326.1; AbT.15.365.2; AbT.15.391.8; AbT.15.391.9; Other activities: AbT.12.2.13; AbT.12.4.7; AbT.12.4.11; AbT.12.4.21; AbT.14.221.12; AbT.14.221.31; AbT.14.221.32; AbT.14.221.51; AbT.14.221.55; AbT.14.221.78; AbT.14.221.79; AbT.14.240.7; AbT.14.242.7; AbT.14.242.8; AbT.14.242.19; AbT.14.242.33; AbT.14.242.34; AbT.14.244.1; AbT.14.244.4; AbT.14.268.9; AbT.14.268.15; AbT.14.268.16; AbT.14.268.18; AbT.14.268.19; AbT.14.268.20; AbT.14.294.1.

Shallow bowls: Building A: AbT.12.53.17; AbT.13.126.1; AbT.13.134.7; AbT.13.134.8; AbT.13.163.11; AbT.14.256.7.

Stemmed dishes: Building A: AbT.13.144.14; AbT.13.144.15; AbT.13.163.9; AbT.13.163.13; AbT.14.152.13; AbT.14.259.4; AbT.15.337.8; AbT.15.338.25; AbT.15.382.2; AbT.15.395.10; Cemetery: AbT.13.177.1; AbT.13.177.11; Other activities: AbT.12.4.28; AbT.14.242.6; AbT.14.242.40; AbT.14.244.8; AbT.14.268.2; AbT.14.296.4+290.2; AbT.14.298.3.

Plain rim jars with flared rim: Building A: AbT.12.37.16; AbT.12.37.38; AbT.12.37.60; AbT.12.42.32; AbT.12.42.56; AbT.12.42.70; AbT.12.42.72; AbT.12.42.95; AbT.12.52.12;

[107] Moon 1987: n. 148 (ED III early).
[108] Moon 1987: nn. 117-126.
[109] Though it cannot be excluded that some of the coffins were re-used vat, the presence of a lid seems to point toward an exclusive use in the funerary practice (the only exception is the looted sarcophagus from Grave 2, whose lid was not preserved).
[110] As already demonstrated for Nippur (McMahon 2006: 66).

AbT.13.134.12; AbT.13.134.13+14; AbT.13.134.15; AbT.13.144.2; AbT.13.152.11; AbT.13.163.24; AbT.13.185.5; AbT.14.194.3; AbT.14.254.8; AbT.14.270.3; AbT.15.337.6; AbT.15.337.10; AbT.15.339.4; AbT.15.338.22; AbT.15.338.24; Cemetery: AbT.12.5.1; AbT.12.5.2; AbT.12.56.4; AbT.12.56.6; AbT.12.56.8; AbT.12.56.12; AbT.13.183.5; AbT.13.183.12; AbT.13.195.4; AbT.13.195.5; AbT.13.195.6; AbT.13.195.20; AbT.13.195.21; AbT.13.195.22; AbT.13.195.23; AbT.14.224.2; AbT.15.385.7; AbT.15.391.13; AbT.15.326.7; AbT.15.326.11; AbT.15.326.12; AbT.15.385.8; AbT.15.391.5; AbT.15.391.6; Other activities: AbT.12.4.1; AbT.14.221.1; AbT.14.221.46; AbT.14.221.48; AbT.14.221.49; AbT.14.221.50; AbT.14.221.57; AbT.14.221.58; AbT.14.240.5; AbT.14.240.6; AbT.14.242.15; AbT.14.242.16; AbT.14.244.5; AbT.14.268.3; AbT.14.268.11.

Plain rim jars with straight neck: Building A: AbT.12.37.35; AbT.12.42.11; AbT.12.42.66; AbT.12.42.78; AbT.12.42.87; AbT.12.42.91; AbT.12.52.13; AbT.12.84.20; AbT.13.152.10; AbT.13.365.9; AbT.14.270.2; AbT.14.297.4; AbT.14.297.5; AbT.15.338.19; AbT.15.338.21; AbT.15.339.6; AbT.15.395.14; AbT.16.346.3; Cemetery: AbT.13.183.23; AbT.13.365.10; AbT.14.224.5; AbT.15.332.12; AbT.15.332.14; AbT.15.365.11; AbT.15.391.7; Other activities: AbT.14.221.47; AbT.14.221.83; AbT.14.221.84; AbT.14.221.85; AbT.14.221.86; AbT.14.242.9; AbT.14.242.10; AbT.14.242.17; AbT.14.242.18; AbT.14.242.36; AbT.14.298.2.

Plain rim miniaturistic jars: Building A: AbT.12.54.12; AbT.12.152.17; AbT.14.275.2; Cemetery: AbT.15.385.3; AbT.15.385.6; AbT.15.385.9.

Triangular rim jars: Building A: AbT.12.32.1; AbT.12.42.58; AbT.12.42.111; AbT.12.52.11; AbT.12.53.4; AbT.13.144.1; AbT.13.152.12; AbT.15.338.14; AbT.15.350.3; AbT.15.392.1; Cemetery: AbT.12.56.5; AbT.12.56.10; AbT.13.174.2; AbT.13.174.3; AbT.13.183.9; AbT.13.183.25; AbT.13.195.3; AbT.14.226.9; AbT.15.343.3; AbT.15.391.4; Other activities: AbT.12.4.34; AbT.14.221.82; AbT.14.242.23.

Band rim jars: Building A: AbT.12.37.37; AbT.12.42.68; AbT.12.42.92; AbT.12.42.97; AbT.12.42.110; AbT.13.147.4; AbT.13.152.6; AbT.13.152.14; AbT.13.163.17; AbT.13.163.23; AbT.13.169.4; AbT.13.169.5; AbT.14.194.7; AbT.14.200.2; AbT.14.254.9; AbT.14.254.11; AbT.14.254.12; AbT.14.275.1; AbT.15.338.16; AbT.15.338.18; AbT.15.338.20; AbT.15.376.2; AbT.15.343.3; AbT.16.346.5; Cemetery: AbT.13.183.27; AbT.14.226.8; AbT.15.365.6; Other activities: AbT.12.4.46; AbT.14.221.53; AbT.14.221.54; AbT.14.221.56; AbT.14.244.7; AbT.14.268.14.

Double-ridged rim jars: Building A: AbT.12.42.93; AbT.14.297.8; Cemetery: AbT.13.183.26; AbT.15.366.1; Other activities: AbT.14.221.52.

10.4 Shaping and Manufacturing Process [LR]

10.4.1 Insights into the Production of the Main Pottery Shapes

Conical bowls and **beakers** are the most widespread, serial produced vessels during all the 3rd mill. BC in Mesopotamia[111] and are both usually quickly realized and detached using a string, whose signs are clearly visible on the bases. Apart from the concentric signs on the bottom, conical bowls and beakers also have the edges irregularly raised or thickened, due to the rapid movements made by the potter. The wall thickness is irregular but there is a constant reduction from the base to the rim. External parallel striations characterize the external surface. These vessel typologies often show signs of quick production (Fig. 10.20): the base is sometimes badly detached from the throwing bat like in AbT.12.56.22 or AbT.14.221.25 or repaired like in AbT.14.221.70; in AbT.12.56.16 there is clearly a piece of extra clay left inside.

Bowls and beakers are usually considered as wheel-thrown, though from the X-rays analyses carried out it seems possible to hypothesize in some cases the combination and synergy of wheel-throwing and coiling as primary forming technique.[112] Wheel-coiled vessels are, indeed, often unrecognisable at a macroscopic level from wheel-thrown ones: both show internal and external rillings and concentric striation (string-cut) on the base.[113] X-ray analysis can be a useful tool in distinguishing the two techniques. Wheel-thrown vessels have in general a clearer base (thicker) and a gradual darkening towards the rim (due to the reduction of the walls) with an alternation of clearer and darker areas corresponding to the rillings. X-ray analyses of wheel thrown vessels show elongated oblique voids, due to a combination of the centrifugal force and the up-lifting of the clay compressed by the potter's hands.[114] Wheel-coiling is characterized in the radiography by an alternation of thicker areas (darker) and thinner ones (clearer), as in the wheel-thrown vessels, though also with a horizontal distribution at rim level; voids are usually horizontal and very indicative when

[111] See Moon 1987: 3; McMahon 2006: 63-64; Gruber 2015.
[112] On the different kinds of wheel-coiling techniques see Courty - Roux 1998.
[113] Berg 2008: 1181; 2013: 9.
[114] Vidale - Tosi 1996: 255; Berg 2009: 143-144.

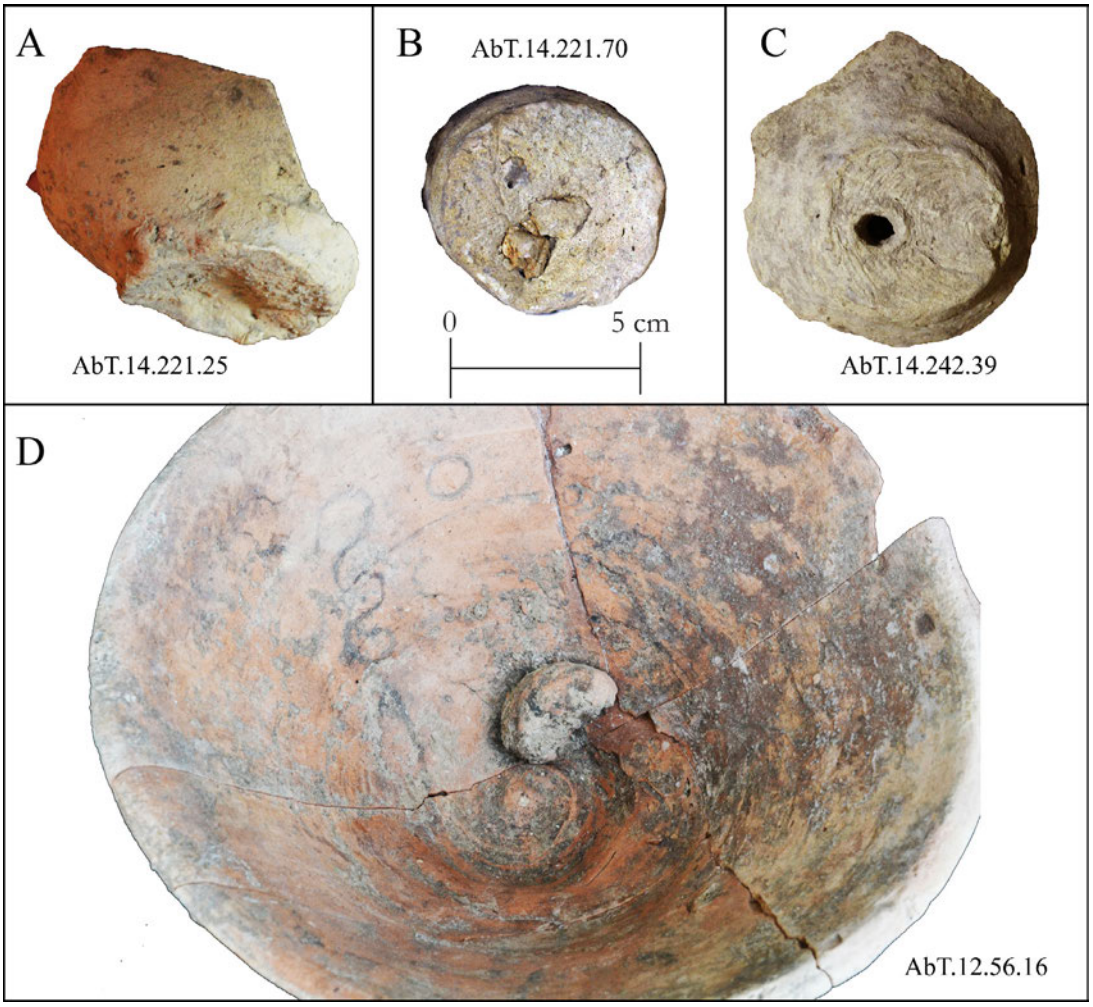

Fig. 10.20 Conical bowls: manufacturing details and peculiarities. a. AbT.14.221.25; b. AbT.14.221.70; c. AbT.14.242.39; d. AbT.12.56.16. Altered colors.

present between two coils.[115] However, X-rays are often not decisive in discerning between the two techniques, as already highlighted by Ina Berg for Cretan Bronze Age vessels: the X-ray quality, the ability of reading of the ceramologist, the skill level of the ancient potter in hiding the coils and the use of surface treatments can indeed obliterate the main forming technique.[116] Looking at Fig. 10.21, in the conical bowl AbT.17.632.1 the oblique voids follow the same direction of the spiral rillings and the external surface of the vessels is plane.[117] Instead, in AbT.15.365.1 the oblique voids cross the rillings[118] but some of them are also parallel to the clearer areas (thicker - in red in the picture): AbT.15.365.1, with its more regular profile, might be thus the result of the use of a wheel-coiling technique: comparable results were obtained through experimental reproduction[119] and the presence of the oblique pores might be the result of drawing the clay of the coils during the throwing or shaping on the wheel.[120]

The same situation can be highlighted for the beakers in Figs 10.22-24. AbT.15.385.4 seems to be completely realized on the wheel: oblique voids are visible in the radiography and the external surface

[115] Berg 2009: 144.

[116] Berg 2008: 1178; Berg - Ambers 2011; Rückl - Jacobs 2016: 298-299 (with experimental replicas).

[117] The vessel in the picture come from a context of the Cemetery excavated in 2017 but not included in the present volume. For another example see the X-ray published in Romano 2015b: Fig. 1 AbT.14.226.1.

[118] This can be obviously due to the different perspective of the two radiographies.

[119] See the base of a closed vessel in Rückl - Jacobs 2016: Fig. 23.

[120] Laneri - Vidale 1998: 245.

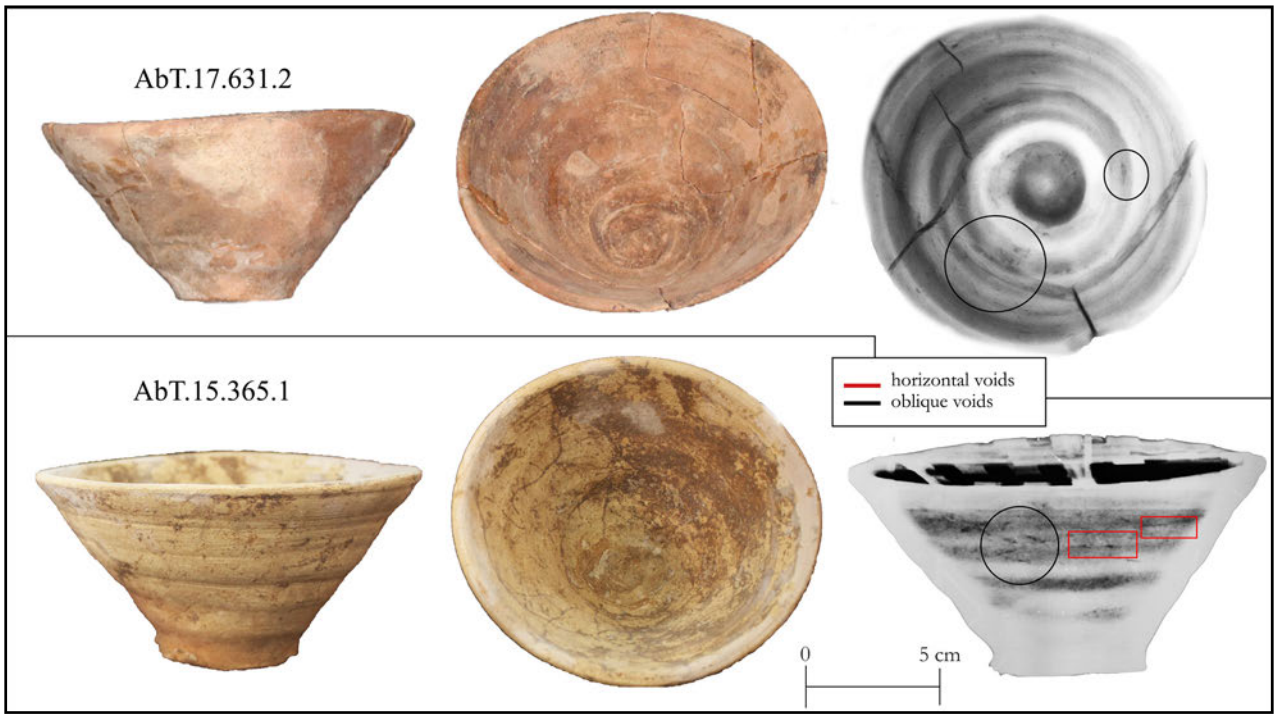

Fig. 10.21 Conical bowls X-rays (AbT.17.631.2; AbT.15.365.1).

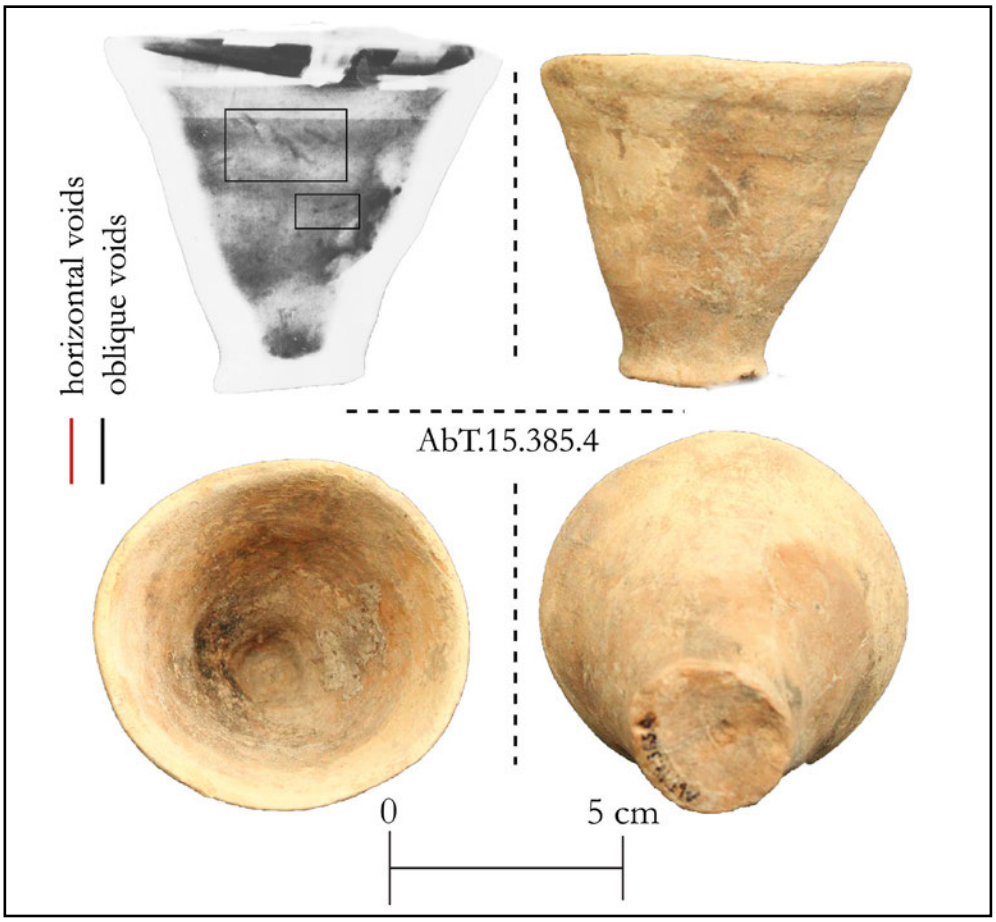

Fig. 10.22 Beaker AbT.15.385.4.

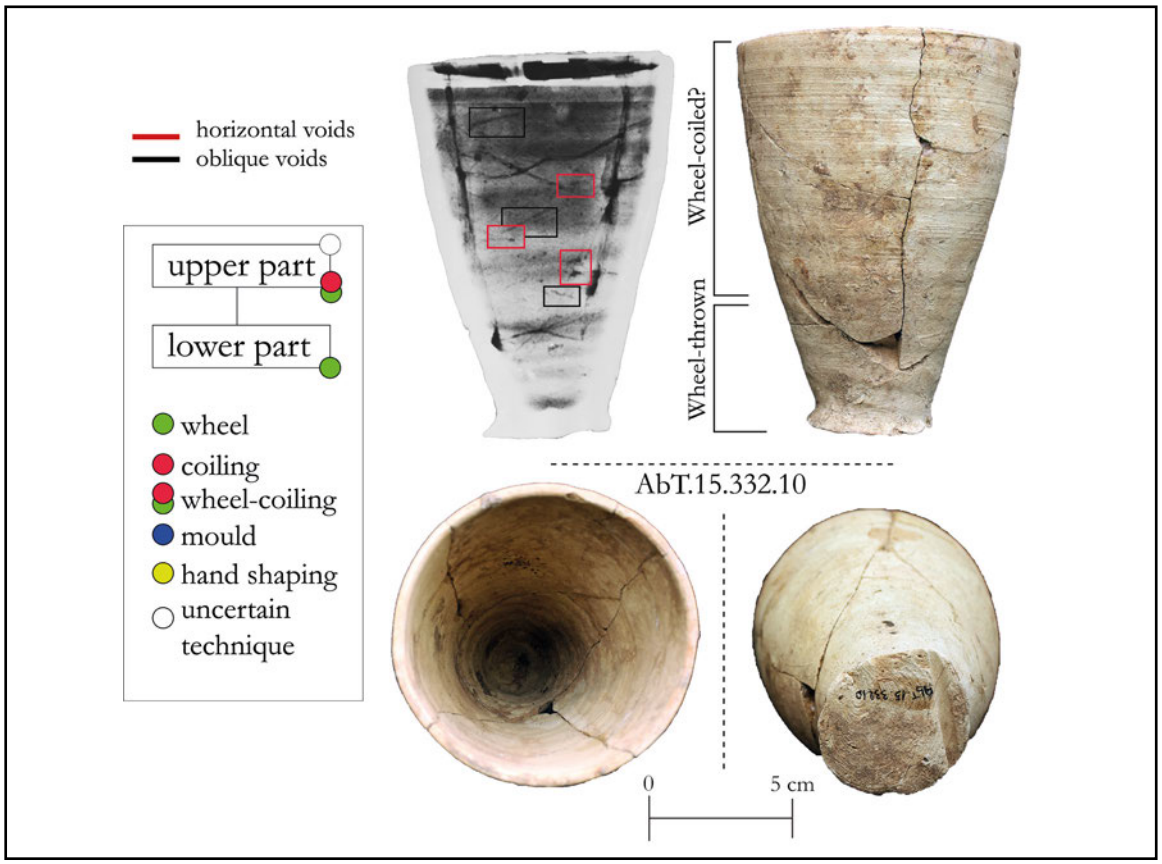

Fig. 10.23 Beaker AbT.15.332.10.

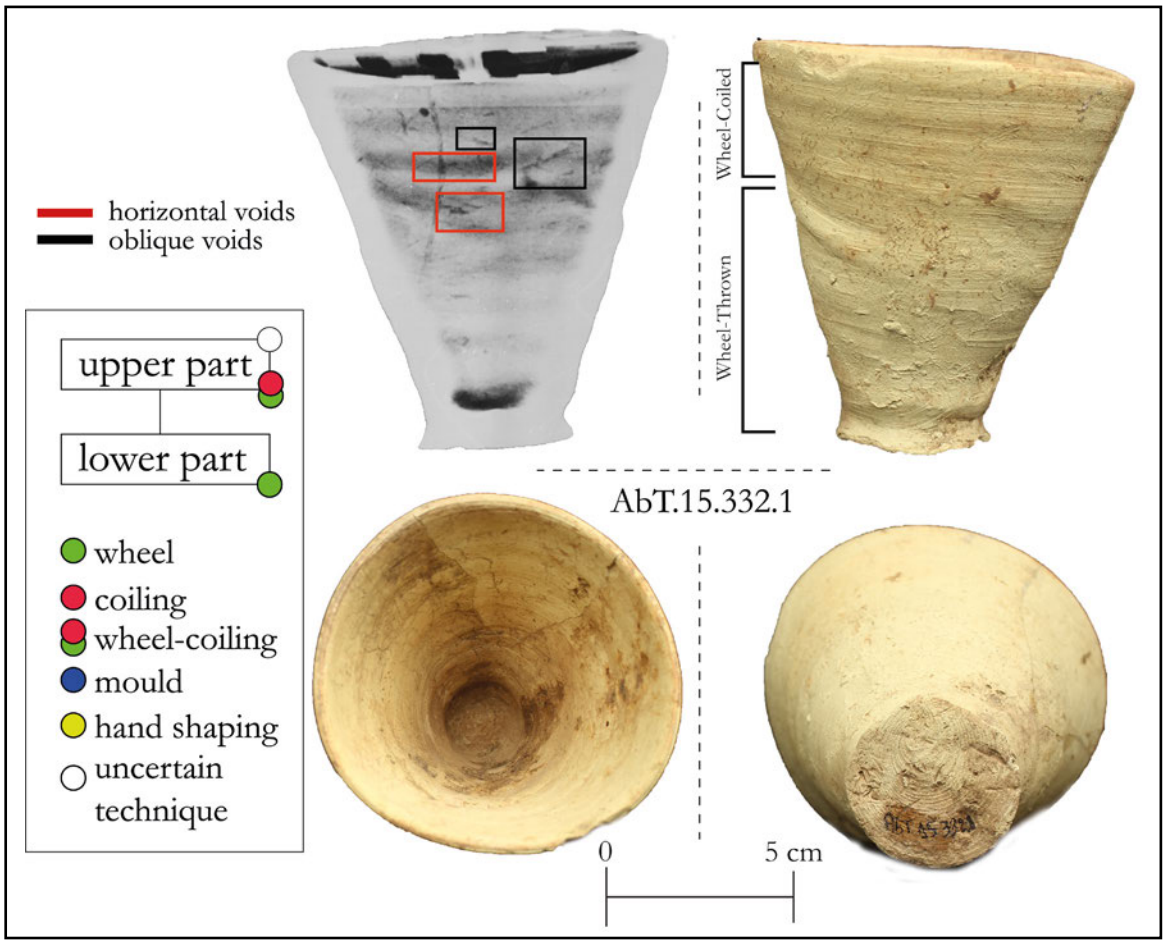

Fig. 10.24 Beaker AbT.15.332.1.

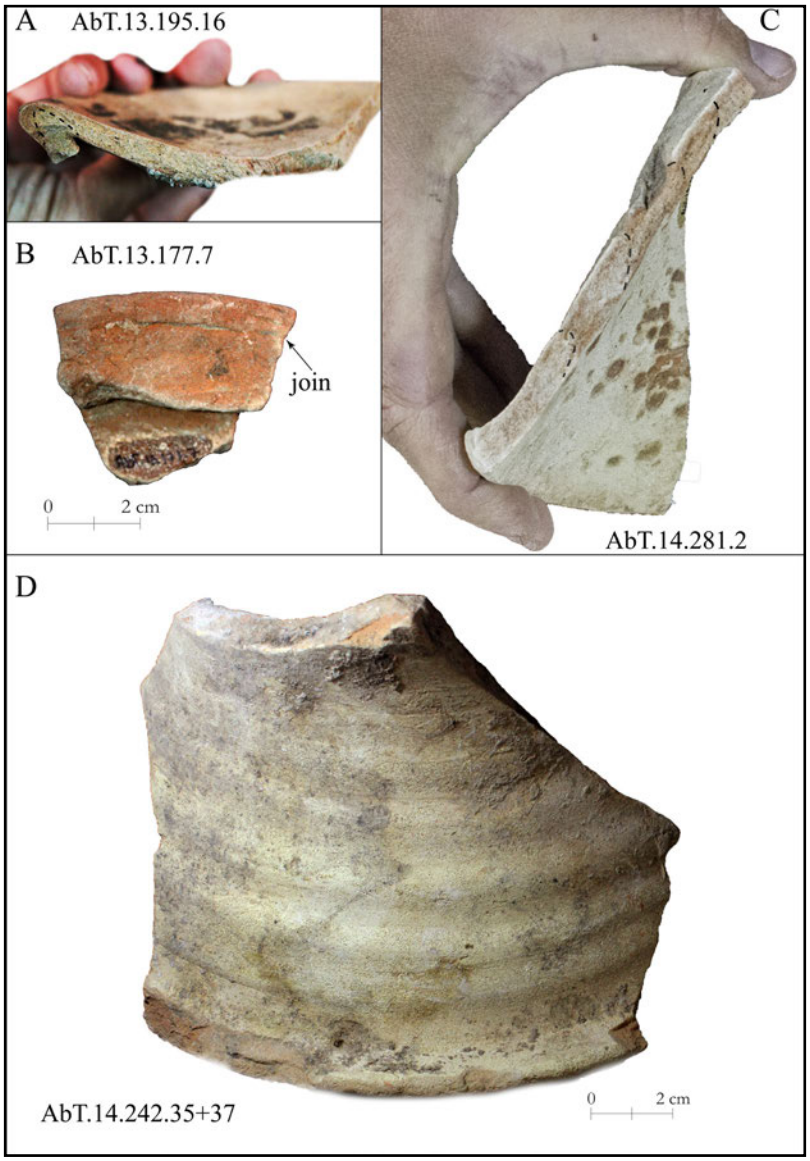

Fig. 10.25 Conical bowl attached to a stem: technological details. a.AbT.13.195.16; b. AbT.13.177.7; c. AbT.14.281.2; d. AbT.14.242.35.37. Alterd colors.

rillings show the spiral generated by the rotative kinetic energy (RKE).[121] AbT.15.332.10 is a very accurately shaped vessel and its upper part shows a quite uniform thickness, if compared with other beakers. While in the lower part of the vessel the spiral generated by wheel-throwing is visible, in the upper part the visible rillings are parallel: in this upper section of the beaker voids are both oblique and horizontal. This synergy of two techniques in the manufacturing sequence is perhaps more visible in AbT.15.332.1, that seems to be realized partially by throwing the vessel and partially by coiling the upper part, hence it is more uniform than the lower one. Indeed, in the upper part of the X-ray two different darker bands can be easily distinguished from the rest of the vessel body and might correspond to the coils seams.

The utilization of different techniques for the realization of the most widespread 3rd mill. BC shapes is an interesting possibility but not yet completely verified: further research and testing, including petrographic sections, microfabric analysis and experimental replicas, will contribute to a clearer view of the 3rd mill. BC manufacturing sequence of these characteristic shapes.

[121]The horizontally alternated clearer and darker areas could also be the sign of wheel-coiling, as previously said.

As said, **conical bowls** can be sometimes **attached to a stem** or to a **cylinder**. The conical bowl's rim is usually pulled down and joined to the coiled stem[122] or to the cylinder,[123] as visible in Fig. 10.25. The cylinders, with a string cut base, are usually realized on the slow wheel, as demonstrated by the X-ray (Fig. 10.26): the spiral is clearly visible both on the internal and external surfaces of the vessel and in the radiography. Two different kinds of the same vessels are realized in a similar way (Fig. 10.27): AbT.13.163.15 external surface was shaved with a tool that left vertical parallel striations,[124] while in AbT.13.163.20 the base was hand modelled, also adding three pinched feet, and shows a hole at the join with the walls.[125]

A peculiar vessel, the **pointed beaker**, is realized modelling the base by hand, as visible in Fig. 10.28: AbT.14.259.5 shows the remains of the not completely obliterated signs of the string cut base; the clay of the very bottom of AbT.15.332.3 was "folded" over the original base.

Trays are made in a very coarse vegetal tempered fabric (Fabric D_1), usually fired at a medium-low temperature and often showing a black core due to the partial oxidation of the organic matter. These vessels were probably modelled with coils and/or slabs: joins between coils or clay layers are often clearly visible in the sections, as shown in Fig. 10.29[126] In the distinction of the coils, a good help comes from the salinization of Abu Tbeirah's soil: the salt crystals, as for the stratigraphic units, accumulates in the space between the coils.

Triangular rim deep bowls are coiled and refined at the wheel. In Figs 9.30-31 coils are visible both in the section[127] and on the external surface: in particular AbT.15.326.1 clearly shows on the

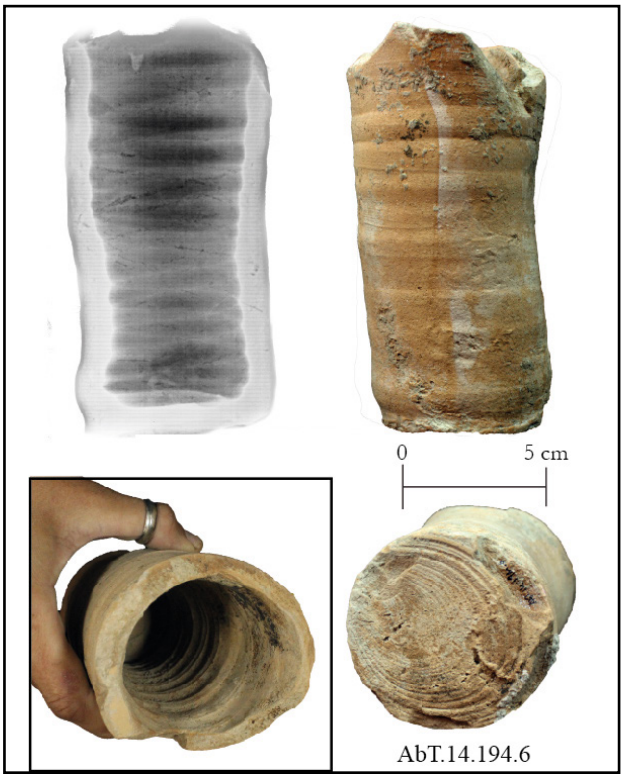

Fig. 10.26 Cylinder AbT.14.194.6.

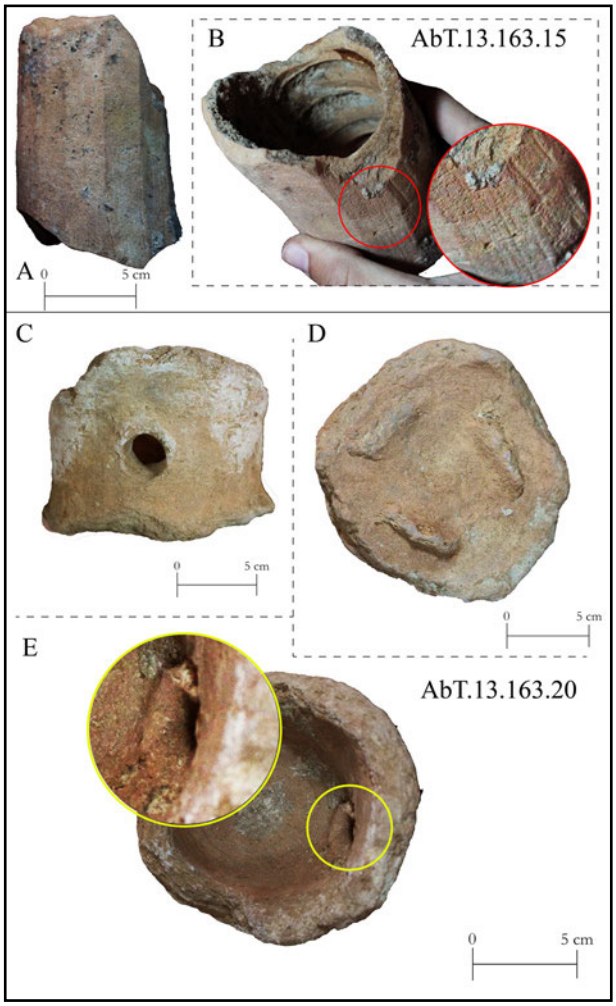

Fig. 10.27 Cylinders: a-b. AbT.13.163.15; c-e. AbT.13.163.20.

[122] As shown in Fig. 10.25 *sub* c-d, coils are very visible both on the external surface and the section.
[123] The use of the same technique is only supposed since no complete specimen has been found.
[124] Similar to Moon 1987: 25 n.134. See for comparisons the experimental replicas in Forte 2014: 626 Fig. b.
[125] Apparently, the base was pierced from the outside, as evident from the residual clay visible inside the vessel (Fig. 10.27 *sub* e).
[126] Sequential slab construction for similar vessels and other containers has been already notices and studied for other Near Eastern contexts (Vandiver 1987; Fazeli *et al.* 2010).
[127] On the coil seams recognition criteria used see Vandiver 1987: in particular p. 14.

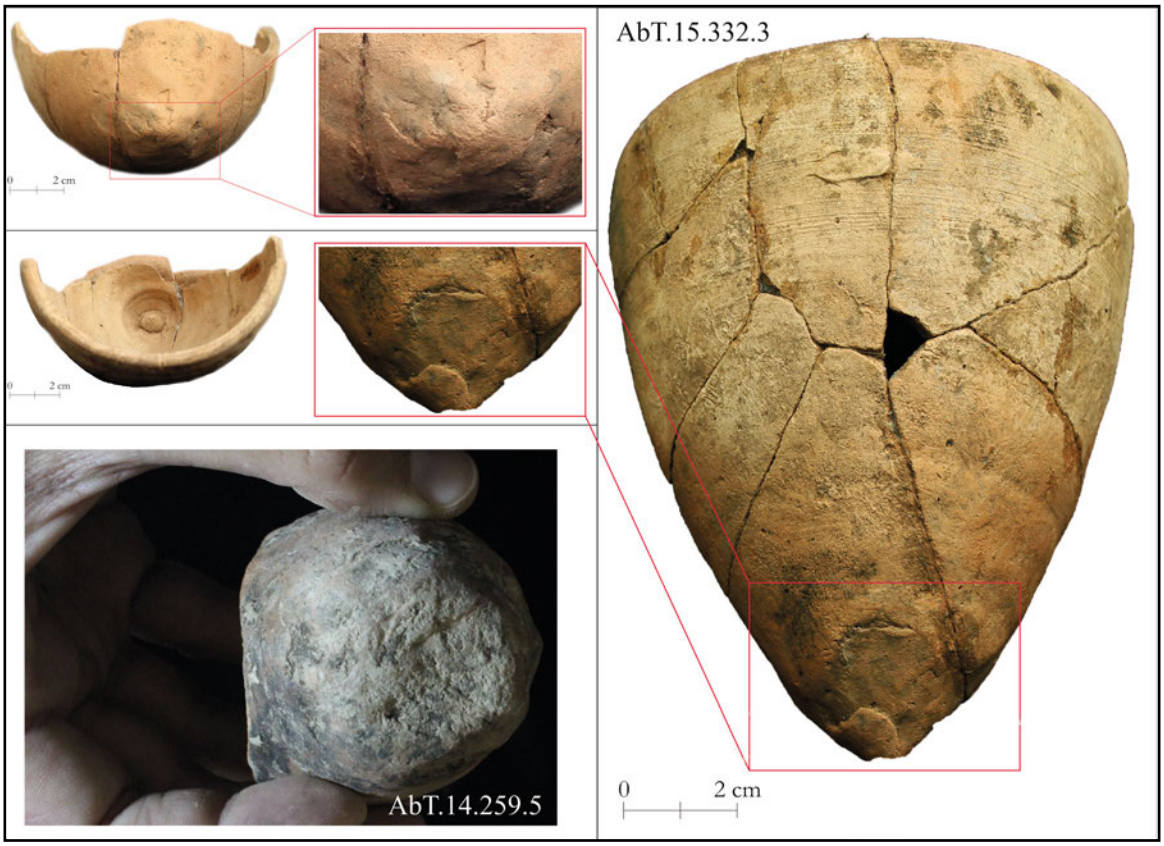

Fig. 10.28 Pointed beakers AbT.14.259.5 and AbT.15.332.3 (top and right).

Fig. 10.29 Trays AbT.12.42.16; AbT.14.221.39; AbT.15.382.5. Altered Color.

Fig. 10.30 Triangular rim deep bowls AbT.13.163.7 and AbT.15.379.3.

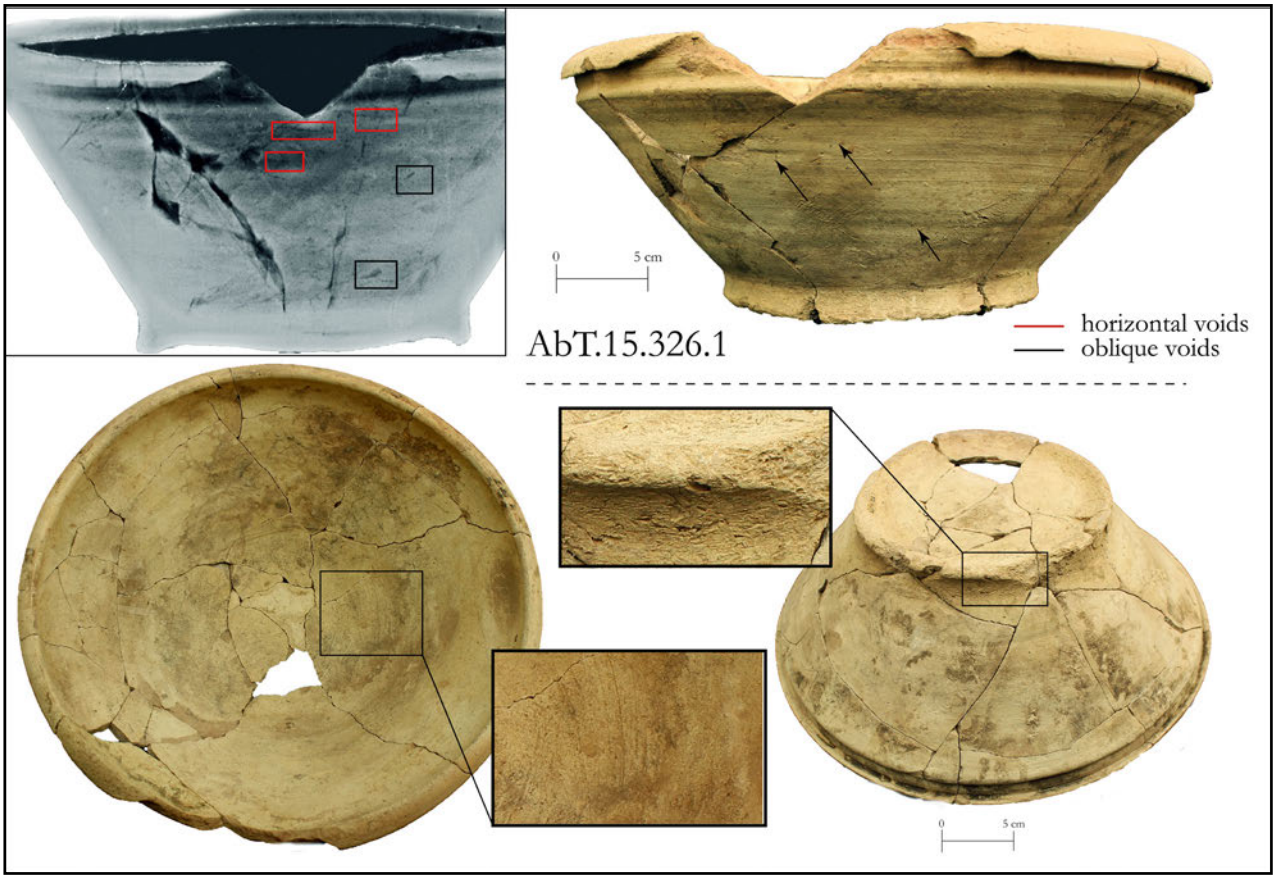

Fig. 10.31 Triangular rim deep bowl AbT.15.326.1.

surface the preferential horizontal breakage at the coil seam level, typical of the coiling technique.[128] The same technique was used also for the **big plates and shallow bowls** (Fig. 10.32). When the bowls have a ring base, this is invariably realized with a coarser, vegetal tempered fabric (see detail in Fig. 10.31): all ring bases in 3rd mill. BC Abu Tbeirah are realized in this way,[129] plausibly to allow a uniform firing for parts of the vessels that have a different thickness. The vessels interior is often refined with a tool, whose diagonal signs are sometimes clearly visible (see Fig. 10.31). The convex base of the deep bowls, but also of **plates and shallow bowls** (Fig. 10.32) and of jars were probably realized through the use of a mold (another vessel?), a technique attested also for Samarra ware. The clay was pressed and modelled, and the excess scraped away (see detail of AbT.14.287.1[130] in Fig. 10.32); partially dried, the base was taken out of the mold and the rest of the vessel was built.[131] Much like for conical bowls, plates and deep bowls can be used to realize more complex vessels: the stemmed-dishes (Fig. 10.33). Due to the huge dimensions of the stem it was impossible to throw the vessel completely on the wheel and thus the stems are also in this case realized with a synergy of different techniques, chosen by the potter on the basis of the size of the vessel. While coiling was probably the main technique used in the huge stand AbT.13.177.1, rillings are quite visible in AbT.14.268.2 (see the black arrows in the pictures) and the radiography apparently indicates the use of wheel-throwing technique for the upper section (oblique voids), while the lower one, near the notched ridge, shows the parallel voids of the coiling. The composite nature of this typology is also evident from the signs of the original attachment between stem and dish in AbT.14.298.3.

As far as jar manufacturing is concerned, some vessels will be analysed as example. **Plain rim jar** AbT.14.224.2 seems to be wheel thrown on the basis of clues coming both from the autoptic analysis and the radiography. The external surface shows indeed oblique fissures (a and b in Fig. 10.34) that are clearly visible in the X-ray, following here the spiral of the clay. If the particles disposition is considered, the spiral is very different from that of the cylinder AbT.15.385.4 and is more similar to a sort of vortex: clearly the vessel was wheel-thrown with a higher RKE.[132] The convex base of the vessel was probably realized with a mold and then modelled with a wooden or bone tool, trimming the excess clay.[133] After the vessel was thrown, it was clearly refined on the wheel with a smoothing tool: the sign of the tool are almost horizontal and are not coherent with the direction of the internal spiral and of the external fissures. The **trumpet base jar** AbT.15.385.7 (Fig. 10.35) was realized with a completely different technique: the jar was indeed clearly assembled from four different parts. The body is composed of two hemispherical parts joined interposing a single coil: both the halves show horizontally alternated dark and clear areas and show no oblique void. While the upper half was probably coiled, the lower part was instead smoothed with a tool that left oblique marks on the surface: this surface treatment, however, might also be an indication of the realization in a mold, like attested in the previously described plain rim jar AbT.14.224.2.[134] The neck and the rim were probably wheel-thrown: while oblique voids are visible, accompanied by horizontal smoothing signs on the surface, horizontally alternated thicker and thinner areas are equally present. The join to the "extended" version of the ring base is clear, with the potter's fingerprints still visible, but no indication on the technique is derived from the radiography. A similar composite pottery shape is AbT.14.259.1 (Fig. 10.36): the halves, probably coiled (no oblique void is visible), are joined in the middle interposing a single coil. The base and the

[128] See Rückl - Jacobs 2016: 309-310, Figs 15-16.

[129] This peculiarity is attested also in other sites (see McMahon 2006: 61).

[130] As suggested by A. McMahon (*pers.comm.*) AbT.14.287.1, if inverted, might be interpred as a stemmed-dish base.

[131] Nieuwenhuyse *et al.* 2001: 154; see also the "hump molds" used by modern potters as a template for slab work. These molds are realized with a plaster that absorbs water and helps the clay slab to dry out, thus easing the separation from the mold.

[132] See also Romano 2015b.

[133] See for comparison the Tell Arbid ED III shard studied by Smogorzewska 2007: 562 Fig. 10. See also the several occurrences in Moon 1987 of vessels with scraped lower part.

[134] This might justify the differences between the halves visible in the X-ray, the lower part on average clearer (and thus thicker) than the upper one. Coils could have been also assembled inside the mold.

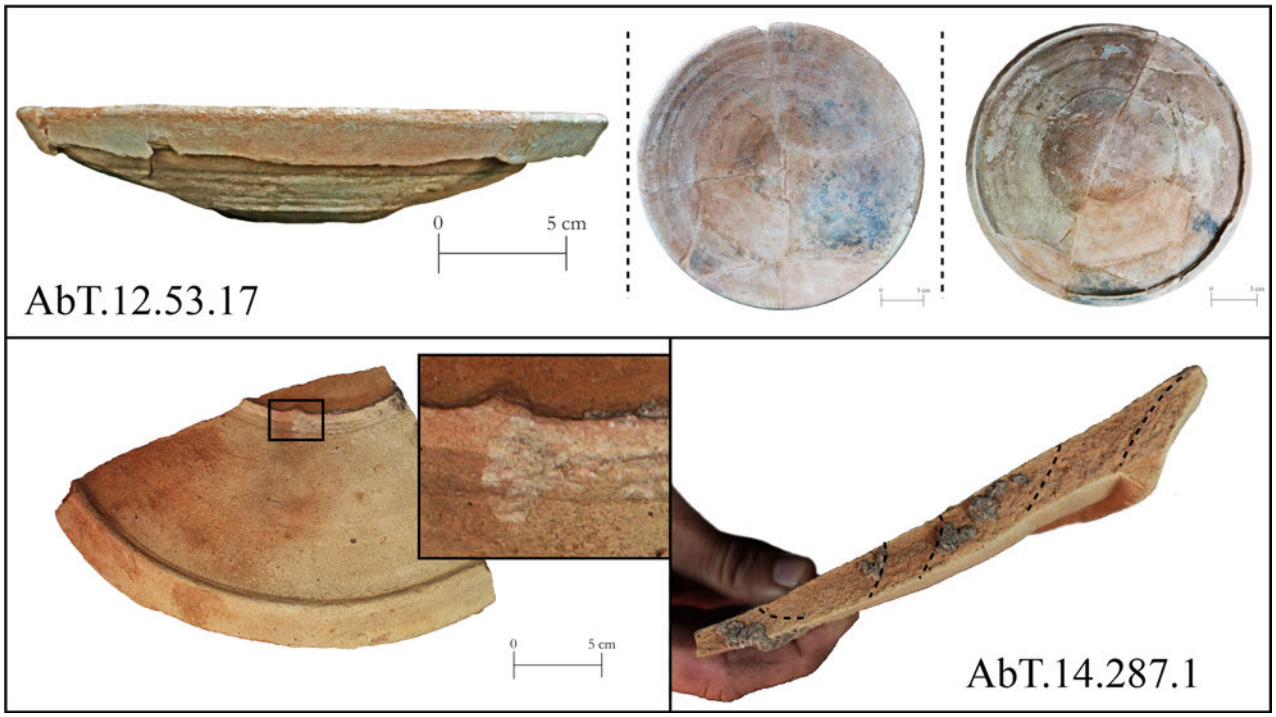

Fig. 10.32 Triangular rim shallow bowls AbT.12.53.17 and AbT.14.287.1. Altered colors.

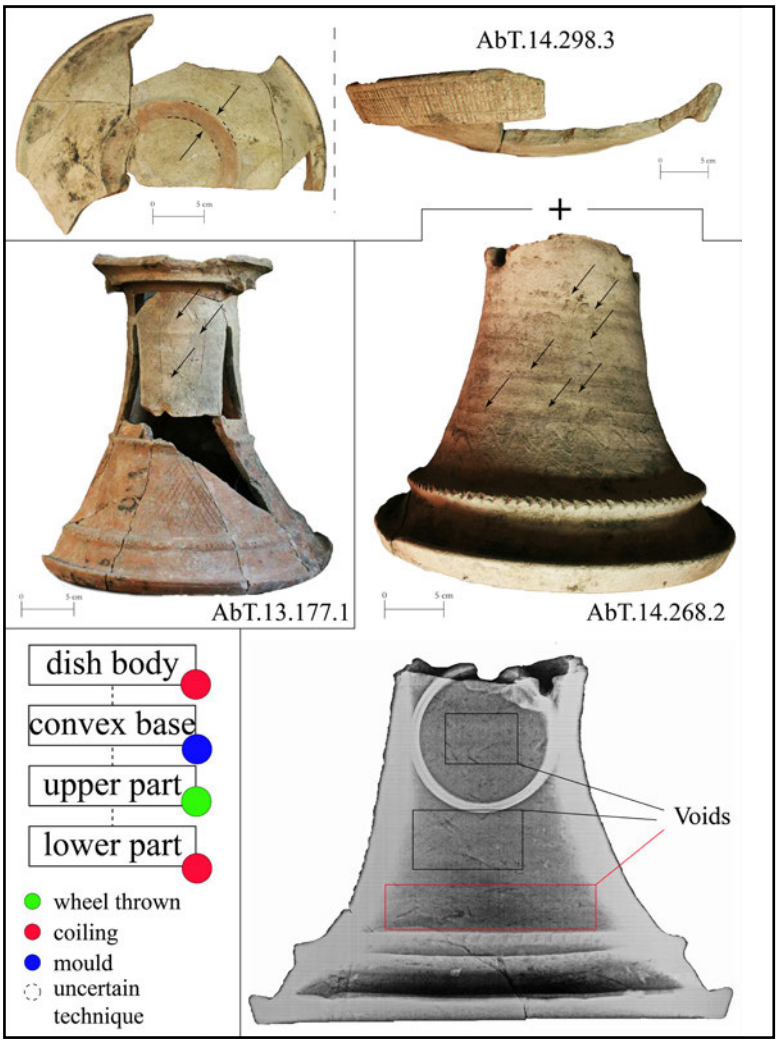

Fig. 10.33 Stemmed dishes AbT.13.177.1; AbT.14.268.2 (the white circle in the X-ray is due to the support used), AbT.14.298.3.

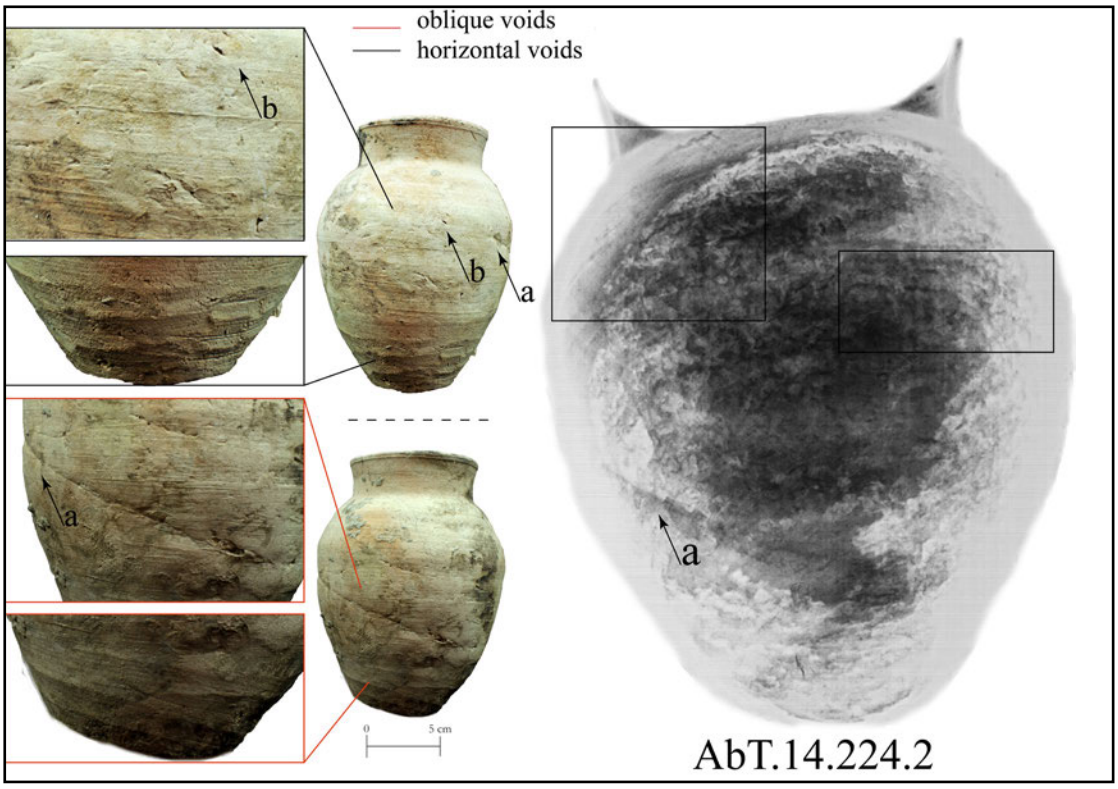

Fig. 10.34 Plain rim jar AbT.14.224.2.

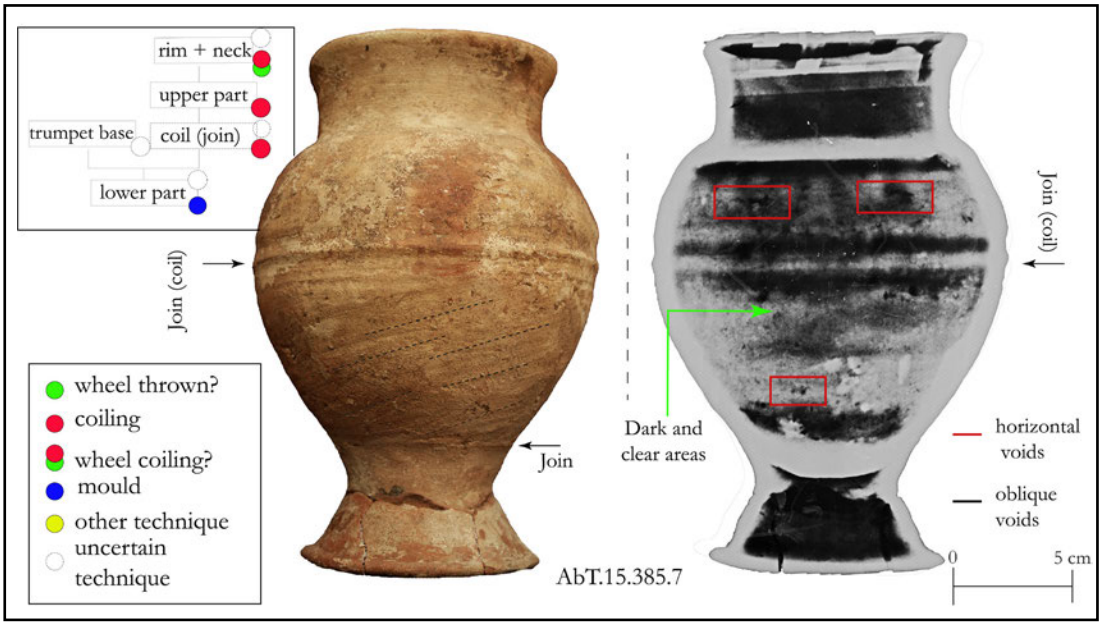

Fig. 10.35 Trumpet base jar AbT.15.385.7.

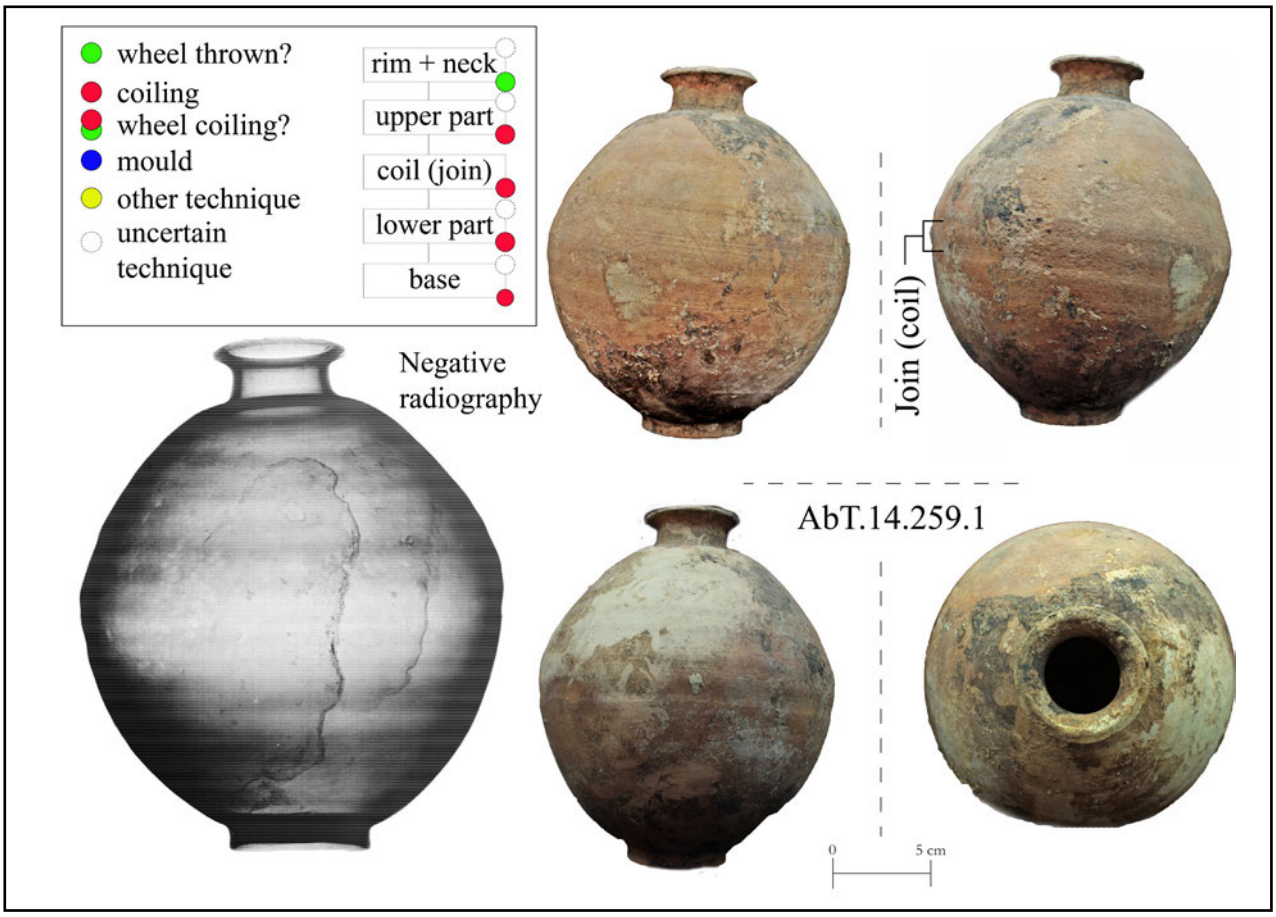

Fig. 10.36 Jar AbT.14.259.1.

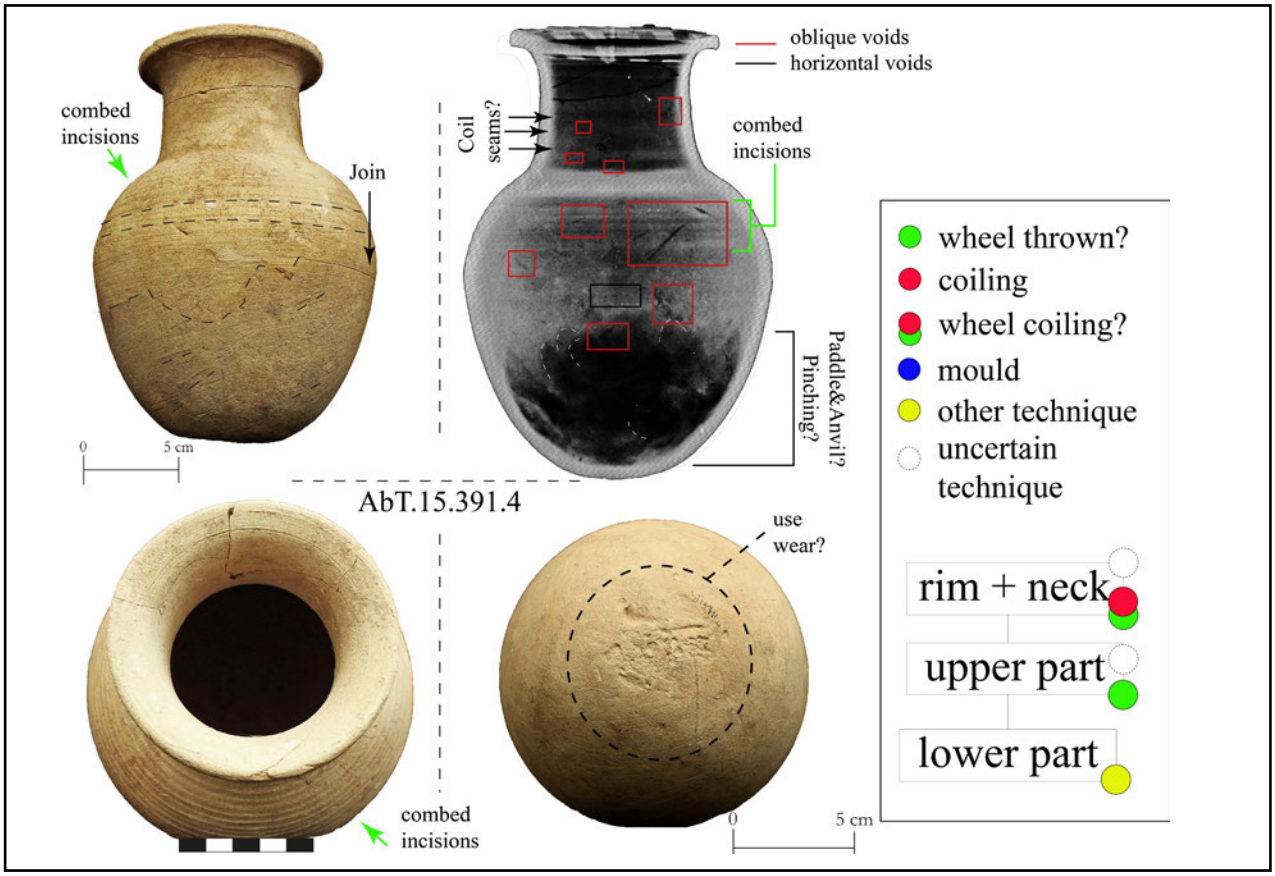

Fig. 10.37 Jar AbT.15.391.4.

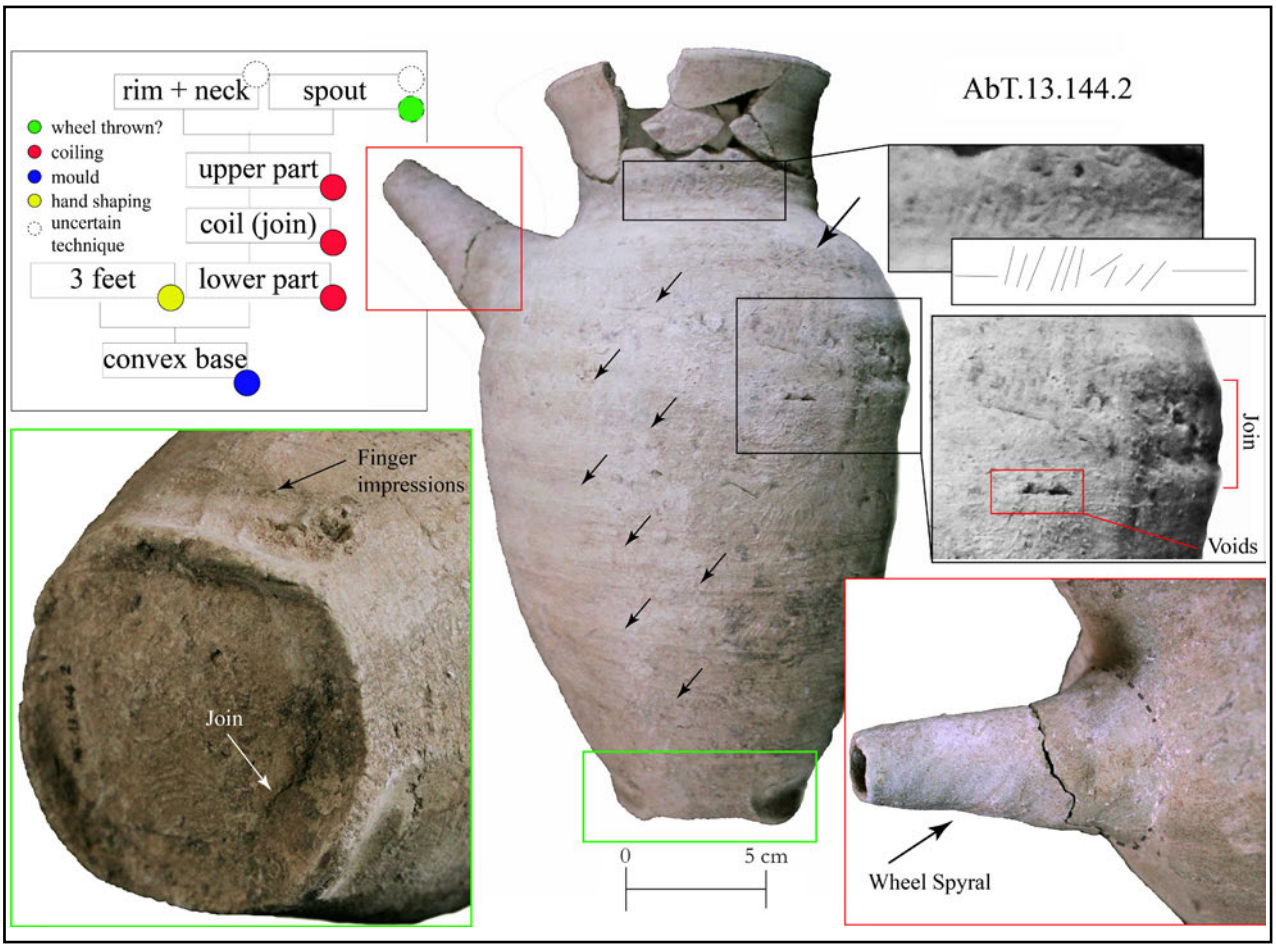

Fig. 10.38 Jar AbT.14.259.1.

short and small neck complete the vessel.[135] The composite nature of AbT.15.391.4 (Fig. 10.37) is visible in the radiography. In this case, the separation between the lower body and the upper part is clearly marked by a horizontal fissure and by the oblique signs on the surface. A hand-forming or mold method can be hypothesized on the basis of the X-ray: the semicircular concavities, visible on the bottom internal surface, might be due to the potter's hand (knuckles?)[136] or to the use of paddle and anvil.[137] The upper part of the body, with its oblique voids can be plausibly interpreted as wheel-thrown. However, the presence of the deep combed-like incisions on the external surface visible also in the radiography can hide the primary modelling technique. The neck and rim seem wheel-coiled, being present both oblique and horizontal voids and not uniform alternated dark and clear horizontal area.

The last case shown here is the **spouted vessel** AbT.12.144.2 (Fig. 10.38). Notwithstanding the absence of a radiography its modelling process could be hypothesized on the basis of the autoptic analysis and of the previously analysed vessels. The body is made of two parts, one for the lower section and the other for the shoulders, both with clearly visible coils. The joining between the two halves through a single coil is also marked by the presence of the usual horizontal fissures. Neck and rim modelling technique cannot be determined (coiled? wheel-coiled?) but oblique signs are visible at the join level. The spout shows the external rilling of the wheel production and the three pinched feet exhibit the potter's fingerprints.[138]

[135] There is no clear evidence on the realization of the rim.

[136] See for an ethnographic comparisons May - Tuckson 2000: 124 (knuckles are used to consolidate a coiled base).

[137] Carmichael 1986: 38. If this is the case, the oblique signs on the surface might be interpreted as facets left by the paddle.

[138] Fingerprints are also visible in the base AbT.14.283.1.

Big containers and coffins are clearly coiled and assembled on the same place of construction: the bottom of a boat-like vessel found in 2017 in a pottery deposit pertaining to the last phase of Area 1 has an irregularly corrugated surface probably created pressing the clay on the soil (Fig. 10.39).[139]

10.4.2 Surface Treatments and Decorations

After finishing, Abu Tbeirah vessels could receive a surface treatment such as smoothing, shaving, slipping, burnishing and be enriched with decorations (mainly incisions, impressions and rarely painting). Smoothing and shaving is in most of the cases functional to the modelling and assembly of the vessel and were discussed in the previous paragraph: smoothing lines running horizontally are probably obtained with the application of RKE and generated with wet fingers;[140] smoothing lines running diagonally at the base level of some jars might be the result of surface evening after the detachment from a mold (Fig. 10.34); the vertically shaved surface of the cylinder hides the strong rillings due to the slow-wheel modelling perfectly (Fig. 10.27).

The presence of a slip on ED III and early Akkadian vessels has always been subject of discussion: though the vases are often apparently covered by a clearer layer of clay, different from the inner fabric colour, it is often impossible to distinguish the presence of an actual slip from the so-called "self-slip".[141] This term indicates the effect of moistening the surface of a vase with a wet hand or cloth, a process that brings to the surface the finest particles of the clay,[142] creating a lighter layer that reaches easily a higher temperature and thus assume a clearer colour.[143] The self-slip, also called "false-slip" or "floated surface", should be distinguished from the whitish scum created

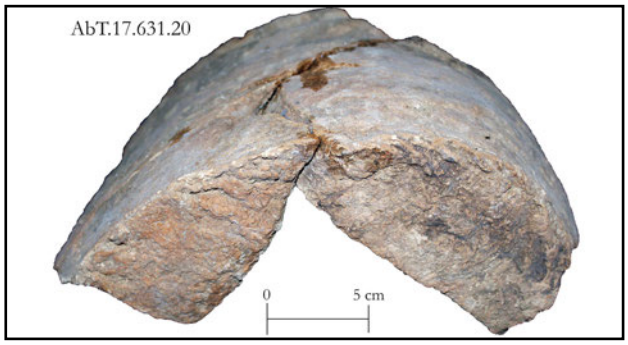

Fig. 10.39 AbT.17.631.20. Detail of the bottom, plausibly realized by pressing the clay on the soil.

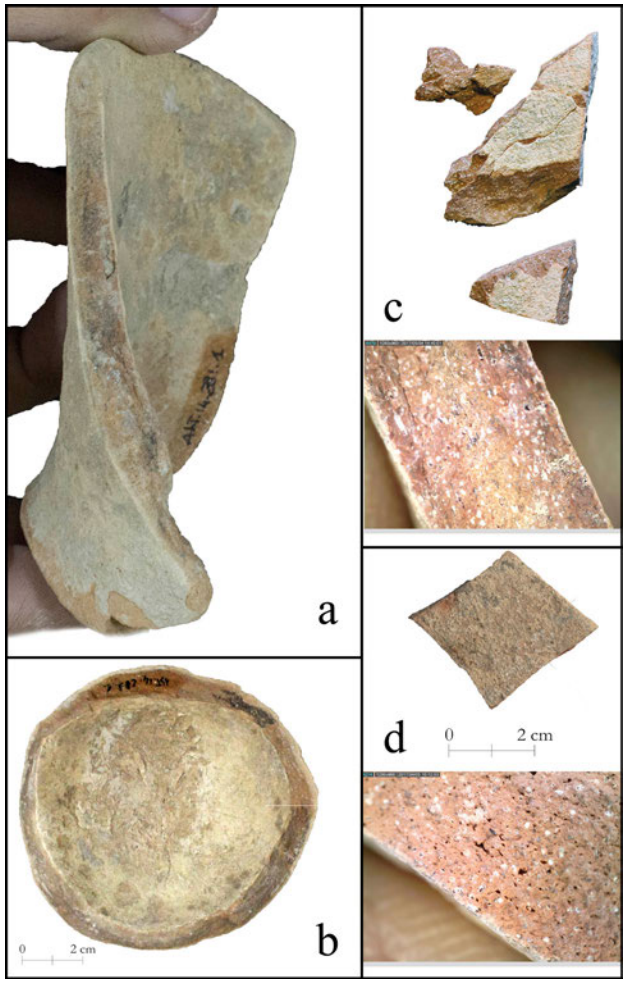

Fig. 10.40 Slip and self-slip: a. conical bowl AbT.14.281.1 (slip); b. jar base AbT.14.283.1 (slip); c. Sample 16 -AbT.12.56.4 (slip); d. sample 19 (slip?).

[139] It is presently not clear if this deposit was connected to a sarcophagus highlighted nearby but not excavated.
[140] Comparable to the experimental results obtained in Roux 2017: Fig. 15.
[141] Moon 1987: 180; Gerber 2005:59-61; McMahon 2006: 61; Armstrong - Gasche 2014: 88. On slip and self-slip see also § 11.
[142] Rice 2005: 151.
[143] See § 11. AbT.13.143.1 (Fig. 10.42 *sub* p) shows a clear self-slipped upper part and a more reddish lower body: this might indicate that the incised decoration was realized after moistening the upper part of the jars.

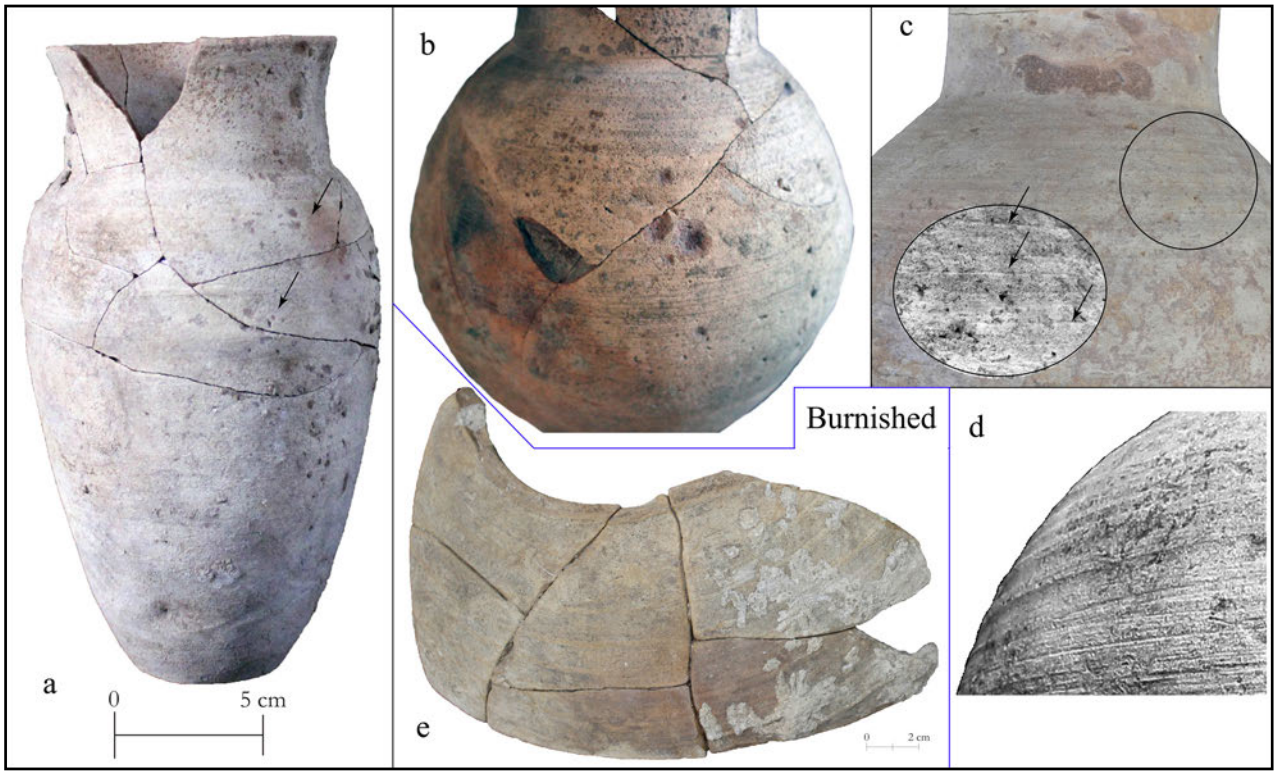

Fig. 10.41 "Reserved slip like" a. AbT.13.183.12; b. AbT.13.183.9; c. AbT.12.56.5; d. AbT.15.391.4; e. AbT.15.383.4.

by the migration and accumulation on the surface during drying of the salts, naturally present in Mesopotamian clay (Fig. 10.36 bottom left).[144] In analysing Abu Tbeirah's pottery, a distinction between the self-slip and the less frequent slipped vessels was attempted, though only more detailed archaeometric analyses will help in refining the distinction. The term "slip" was used in the catalogue only in the cases in which the external/internal layer of clay is clearly separated from the clay.[145] The slip/self-slip is attested mainly in jars and big bowls, and almost always when the vessel is decorated with incisions; conical bowls and beakers, with rare exceptions (Fig. 10.40 *sub* a), do not show any surface treatment.

Some jars from Building A and from the layers of the latest phase show a horizontal "reserved-slip" like effect, that might be generated smoothing on the wheel a leather-hard surface with a wet smooth tool or scraping out the wet surface (Fig. 10.41 *sub* a-c):[146] the realization of this horizontal lines displace the wet clay as visible in Fig. 10.41 *sub* c where margins of the horizontal "reserved" bands appear raised. This horizontal scraping can be more or less pronounced, like in Fig. 10.41 *sub* d, with the grooves/combed-like decoration visible also in the X-ray (Fig. 10.37). A similar effect was realized through burnishing as in the fragment in Fig. 10.41 *sub* e.[147] Planned archaeometric analyses and experimental replicas will be pivotal in better

[144] Rice 2005: 336; McMahon 2006: 61. See also § 11. Stemmed-dish AbT.13.177.1 in the figure show a variation of the external colour that ranges from light reddish brown (5YR 6/4) to light brown (7.5YR 6/4) and to brown (7.5YR 4/4), a colour variation that thus can be due to the not uniform drying and/or firing process.

[145] The interpretation might be distorted from post-depositional salt infiltration that produce a laminar flaking of the pottery (see § 6.1.1.1).

[146] Delougaz 1952: 33; Moon 1983: n. 337 "blunt combed effect", n. 522 "Incised (or perhaps raised) lines on shoulder"; McMahon 2006: *passim* "horizontal grooves" and Pl. 89 n.7 Type C4. For experimental comparisons see Roux 2017.

[147] Similar technique of Fig. 10.41 *sub* b but with a dry and hard tool. On the differences between smoothing and burnishing at a macroscopic and microscopic level see Ionescu *et al.* 2015 (esp. 22-23, "Smoothing makes ceramics appear 'matte' or 'dull', while burnishing gives ceramics an appearance that may be described as 'lustrous', 'shiny' or 'glossy').

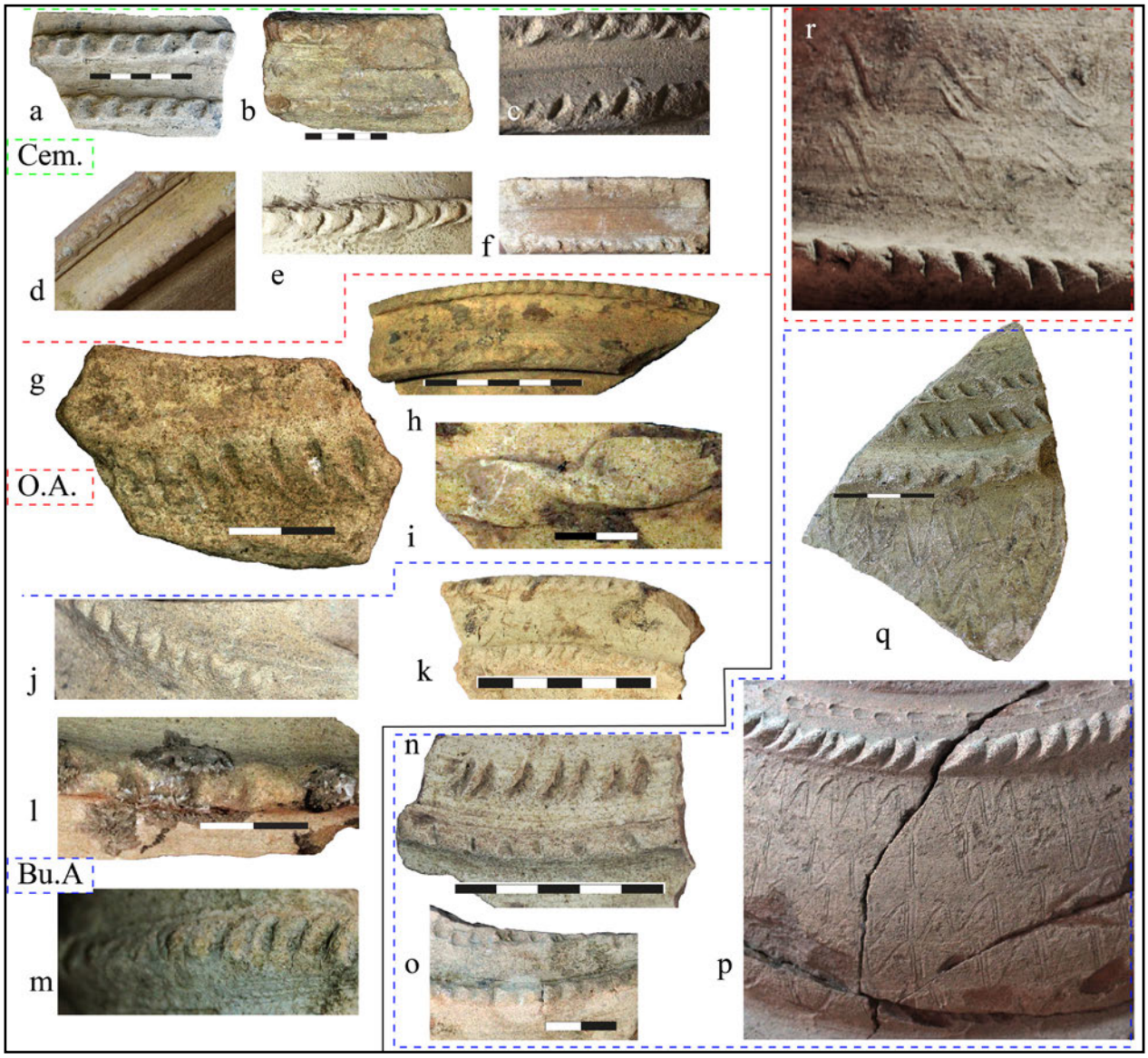

Fig. 10.42 Notched ridgee and incisions. a. AbT.12.84.19; b. AbT.14.242.25; c. AbT.14.242.6; d. AbT.14.242.40 (double ridged rim); e. AbT.14.221.45; f. AbT.14.290.2+296.4; g. AbT.13.183.30; h. AbT.15.326.10; i. AbT.15.326.3; j. AbT.13.144.14; k. AbT.15.382.2; l. AbT.13.152.16; m. AbT.13.163.25; n. AbT.13.163.19; o. AbT.13.152.15; p. AbT.13.143.1; q. AbT.12.37.3; r. AbT.14.268.2. Pictures not in scale if not otherwise indicated. Altered colors.

understanding this step of the pottery production process.

Decorations can be found on some ridges applied to jars and stemm walls[148] (also on coarser shapes such as Fig. 42 *sub* b) or on stemmed-dish double ridged rims. In the first case the ridges are mostly[149] not applied perpendicularly to the surface but follow the curve of the walls and are in a way more raised toward the upper part of the vessel. The decoration can consist of finger-impressions (Fig. 42 *sub* i; Fig. 44 *sub* c) or in a series of incisions realized with a tool (notched decoration)[150]. In some case the incisions are very regular and generate a quite homogeneous pattern

[148] AbT.12.53.13 has been not photographed while the wavy decoration on the top of the rim of AbT.15.382.2 is not clearly visible, due to the strong erosion of the surface, and has not been reported in the figure.

[149] See Fig. 10.42 *sub* a as exception.

[150] The notched decoration is realized cutting and displacing the clay of the vessel not impressing perpendicularly a tool

Fig. 10.43 Inincisions and excissions. a+b. AbT.13.177.10; c. AbT.13.183.29; d. AbT.13.177.11; e. AbT.13.177.1; f. 14.242.40 (rim upper part); g. AbT.14.298.3; h. AbT.14.294.2; i. AbT.14.242.13; j. AbT.14.242.10; k. AbT.14.242.20; l. AbT.14.242.13; m. AbT.13.163.16; n. AbT.14.254.3; o. AbT.13.167.27; p. AbT.13.134.16; q. AbT.13.152.13; r. AbT.15.350.2; s. AbT.14.179.1; t. AbT.13.144.15. Pictures not in scale if not otherwise indicated. Colors altered.

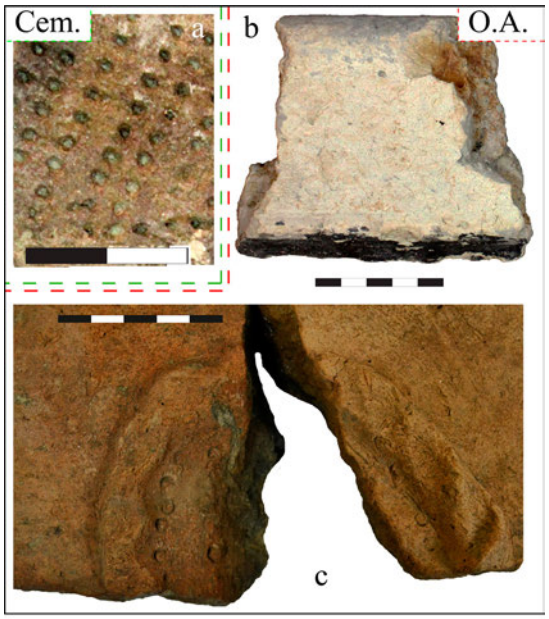

Fig. 10.44 Impressions and bitumen painting. a. AbT.14.240.8; b. AbT.14.221.13; c. AbT.12.84.31.

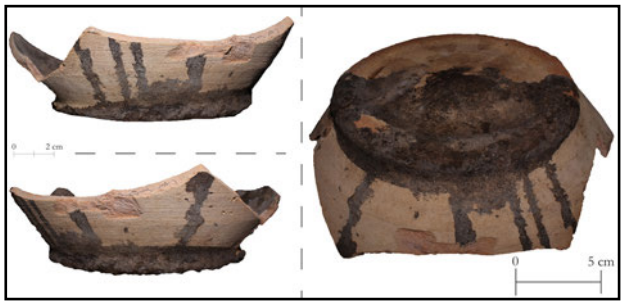

Fig. 10.45 AbT.13.163.28.

Fig. 10.46 AbT.12.84.30.

(Fig. 10.42 *sub* h, d), others are made more quickly and in a less homogeneous way (Fig. 10.42 *sub* m, p) or even cutting from the top down (Fig. 10.42 *sub* g). Several occurrences of a combination and sequence of wavy incised or combed decoration, notched ridges and other incisions were noticed in Building A - phase 1 and in the latest activities (Fig. 10.42 *sub* n-r).[151]

Incisions were apparently done when the vessel was still wet (*e.g.* Fig. 10.43 *sub* m-n) or not completely dried (*e.g.* Fig. 10.43 *sub* e)[152] and, when present, usually after the application of the slip or after dampening the surface (Fig. 10.43 *sub* q where the cut clearly cross the self-slip layer).[153] Incisions are used for simple parallel-line decorations (Fig. 10.43 *sub* o) or more complicated patterns, such as in the stemmed-dish discovered in Grave 16 (Fig. 10.43 *sub* e), including weaves,[154] hatched triangles, lozenges, grid-like or herringbone patterns. This cutting technique is used in a casual way (Fig. 10.43 *sub* l) or in a more regular one (Fig. 10.43 *sub* d). In Fig. 10.43 *sub* h the hatched pattern was realized doing the lines from right to left, then adding the lines from top to bottom, clearly displacing the clay. This might be a case of excision of the clay: the secondary lines are large and quite homogeneous and, moreover, it is evident the displacement of the clay toward the bottom, like if a tool was drawn through the clay, removing part of it.[155] Another kind of decoration very common at Abu Tbeirah is a line of small incisions usually made at or near the joining between the neck and the body of jars (Fig. 10.42 *sub* o-p; Fig. 10.43 *sub* p, r, k). While in some cases this is clearly a simple decoration (see above), as in the jar AbT.13.134.16 (Fig. 10.43 *sub* p) it might also have had a technological significance: the movement made drawing the clay from the top to the bottom might have strengthened (or masked?) the join between the two parts of the vessel.

(on the distinction used among the technique and applied in this volume see Rice 2005: 145).

[151] The case *sub* r has been found inside a soil heap immediately under the surface.

[152] The displacement of the clay is higher when the clay is wet. For a comparison of the effects of the incisions at a different stadium of drying see Rice 2005: 147 Fig. 5.16.

[153] The only exception is AbT.14.179.1 (Fig. 10.43 *sub* s) in which the slip clearly fills the less deep incisions (the two deeper incised curves show the fabric colour).

[154] AbT.13.152.16 presents a weavy decoration but has not been reported here.

[155] The clay displacement is limited and follows the direction of the tool.

Other less frequent decorations are small rounded impressions (Fig. 10.44 *sub* a, c) or simply bitumen painting (Fig. 10.44 *sub* b).[156] This kind of simple painting technique is interesting from the technological point of view because it was probably applied immediately after firing, when the vessel was still hot, allowing, in this way, the bitumen to melt: this technique was still in use in the '80s in some Diyala villages.[157] AbT.13.163.28 (Fig. 10.45) has a drop decoration only on half base and should have been applied with the jar upside-down. AbT.12.84.30 (Fig. 10.46) is a fragment of a vat rim and wall with two ridges highlighted with bitumen painting. In addition, the presence of two potter's mark (cross-like incisions),[158] coming from the large dump pit, should be mentioned.

10.5 Use and Re-Use [LR]

Research on the intended use and actual function of Abu Tbeirah's vessel's, though at its beginning, is already showing its potentiality. The analysis of use traces and/or of residue are nevertheless subjected to post-depositional processes that can create biases in the interpretation (see § 6.1.1): salt, first of all, always accumulates on pottery surface, creating crystals that can cause signs and breakages on the vessel exteriors; manganese can generate "sooting-like" traces on the pots; bitumen contamination can alter the results in the isotope and residue analyses.[159] With this background and on the bases of the preliminary results obtained, some general considerations can be made.[160]

The context in which the artifact was recovered is always considered of primary importance in restricting the potential functions. Morphology and actual use obviously have a connection that can be more or less nuanced, but shape and volume impose physical boundaries that can also help interpreting the intended function of a vessel. Therefore, the subdivision between open and closed vessels, used in the typological description, will be maintained, enucleating the cases in which evidence of an actual use different from the intended one was observed. Slip or burnishing and surface treatments, that can have also a practical function (*e.g.*, reducing the permeability of a vessel), are rare in our record and necessitate a wider study that also includes the frequently attested use of bitumen in waterproofing.[161]

Conical bowls and beakers, due to their dimension, shape, and volume, were probably originally intended as individual sized serving and eating vessels:[162] found in funerary and domestic contexts, they were used both in daily or "ritual" practices. However, their design makes them perfect to be used as multifunctional containers.[163] Conical bowls can be found over or inside jars,[164] indicating their use as lid, or can have a pierced base, such as AbT.14.242.39 (Fig. 10.20), to be used as funnels.[165] Their positioning along the walls of a room, one over the other, might indicate their use as lamps, as the bitumen incrustation found inside them seems to confirm.[166] Bitumen is often found inside conical bowls and beakers that

[156] See Mynors - Al-Kaissi 1987: 149 for analyses on the black painting, interpreted as organic (bitumen) origin. Some fragments recovered show very eroded red-painting traces (see § 10 Sample 1): further analyses on the fragment are needed to better clarify the red traces over its surface.

[157] Matson 1983, 623; for the 2nd mill. BC see Armstrong - Gasche 2014: 79, 82, 88.

[158] AbT.14.242.11-12.

[159] See Roffet-Salque *et al.* 2017, in particular p. 628 Fig. 2 in which are clearly re-assumed the "inputs, losses and transformation processes" influencing residue analyses.

[160] Recurrence in the association of shapes that might help in the interpretation of the function was not noticed in the contexts presented in the book. Here the actual use of some singular shapes will be highlighted, thought it cannot be excluded that further studies and comparisons with other contexts excavated at Abu Tbeirah will help in better defining and eventually correct the interpretation of their use. However, the contexts analysed, as stated in § 6.4, belong to the abandonment phase of Building A and to the Cemetery and other later activities in Area 1. While the function of the pottery equipment in the grave is discussed at § 6.3.2.2, in most of the cases the association among shapes in the layers pertaining to the abandonment of Building A cannot be considered as reliable.

[161] In AbT.12.32.1 the bitumen was limited at the lower part of the jar. On the use of bitumen and other substances as sealant see Roffet-Salque *et al.* 2017: 629.

[162] Henrickson - McDonald 1983: 632.

[163] Moon 1987: 3; Jones 1996: 159 (also Jemdet Nasr bowls are not specialized vessels); Thalman 2003: 50; Gruber 2015: 161-162.

[164] See for example AbT.14.226.4 inside Grave 17 (§ 7.4.2).

[165] Moon 1987: 3; Gruber 2015: 161-162. For a different interpretation see Delougaz 1942: 41.

[166] The use of conical bowls as lamps was also supposed by Thalman 2003: 50. The absence of bones or other evidence of offerings seems to confirm this interpretation at least for Abu Tbeirah contexts.

were thus probably used for preparing,[167] mixing or transporting small portion of the material. A singular connection was identified between beakers and tannur: the frequent discovery of beakers inside the conical oven should be related to the long shape of the beakers that might have facilitated access to the base of the tannur in an easier way, removing the accumulated ashes.[168] A similar function might be supposed for a small beaker AbT.13.183.4 (Grave 15) found inside the jar AbT.13.183.3: the small rim diameter probably is not adequate to identify its function as a lid and a use as a sort of "dipper" seems more plausible. Trays,[169] deep and shallow bowls have a capacity which is perfect for serving a group of people but were surely multi-purpose,[170] while the tray version with sort of "arms" protruding inside might be interpreted as a support.[171] Stemmed-dishes were probably multi-purpose too: from incense burners, lamps to serving vessel. AbT.13.177.1 (Fig. 10.33), instead, could also be interpreted as drum: it has clearly some small pinched "knobs" that could have been used to fasten a skin over the top of the vessel.[172] An unexplained finding was the recovery of a vegetal matting whose impression was covering the interior of the stand base AbT.14.268.2 (Fig. 10.33) found in the last activities of Area 1: is it a casual finding or could it be connected with some kind of sound control? The rarity of cooking pots in our pottery might be due to the use of tannur and other cooking techniques (such as indirect heating),[173] and at the same time might hide a specialized use of this kitchen tools. Jars and closed containers could obviously be used in a variety of different ways, from long to temporary liquid or dry storage. Surely the size and volume of the containers can help distinguishing the movable and unmovable ones and the extremely limited number of rim-profile's types could help in determine the vessel function.[174] Out-turned or double ridged rims could for example ease securing a lid or movable cover, like the presence of small pierced handles near the rim. AbT.14.242.32 (Fig. 7.57) had handles not solid enough to lift the vessel.[175] AbT.12.56.2 (Fig. 10.15) shows small holes at the base of the wide out-turned rim that could have been intended for hanging the vessel. The presence at Abu Tbeirah of jars with convex and pierced bases[176] could be connected to the production of beer[177] or of butter/cheese.[178] Big vat and coarse vases found in Abu Tbeirah's domestic contexts come mostly from open spaces and a possible interpretation of their function might be as water collector (though a complete vat has not been found *in situ*).

The intended or actual primary use of a vessel does always not correspond to its last life stage. Pottery was clearly not disposal for Abu Tbeirah's inhabitants: repairing, reuse and recycling were very common practices and are sometimes quite evident in our record. For example bitumen glue was used for repairing the sarcophagus of Grave 17 (US 225)[179] or an "alien" rounded shaped fragment of a coarse vessel was used to fix the

[167] The beaker AbT.15.395.5 was probably used as a sort of pestle in the activities with bitumen carried out in Room 23 (see § 9).

[168] See for example the beakers found inside the tannur in Room 2 (US 51 - § 8.2).

[169] Delougaz 1942: 100 suggests that some of them might be used as braziers. No evidence of a use in contact with fire was detected on Abu Tbeirah's specimens.

[170] Henrickson - McDonald 1983: 632.

[171] Moon 1987: 40.

[172] The interpretation of some stemmed dishes as drum is not new (Woolley 1934: 260) and finds support in the ethnographic evidence from the Marshland. The Ma'dain used, indeed, to realize sort of drum called *tabol* using the skin of a carp or the gullet of a pelican (Ochsenschlager 2004: 74-77, 90). We are grateful to M. Zingarello for this suggestion (*pers. comm.*).

[173] Inside Room 1 phase 2 several holes have been found in connection with a hearth (D'Agostino *et al.* 2013: 78-79 Fig. 10).

[174] The same is valid also for large bowls that can be also suitable for storage, if used, *e.g.*, with a cover.

[175] The same has been suggested by Delougaz 1942: 41: a "four-lugged" jars was found together with a conical bowl pierced on the bottom that was interpreted thus as a lid, originally fastened with a rope. Henrickson - McDonald 1983: 632 suggest also the use of the handle for tilting the vase.

[176] *E.g.* AbT.14.278.1.

[177] "The soaked or germinated grain could be pressed through the hole in the bottom to be spread out on reed mats for drying in order to stop the germination process, and to produce a stable and grindable kind of dried malt" (Damerow 2012: 16-17 who identifies the vessel with the term "nig_2-dur_2-$buru_3$").

[178] As in the dairy freeze found at Al-Ubaid. See also Romano 2010.

[179] In this case the breakage happened after firing. Repairing of broken vessel before firing is also attested at Abu Tbeirah: the miniaturistic plain rim jar AbT.14.275.2 had a small hole in the string cut base repaired before firing with clay.

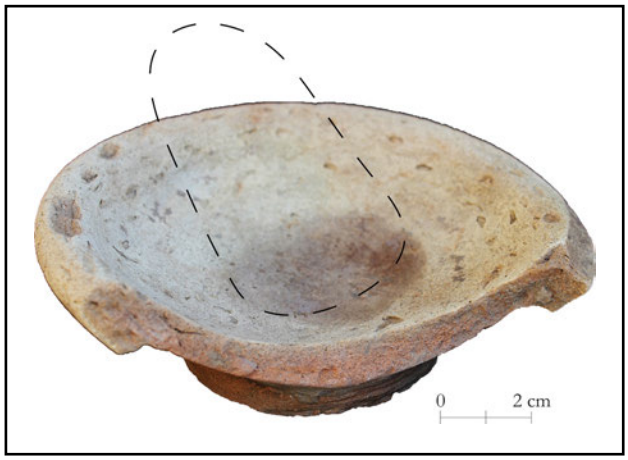

Fig. 10.47 Conical bowl AbT.12.4.2, once attached to a stem, reused as a mortar.

bottom of a ring base jar (AbT.14.268.1+4 - Fig. 7.66).[180] Another coarse ring base AbT.14.221.3 (Fig. 7.47) was pierced in antiquity in the middle to be reused. The stemmed-dish bowl AbT.14.298.3 was probably reused once detached from the stem and the broken bitumen decorated jar base AbT.13.163.28 (Fig. 10.45) was used as a sort of tray for containing other vessels (AbT.13.163.29 to AbT.13.163.40). Originally connected to a stand, the conical bowl AbT.12.4.2 (Fig. 10.47) was used as mortar as the circular depression obtained through pounding testifies.

10.6 Conclusions [LR - MZ]

The study of Abu Tbeirah pottery, though at its beginning, is already showing potentiality thanks to the new excavation and documentation methods but it is surely wiser to avoid sharp conclusions on the base of the evidences presented here. The "envelope method" has demonstrated to be a powerful tool for sorting and sketching the pottery horizon of the two occupational phases considered in the present volume. The pottery corpus of Area 1 corresponds to that of the ED III/Akk. but there is however no clear indication to which part of the transition the described pottery belongs to. § 6.4 showed how at present a better temporal definition of a household context such as Building A is not possible and that once again the absence of a good set of ^{14}C datings and/or written artefacts found in context makes it difficult to better define our pottery chronologically. Surely the prosecution of the excavations at Abu Tbeirah and other coeval sites will soon provide a more reliable sequence and a more specific chronological definition of the contexts excavated up to now.

The limited differences between the pottery from Building A and the Cemetery could probably be due to the aleatory nature of the archaeological record or to the peculiarity of the contexts (household goods *versus* burial equipment): *e.g.* the presence in Building A rooms of plates and trays, mostly absent in the later phase, or the jars with long necks absent in the Building.[181] The sharing of food and drinks was an element characteristic of many ritual practices and community events in 3rd mill. BC Mesopotamia,[182] consequently the absence of striking difference is not surprising in the frame of the comparatively limited shapes repertoire of the plain pottery tradition of this period. On the broader regional context, Abu Tbeirah pottery repertoire is obviously directly comparable with Ur and also with other southern Mesopotamian contexts. The presence and diffusion of beakers seems indeed characteristic of most southern sites: beakers were not so common at Abu Salabikh to be distinguished in a different category,[183] while they are largely attested at Ur, Larsa, al-Hiba and Fara.[184] Further studies on Abu Tbeirah pottery are needed in order to speculate on further differences with other southern Mesopotamian contexts.

Presently the most interesting and promising aspect of our research is the study of the *chaîne opératoire* and of the behavioural chain involved in Abu Tbeirah pottery production and use/reuse. The preliminary analyses carried out at Abu Tbeirah are showing, in contrast with what is usually assumed, a limited use of the wheel. Only small or easy-to-throw vessels and some jars are entirely realized through RKE. Most of the other shapes are indeed the result of the use of

[180] See for comparisons Doojes - Nieuwenheyse 2007; 2008; 2009.

[181] Trumped base jar and spouted vessels were found in graves belonging to Building A - phase 2, not considered in this volume). A substantial uniformity between the domestic repertoire and the funerary one was noticed in other contexts of the 3rd mill. BC Mesopotamia (see Nishimura 2015).

[182] See Romano 2015a for an assessment of the symposium and banquet in Mesopotamia.

[183] *E.g.* Moon 1987: 16 n. 92.

[184] Adams (1981: 309 Fig. 6) consider beakers as a guide shape for the Jemdet Nasr-ED Periods in "southern Mesopotamia" margins.

multiple techniques and in most cases the wheel was probably used to ease joining among parts, to realize the rim and refine the exterior of the final shape. As said in the introduction, the use of forming techniques different from the wheel at the end of the 3rd mill. BC was already noticed with sparse indications in the archaeological literature but has been strongly underestimated. The new researches on the prosecution of "older" pottery forming techniques, conducted in the Iranian, Levantine or other Mediterranean contexts, should be taken as reference for approaching southern Mesopotamian material. The limited use of the wheel in Abu Tbeirah's production could indeed reflect more than a local characteristic: the diffusion of the use of the wheel and the understanding of its potential might be a slower phenomenon than expected, involving a "technological practice" radically different from that involved in coiling/hand technique.[185] Furthermore, it has been demonstrated that coiling has a good degree of efficiency not only on the bases of the ratio between completed and discarded vessels but also in terms of time expenditure.[186] Throwing on a heavy, not perfectly centred, 3rd mill. BC potter's wheel[187] should have been a quite difficult task, probably manageable for small vessels/parts of vessel (conical bowls, spouts, not very tall beakers) but rarely used so virtuously as to throw an entire jar from a single lump of clay (as in AbT.14.224.2 Fig. 10.34). Looking at the conical bowls and beakers analysed above and at the other materials excavated, it seems that wheel thrown vessels were on average less symmetrical and poorly shaped if compared to those hand-made, demonstrating that the skill level in coiling was higher than in wheel-throwing technique.

Technological studies will lead, in perspective, to a better knowledge of the potter's figure and role at the end of the 3rd mill. BC. Abu Tbeirah's potters skills included a relatively limited number of rims and base kinds and, in a certain way, of types. A combination of different shapes was used to realize more complex vessels: this is the case of conical bowls attached to a stem or of the more complex stemmed-dishes. The same base of the stems, if found in fragments, is potentially undistinguishable from a deep bowl with triangular rim. Jars, with few exceptions, are the results of the joining of two halves, realized separately and then joined through the use of one or more coils. A jar made in this way can have a ring attached to the flat/convex base, and in some cases this ring can be extended forming the so-called "trumpet base". The rim in this particular kind of shape can be triangular or plain, meaning perhaps a completely different emic category for the Sumerian potters[188] but hardly distinguishable for us. In addition, the absence of a clear differentiation of shapes and of functional categories implies that there were no strict rules for the use of specific vessels and this is apparently confirmed by the preliminary results indicated at § 9.5, already showing that the same type of vessel was used for several purposes.[189]

The additive modelling process described above, that will be called "agglutinative" in a provocative way, is evident also in other sites: a jar from Larsa,[190] on the base of the same published drawing, seems to have been made using a big bowl as a base, adding over the rest of the body.[191] The realization of a vessel joining several parts obviously foresees drying periods among the steps and allows the segmentation of the production process. An ethnographic comparison for this technological practice can be found in the Marshlands: as described in depth by Ochsenschlager, it is interesting that the Ma'dain potters could produce a single vessel at a time or several at the same time, repeating for each the same steps, and that both productive procedures were accepted and depended on individual choices.[192] The multiple parts of the composite vessels might have been produced and joined by different potters:[193]

[185] See Courty - Roux 1998; Roux - Rosen 2009.

[186] Courty - Roux 1998: esp. 750.

[187] See Romano 2015b with a catalogue of 3rd mill. BC Mesopotamian potter's wheel.

[188] *E.g.*, on the basis of a different use or involving the presence of a cover in the vessel with the triangular rim.

[189] Abbink 1999: 163.

[190] Thalman 2003: 107 Fig. 41 - B 33

[191] This is a practice already documented for 4th mill. BC Iranian contexts (Vidale 2011).

[192] Ochsenschlager 2004: 111-121, in particular 119.

[193] According to Crown (2007: 685-686), recognizing "collaborative craft products" is important for several reasons: 1. if the collaboration is associated with task segmentation, it can suggest a certain type of specialized production; 2. it can help in understanding learning and teaching frameworks; 3. the presence of "collaborative" vessels in pottery assemblages implies that not all the vessels

decomposition and segmentation of tasks was plausibly based on their personal skills or their level of apprenticeship.[194] This is what seems to be depicted on the rare seals with pottery production scenes of the 3rd mill. BC re-assumed by Moorey.[195] At Abu Tbeirah for example, the extreme variety in the profiles of conical bowls and beakers or of other shapes might hide the presence of different hands[196] and/or different productive events,[197] that could refer to a serial (rather than mass) production.

Reassuming, the ED III/Akk. potters used an additive or "agglutinative"[198] production method that did not imply, if not partially and limitedly, the use of a wheel. This sequential construction of vessels might have involved different people with different tasks. Several questions arise from this assumption and our material evidence is still too limited to give a definitive answer. In what frame was the pottery production performed? And thus, were ED III/Akk. potters attached or independent specialists? If they were attached personnel, what was their degree of dependence from the institution?

The organization of pottery production at the end of the 3rd mill. BC has been object of debate from which a nuanced picture could be derived.[199] Clearly pottery was produced by specialists but there were different degrees of independence of potters from the institutions, at least for the Ur III period: potters could indeed be totally or partially dependent from their institution but also totally independent (such as the potters involved in the local community production).[200] The relative independence of these artisans seems evident from their rare occurrences in the cuneiform administrative record.[201] The ubiquitous presence of clay suitable for pottery production[202] is surely one of the reasons of the lack of interest of the administrations in the control of the production (or at least to the wide public production) of these utilitarian craft goods at the end of the 3rd mill. BC.[203] If part of the Ur III pottery production was probably "carried out in individual family-owned and family-operated workshops",[204] it might be reasonable to expect a similar situation in a medium-sized settlement such as Abu Tbeirah during the ED III/Akk. transition.[205] Further and broader analyses on Abu Tbeirah's findings will hopefully contribute in understanding our pottery as a reflection of the work of one or several workshops and then in distinguishing, both synchronically and diachronically, different communities of practice.[206]

are the work of individual artisans and thus interesting questions raise about ownership and use.

[194] Children were also involved in pottery production (Steinkeller 1996: 240).

[195] Moorey 1994: 141-143.

[196] In this regards it is interesting the experiment conducted in Nepal by Gandon *et al.* 2018.

[197] See the results obtained for Tell Leilan pottery (Blackmann *et al.* 1993). The ongoing cataloging of finger prints on our shards and the analysis that will be carried out in collaboration with the Italian Police Scientific Department are, indeed, aiming at documenting the potter as individual, reaching the deepest level of our planned bottom-up approach to Abu Tbeirah material culture.

[198] On the Sumerian "agglutinative mind" see also Seminara 2001 and Ramazzotti 2010. See also the studies by Malfouris (2010) on the relationship between neural and cultural plasticity.

[199] See Waetzoldt 1971; Stein - Blackman 1993; Moorey 1994: Steinkeller 1996; Dahl 2010.

[200] On "craft specialization as archaeological category" see Clark 1995 with a discussion of the categories of independent and attached specialist.

[201] Stein - Blockmann 1993: 53; Steinkeller 1996: 233.

[202] See § 11.

[203] Stein - Blockmann 1993: 53-54.

[204] Steinkeller 1996: 249.

[205] On the relationship between institution and potters in 3rd mill. BC Mesopotamia see also Glatz (ed.) 2015: 22.

[206] Wenger 1998.

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