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Author(s): Anna Smogorzewska

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Anna Smogorzewska
Institute of Archaeology, University of Warsaw

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Keywords: Ninevite 5, cooking pots, technology, kitchen, thermal properties

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Cooking pots should have a set of qualities related to their form and technology that let them perform in their special function. Thermal shock resistance and heating effectiveness requirements play a particularly significant role in shaping the technological and morphological aspects of cooking pot production (Matson 1965; Shepard 1976; Rice 1987; Orton *et alii* 1993). Cultural, social and economic factors may also influence pot design. After all, cooking pots and cooking practices can vary both between and within cultural traditions and societies.

The prime objective is to describe and assess kitchen ware produced in the Ninevite 5 pottery tradition, which is typical of Northern Mesopotamia in the Early Jezirah (EJ) I to EJII/EJIIIa periods (approximately 2900–2550 BC), in terms of distinctive features as well as pottery variables which may have influenced cooking pot functionality. Morphological features, such as pot shape, size, accessibility of contents, wall thickness and proportions are considered, as are other vessel attributes relating to technological issues and pottery properties, that is, raw material, temper,

firing temperature, method of manufacture, surface treatment and porosity.

The kitchen ware pottery dataset taken into account comes from sites with attested Ninevite 5 occupation, among others Tell Leilan, Tell Barri, Tell Brak, Tell Raqa'i, Tell Atij, Tell Fisna, Tell Kutan and Telul eth-Thalathat, as well as Tell Arbid, a site in northeastern Syria excavated by a team from the PCMA, University of Warsaw. Attention was focused in particular on an assemblage of roughly 80 diagnostic fragments of cooking pots found in a late Ninevite 5 dwelling quarter (Sector D) on Tell Arbid (EJII–EJIIIa). The collection was analyzed with regard to the frequency of appearance of given forms and technological groups. Selected sherds were also subjected to laboratory examination to test for clay composition, pottery properties (density and porosity) and aiming at establishing their original firing temperatures.

NINEVITE 5 KITCHEN WARE

Ninevite 5 kitchen ware constitutes a class of pottery sharing a common technology, surface treatment and distinctive vessel forms. Hole-mouth cooking pots with crescent lugs are the most diagnostic shape, other forms including jars, bowls and lids. Chaff temper appears to have been preferable for the production of these pots and it was added to the paste in various proportions. Some grit and lime could also be observed in the fabric. Surface treatment — burnishing and texturing — seems to have been specific to the ware as well, although not widespread. Low firing temperatures were apparently typical of Ninevite 5 cooking pots, same as for cooking pots of various other periods and pottery traditions.

MORPHOLOGICAL TYPES

There was little apparent variation of cooking vessel shapes in the Ninevite 5 pottery tradition. Food was prepared mainly in hole-mouth pots, furnished with crescent lugs, this being the most diagnostic form in the entire Ninevite 5 kitchen ware tradition [***Figs 1, 2***]. These particular pots may even be regarded as a kind of "index type" for Ninevite 5 pottery, alongside the characteristic decorative motifs and certain other morphological pottery types. Disc-shaped lids with a handle were also distinctive of this tradition. Jars and bowls representing kitchen ware technology were encountered but were clearly less numerous.

POTS

Hole-mouth cooking pots feature a restricted orifice with simple or square rim. Morphological variation is slight, occurring chiefly in the size and height-to-rim-diameter ratio. The Ninevite 5 cooking pots were usually squat, with a height-to-rim-diameter ratio of 1:1, although some higher specimens, with a ratio of 1.4:1 have also been attested, as well as shallower ones with a ratio of 1:1.5. Ethnographic data show that most cooking pots are squat with a large basal surface for efficient heat transfer and a restricted mouth to prevent rapid evaporation during cooking (Henrickson,

McDonald 1983: 631). Pots differ also in terms of the shape and orientation of the walls. Considering these variables, one can distinguish three types of Ninevite 5 hole-mouth pots, P1A and P1B, and P2 [*Fig. 1*]:

– **Type P1A**: hole-mouth pots with inturned rim and globular body (standard height-to-rim-diameter ratio of 1:1 or 1.3:1) [*Figs 4A–B*]. Pots of this type are known from Telul eth Thalathat (for references, see *Tables 1–6*), Tell Kutan, Tell Khazna, Tell Brak and Tell Arbid. Size categories were distinguished by rim diameter: three sizes having respectively about 15 cm, 20 cm, and 30 cm.

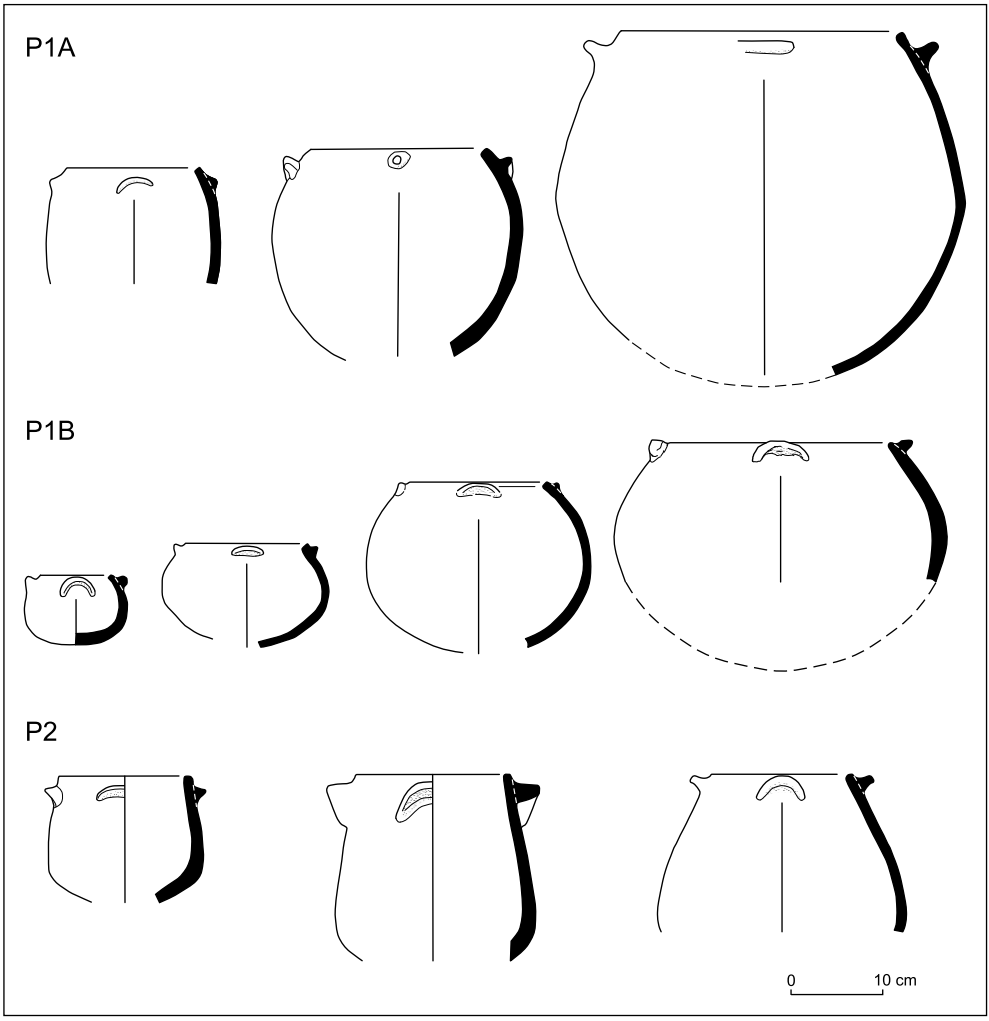

Fig. 1. Hole-mouth cooking pot types: P1A, P1B and P2 (All drawings A. Smogorzewska)

– **Type P1B**: hole-mouth pots with inturned rim and globular body. More squat-shaped compared to type P1A (height-to-rim-diameter ratio usually 1:1 or 1:1.5) [*Fig. 5*]. Known from Telul eth-Thalathat, Tell Fisna, Tell Khazna and Tell Brak. Three size categories can be distinguished in this group: pots with rim diameters of about 10 cm, 15 cm, 20 cm.
– **Type P2**. Hole-mouth pots with more vertical walls compared to types P1A and P1B [*Fig. 6*]. The walls are steep from the rim to the bottom part, where they become more rounded. Both squat (height-to-rim-diameter ratio of 1:1) and taller pots (height-to-rim-diameter ratio of 1.4:1) of this type were registered at Tell Brak. Pots of this type vary as to wall orientation (variants include strongly closed walls and nearly vertical walls).

Fig. 2. Hole-mouth cooking pot with crescent lugs (Late Ninevite 5 period, Tell Arbid) (Photo A. Reiche)

JARS

Kitchen-ware jars fall into two main types: wide-mouthed jars with short, curved neck and globular body (type J1) and taller jars with vertical and steep shoulders (type J2).

Jars of type J1 are known from Tell Arbid, Tell Raqa'i (level 4) and Tell Brak [*Fig. 7:1–8*]. Some jars of this type from Tell Raqa'i and Tell Atij (Boileau 2005: 45) were furnished with spouts [*Fig. 7:3*]. Examples from Tell Arbid, Tell Brak and Tell Khazna were provided with crescent-shaped and horizontal lugs [*Fig. 7:4–8*].

Jars of the J2 type are known from Tell Raqa'i and Tell Brak [*Fig. 7:9–11*]. One of the jars from Tell Raqa'i is distinct for the triangles excised on its outer surface [*Fig. 7:10*], while the example from Tell Brak was furnished with a lug [*Fig. 7:9*].

BOWLS

Bowls used in Ninevite 5 kitchens usually represented open forms [*Fig. 8*] and shared with cooking pots the same technological characteristics (fabric with chaff temper, burnished surface, low firing temperature) and some morphological traits (e.g., crescent-shaped lugs).

A few open bowls were found in a kitchen space in Sector W of the excavations on Tell Arbid; they accompanied a standard assemblage of hole-mouth pots. Two bowls were large, with rim diameters of roughly 40 cm [*Fig. 8:6,8*]. One was smaller, with an approximate rim diameter of 20 cm [*Fig. 8:7*] (Reiche, Smogorzewska 2013). The inside surface of one of the large bowls was cracked. Bowls with crescent-shaped lugs are known from Tell Raqa'i, Tell Brak and Tell Khazna [*Fig. 8:2–5*]. Kitchen-ware bowls were also recorded at Tell Atij and Tell Gudeda (Boileau 2005: 45). One of the bowls from Tell Raqa'i (level 3) was furnished with a lug at the rim [*Fig. 8:1*].

LIDS

Disc-shaped lids with handles were a distinct form in Ninevite 5 kitchen ware [*Fig. 9*; see also *Fig. 3*]. They are commonly found on Tell Arbid and other sites with Ninevite 5 occupation: Tell Kutan, Tell Brak (Matthews [ed.] 2003: Fig. 5.58:3), Tell Leilan, Tell Raqa'i (Schwartz, Curvers 1992: Figs 22:12, 13), Telul eth Thalathat.

The lid handles come in a variety of shapes, loop handles being the most common (circular or squarish in section). At Tell Arbid, horn-like handles with dimples are also known from the Ninevite 5 pottery phase with incised and excised decoration (EJI); they could have belonged to lids (fragmentarily preserved) [*Fig. 9:6–7*]. One lid from Tell Arbid was furnished with a knob handle [*Fig. 9:1*]. Tell Kutan and Telul eth-Thalathat yielded both plain and decorated lids (Bachelot 2003: Fig. 34; Fukai, Horiuchi, Matsutani 1974: Pl. XXXIV:4,5). Some are decorated with plastic motifs, sometimes equipped with two handles (Bachelot 2003: Figs 35, 36) [*Fig. 9:9–11*]. Most lids had diameters of 20–25 cm to correspond in size with the cooking pots. Smaller lids with diameters of approximately 15 cm were also encountered. A lid from the kitchen in Sector W of Tell Arbid is exceptionally large, measuring 37 cm in diameter [*Fig. 9:5*].

LUGS

Crescent-shaped lugs are a distinct feature of Ninevite 5 kitchen ware. Horizontal lugs are also present, but they seem to be both less typical and less numerous. They become more common in the late Ninevite 5 period (EJII–IIIa). Crescent-shaped lugs can be found on hole-mouth cooking pots, jars and bowls, although they are most strongly associated with the hole-mouthed pots. Well-preserved examples of cooking pots usually feature two or four such lugs beneath the rim. A cooking pot from Tell Khazna is distinct for the several crescent lugs applied next to one another below the rim (Munčaev, Merpert, Amirov 2004: Pl. 34:2) [*Fig. 7:4*].

Round knobs and ring-like lugs were also sometimes applied on cooking pots; they are known from Tell Arbid [*Figs 5:5, 6:14–15*], Tell Leilan (Schwartz 1988: Figs 35:3,9, 45:4), Tell Raqa'i (Schwartz, Curvers 1992: Fig. 22:6) and Tell Fisna (Numoto 2003: Fig. 14:125). A few types of lugs can be present on the same pot. A crescent-shaped lug along with a round knob and ring-like lug were applied on one of the pots from Tell Arbid below the rim [*Fig. 6:14*].

Fig. 3. Lids (Late Ninevite 5 period, Tell Arbid) (Photo A. Smogorzewska)

Table 1A. Cooking pots of type P1A [Fig. 4A]

Fig.: No.	Dia. rim	Fabric; color	Surface treatment	Remarks	Site, dating (references)
4A:1	14 cm	Chaff temper Light brown 7.5YR 6/4	—	Horizontal lug; chaff-faced	Tell Arbid EJI
4A:2	19 cm	Chaff temper, mica (little), white grains Brown 7.5YR 5/4	Slightly burnished	Lug; dark grey core	Tell Arbid EJII
4A:3	24 cm	Mineral temper (basalt and dark grains), mica and chaff Reddish yellow 7.5YR 6/6	Burnished on both surfaces	Crescent lugs; dark grey core	Tell Arbid EJII
4A:4	22 cm	Chaff temper Reddish yellow 7.5YR 6/6	—	Horizontal lug	Tell Arbid EJI
4A:5	22 cm	Chaff temper Light brown 7.5YR 6/4	—	Lug	Tell Arbid EJI
4A:6	15 cm	Chaff temper Light brown 7.5YR 6/3	Roughing in the lower part	Four crescent lugs	Tell Arbid EJII
4A:7	21 cm	Chaff temper Light brown 7.5YR 6/4	Slightly burnished inside	Horizontal lug; outer surface cracked; dark grey core	Tell Arbid EJI
4A:8	19 cm	Chaff temper Light brown 7.5YR 6/4	—	Crescent lug; dark grey core	Tell Arbid EJI
4A:9	15 cm	Chaff temper Light brown 7.5YR 6/4	—	Crescent lug	Tell Arbid EJI
4A:10	21 cm	Chaff temper Light brown 7.5YR 6/4	Burnished on both surfaces	Crescent lugs; dark grey core	Tell Arbid EJI
4A:11	17 cm	Chaff temper, a little gravel and mica Light brown 7.5YR 6/4	Highly burnished on both surfaces	Crescent lugs	Tell Arbid EJII
4A:12	21 cm	Vegetal temper (much), mineral inclusions (little) Brown	—	Crescent lugs	Tell Brak, HS2 Level 1 (Matthews [ed.] 2003: Fig. 5.58:4)
4A:13	19 cm	Vegetal temper (medium), coarse mineral Dark brown	—	Horizontal lug	Tell Brak, HS4 Level 8 (Matthews[ed.] 2003: Fig. 5.60:18)
4A:14	13 cm	Vegetal temper (little), mineral (medium) Grey brown	—	Crescent lugs	Tell Brak, HS4 Level 9 (Matthews [ed.] 2003: Fig. 5.60:5)

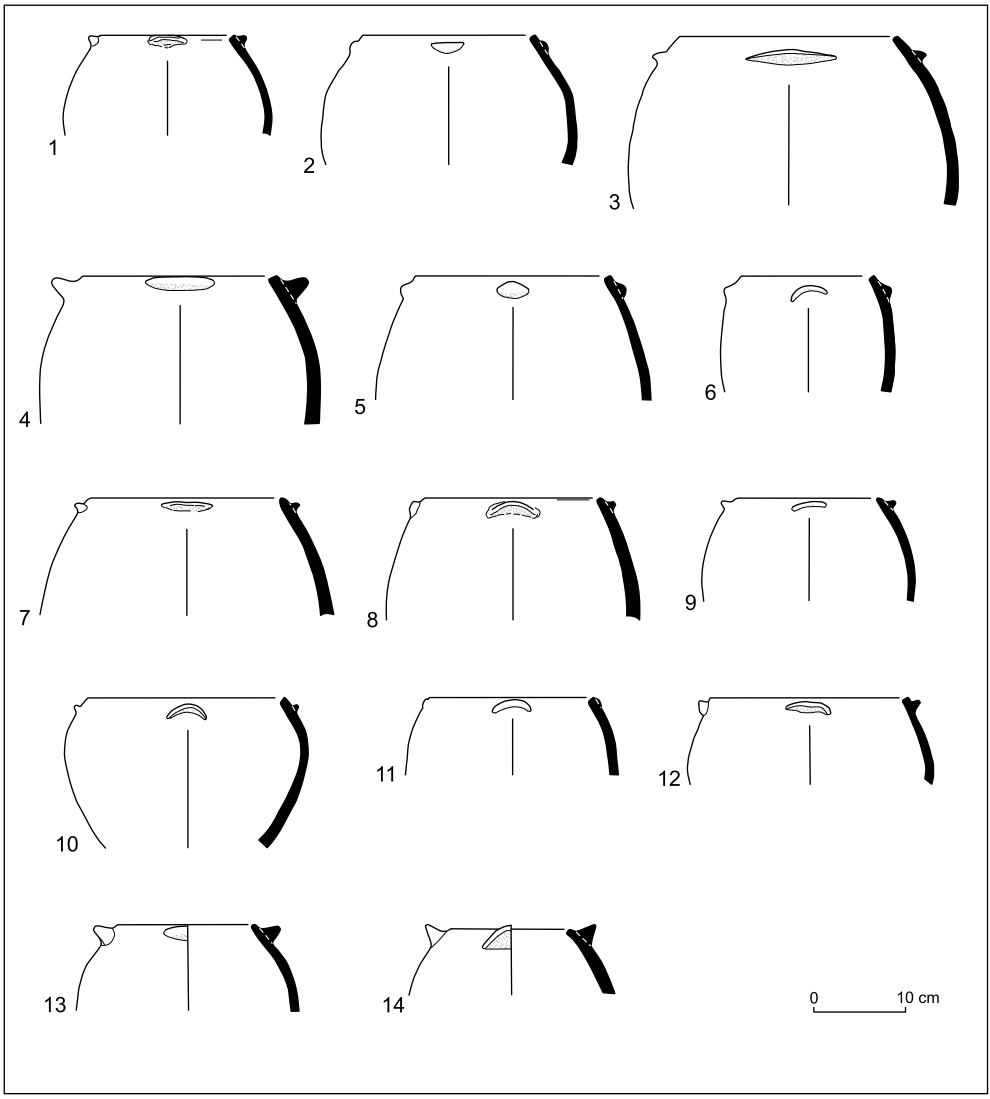

Fig. 4A. Cooking pots of type P1A (for descriptions, see Table 4A)

Table 1B. Cooking pots of type P1A (continued) [Fig. 4B]

Fig.: No.	Dia. rim	Fabric; color	Surface treatment	Remarks	Site, dating (references)
4B:15	19 cm	Mineral temper	Burnished	Lugs	Telul eth-Thalathat (Fukai, Horiuchi, Matsutani 1974: Pl. LII:16)
4B:16	30 cm	Mineral temper	Burnished	Crescent lugs	Telul eth-Thalathat (Fukai, Horiuchi, Matsutani 1974: Pl. LII:17)
4B:17	25 cm	Chaff temper; light brown 7.5YR 6/4	Slightly burnished outside	Crescent lugs; dark grey core; soot deposit	Tell Arbid EJI
4B:18	16 cm	Chaff temper; single gravel grains; light brown 7.5YR 6/4	—	Crescent lug	Tell Arbid EJII
4B:19	14 cm	Chaff temper; reddish yellow 5YR 6/6	—	Crescent lug; dark grey core; chaff-faced; soot deposit	Tell Arbid EJI
4B:20	20 cm	Dense vegetal inclusions and medium-sparse white and grey grit inclusions; yellowish red 5YR 5/6	—	Crescent lugs; dark grey core; most of exterior soot blackened	Tell Brak, HS4 (Matthews 1995: Fig. 12:1)
4B:21	13 cm	Medium to large grit; pinkish brown	Textured exterior	Crescent lug	Tell Raqa'i, Level 6 (Curvers, Schwartz 1990: Fig. 24:8)
4B:22	32 cm	Coarse ware	—	Horizontal lug	Tell Kutan (Bachelot 2003: Fig. 33:2)
4B:23	32 cm	Coarse ware	—	Crescent lug	Tell Kutan (Bachelot 2003: Fig. 33:1)

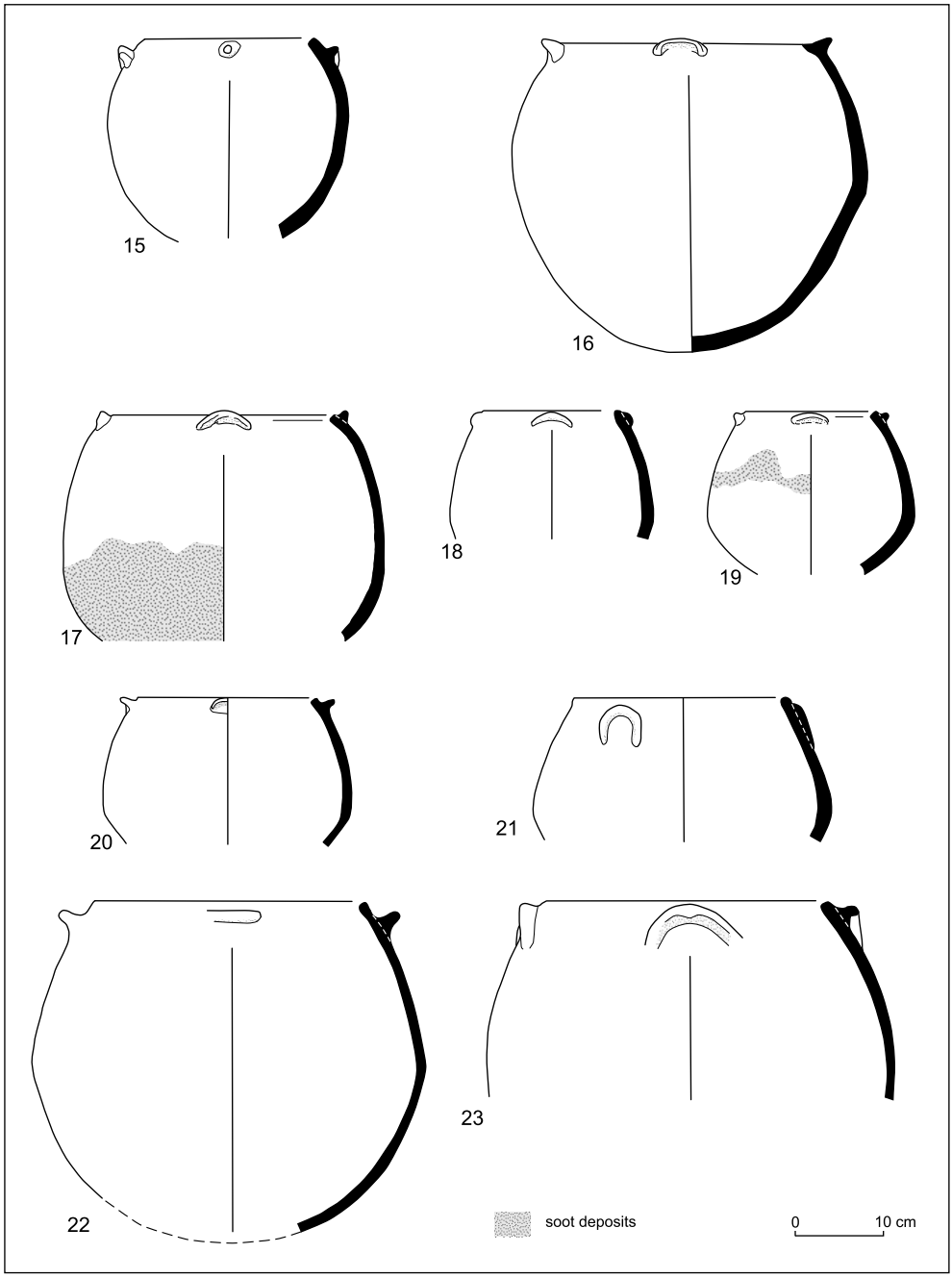

Fig. 4B. Cooking pots of type P1A (for descriptions, see Table 4B)

Table 2. Cooking pots of type P1B [Fig. 5]

Fig.: No.	Dia. rim	Fabric; color	Surface treatment	Remarks	Site, dating (references)
5:1	12 cm	—	—	Crescent lugs	Tell Khazna (Munčaev, Merpert, Amirov 2004: Pl. 34:1)
5:2	13 cm	Fine to medium mineral temper (little); reddish yellow 5YR 6/6	—	Crescent lug	Tell Brak, HS4, Level 5 (Matthews [ed.] 2003: Fig. 5.64:6)
5:3	9 cm	Brown	—	Crescent lugs	Telul eth-Thalathat (Fukai, Horiuchi, Matsutani 1974: Pl. LII:15)
5:4	10 cm	Sand temper (much); blackish brown	Burnished interior; impressions on bottom	Crescent lug	Tell Fisna (Numoto 2003: Fig. 14:123)
5:5	9 cm	Chaff temper; pink 7.5YR 7/4	—	Crescent lugs; ring-like lug; round knob; dark grey core; chaff-faced	Tell Arbid EJI
5:6	16 cm	Chaff temper; light reddish brown 5YR 6/4	—	Crescent lug; soot deposits	Tell Arbid EJI
5:7	18 cm	Mica, single gravel grains, tiny white particles, chaff (little); yellowish red 5YR 5/6	Burnished	Crescent lug	Tell Arbid EJII
5:8	22 cm	Mica, single gravel grains, tiny white particles, chaff (little); reddish yellow 5YR 6/6	Burnished	Crescent lug; dark grey core	Tell Arbid EJII
5:9	25 cm	Chaff temper; light brown 7.5YR 6/3	—	Crescent lug; dark grey core	Tell Arbid EJI
5:10	13 cm	Medium grit; brown with dark brown areas	—	Crescent lug; dark grey core	Tell Raqa'i, Level 3 (Curvers, Schwartz 1990: Fig. 19:7)
5:11	16 cm	Medium grit; brown, dark brown/black areas on exterior	Burnished exterior; textured below carination	Horizontal lugs; dark grey core	Tell Raqa'i, Level 3 (Curvers, Schwartz 1990: Fig. 19:8)

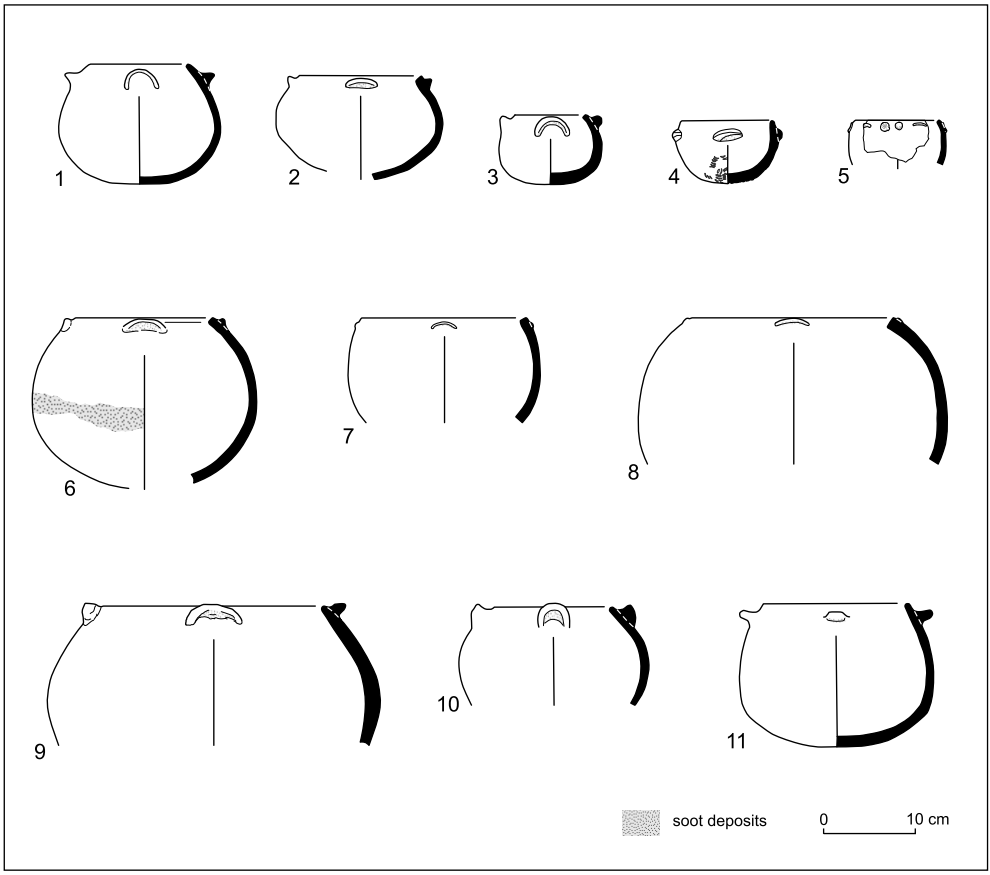

Fig. 5. Cooking pots of type P1B (for descriptions, see Table 2)

Table 3. Cooking pots of type P2 [Fig. 6]

Fig.: No.	Dia. rim	Fabric; color	Surface treatment	Remarks	Site, dating (references)
6:1	15 cm	Medium straw and grit temper reddish brown exterior, brown interior	Textured by impressions	Crescent lugs; dark grey core	Tell Leilan, Stratum 40 (Mayo, Weiss 2003: Fig. 3:2)
6:2	16 cm	Medium mineral temper (much); pink brown	Textured by impressions	Crescent lugs	Tell Brak HF4, Level 2 (Matthews [ed.] 2003: Fig. 5.69:22)
6:3	15 cm	Medium mineral and vegetal temper; red	Textured by nail impressions	Crescent lugs	Tell Brak HL2, Level 1 (Matthews [ed.] 2003: Fig. 5.66:2)
6:4	13 cm	Coarse mineral (much) and medium vegetal temper; dark brown	—	Crescent lug	Tell Brak HS2, Level 1 (Matthews [ed.] 2003: Fig. 5.58:30)
6:5	17cm	Coarse mineral and vegetal temper (much); red-brown	—	Horizontal lug	Tell Brak HS4, Level 4 (Matthews [ed.] 2003: Fig. 5.60:3)
6:6	16 cm	Coarse vegetal (much) and mineral temper; red-brown	—	Horizontal lug	Tell Brak HS4, Level 7 (Matthews [ed.] 2003: Fig. 5.62:19)
6:7	14 cm	Coarse vegetal and mineral temper (much); orange brown/grey brown	—	Crescent lug	Tell Brak HS4, Level 9 (Matthews [ed.] 2003: Fig. 5.60:8)
6:8	16 cm	Medium vegetal (much) and mineral (a little) temper; brown	—	Crescent lugs	Tell Brak HF2, Level 2 (Matthews [ed.] 2003: Fig. 5.68:7)
6:9	12 cm	Chaff temper; yellowish red 5YR5/6	Textured by incisions (bottom)	Crescent lugs	Tell Arbid EJI
6:10	15 cm	Chaff temper; reddish yellow 5YR 6/6	—	Crescent lugs; dark grey core; cracked surface inside; chaff-faced	Tell Arbid EJI
6:11	11 cm	Chaff temper; light brown 7.5YR 6/4	—	Crescent lug	Tell Arbid EJI
6:12	15 cm	Chaff temper; light reddish brown 5YR 6/4	—	Crescent lug	Tell Arbid EJI
6:13	19 cm	Medium mineral inclusions (dark grains); light reddish brown 5YR 6/4	Brushing traces on both surfaces	Lug	Tell Arbid EJII
6:14	10.5 cm	Chaff temper; pale brown 10YR 7/3	—	Crescent lug, ring-like lug; round knob; dark grey core	Tell Arbid EJII
6:15	11 cm	Chaff temper, fine lime particles; very pale brown 10YR 7/4	—	Ring-like lug; round knob	Tell Arbid EJII
6:16	18.5 cm	Fine and medium grit; light brown	—	Round knob	Tell Raqa'i, Level 4 (Schwartz, Curvers 1992: Fig. 22:6)

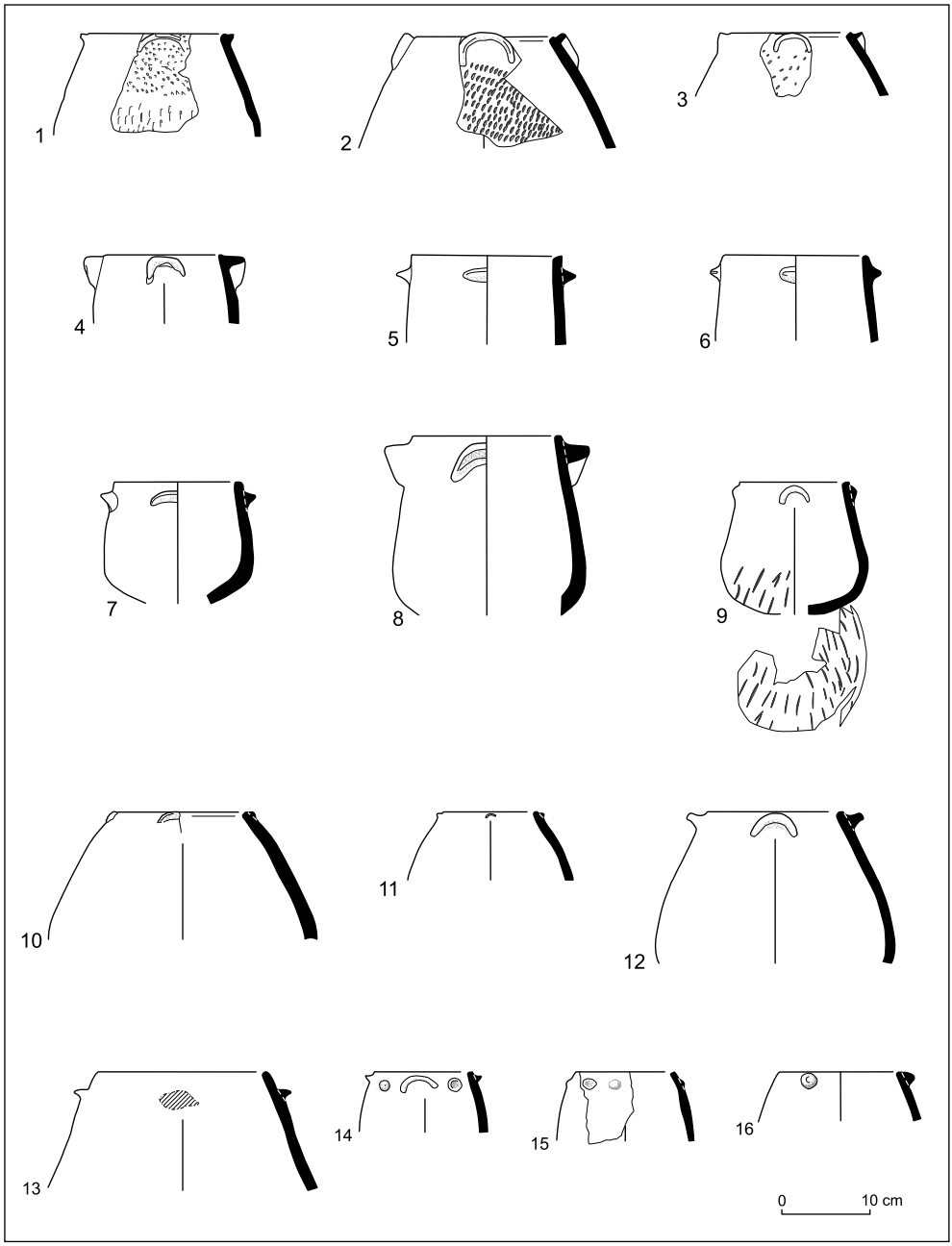

Fig. 6. Cooking pots of type P2 (for descriptions, see Table 3)

Table 4. Jars [Fig. 7]

Fig.: No.	Dia. rim	Fabric; color	Surface treatment	Remarks	Site, dating (references)
			TYPE J1		
7:1	16 cm	Medium grit; light brown	—	—	Tell Raqa'i, Level 4 (Schwartz, Curvers 1992: Fig. 22:7)
7:2	19 cm	Fine to coarse grit; light reddish brown	Exterior burnish	Dark grey core	Tell Raqa'i, Level 4 (Schwartz, Curvers 1992: Fig. 22:8)
7:3	11 cm	Medium and coarse grit; light brown	—	Spout	Tell Raqa'i, Level 4 (Schwartz, Curvers 1992: Fig. 22:11)
7:4	14 cm	—	—	Crescent lugs	Tell Khazna (Munčaev, Merpert, Amirov 2004: Pl. 34:2)
7:5	19 cm	—	—	Crescent lug	Tell Khazna (Munčaev, Merpert, Amirov 2004: Pl. 34:5)
7:6	18 cm	— Grey	—	Crescent lug	Tell Brak, HS2, Level 1 (Matthews [ed.] 2003: Fig. 5.58:15)
7:7	22 cm	Mica, single gravel grains, tiny white particles, chaff (little(; brown 7.5YR 5/2	Burnished on both surfaces	Horizontal lugs	Tell Arbid EJII
7:8	20 cm	Mica, single gravel grains, tiny white particles, chaff (little); reddish yellow 7.5YR 6/6	Burnished outside	Crescent lug	Tell Arbid EJII
			TYPE J2		
7:9	13 cm	—	—	Crescent lug	Tell Brak, HS4, Level 7 (Matthews [ed.] 2003: Fig. 5.62:14)
7:10	19 cm	Medium and fine grit; pinkish-brown	—	Excised triangles	Tell Raqai, Level 4 (Schwartz, Curvers 1992: Fig. 22:1)
7:11	21 cm	Chaff and fine grit; brown	—	Dark grey core	Tell Raqai, Level 4 (Schwartz, Curvers 1992: Fig. 22:2)

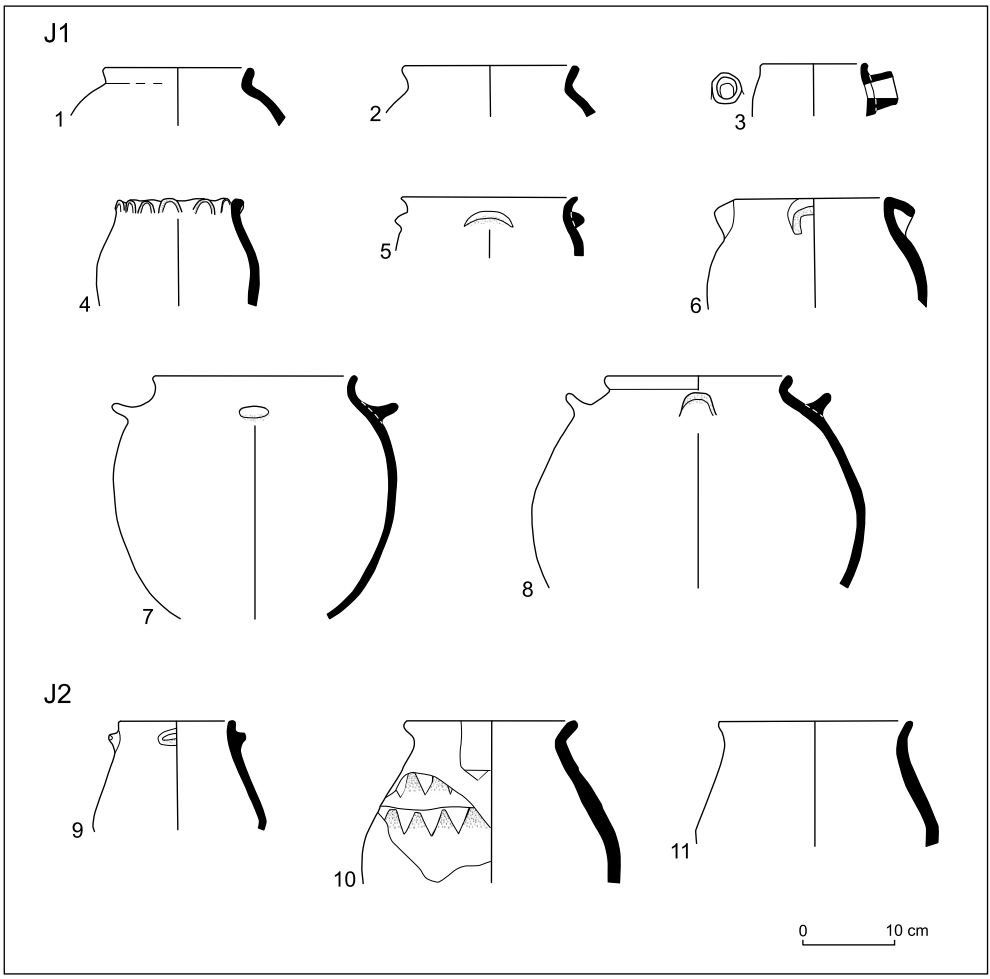

Fig. 7. Jars: 1–8 – type J1; 9–11 – type J2 (for descriptions, see Table 4)

Table 5. Bowls [Fig. 8]

Fig.: No.	Dia. rim	Fabric; color	Surface treatment	Remarks	Site, dating (references)
8:1	16 cm	Medium to coarse grit and chaff; light to dark brown	Burnished interior (1.5 cm band below rim); burnishing traces on exterior	Lug at the rim; dark grey core	Tell Raqa'i, Level 3 (Curvers, Schwartz 1990: Fig. 19:13)
8:2	25 cm	Fine and medium grit; brown	—	Crescent lug; dark grey core	Tell Raqa'i, Level 4 (Schwartz, Curvers 1992: Fig. 22:4)
8:3	21 cm	Medium and coarse grit; brown	—	Crescent lug; dark grey core	Tell Raqa'i, Level 4 (Schwartz, Curvers 1992: Fig. 22:3)
8:4	30 cm	Medium vegetal and mineral (much); dark brown	—	Crescent lug	Tell Brak, HS4, Level 9 (Matthews [ed.] 2003: Fig. 5.60:15)
8:5	17 cm	—	—	Crescent lug	Tell Khazna (Munčaev, Merpert, Amirov 2004: Pl. 34:10)
8:6	44 cm	Chaff temper; reddish yellow 5YR 6/6	—	Dark grey core; inner surface cracked; chaff-faced	Tell Arbid EJI
8:7	20 cm	Chaff temper; reddish yellow 5YR 7/6	—	Chaff-faced	Tell Arbid EJII
8:8	40 cm	Chaff temper; reddish yellow 5YR 6/6	—	Dark grey core; chaff-faced	Tell Arbid EJI

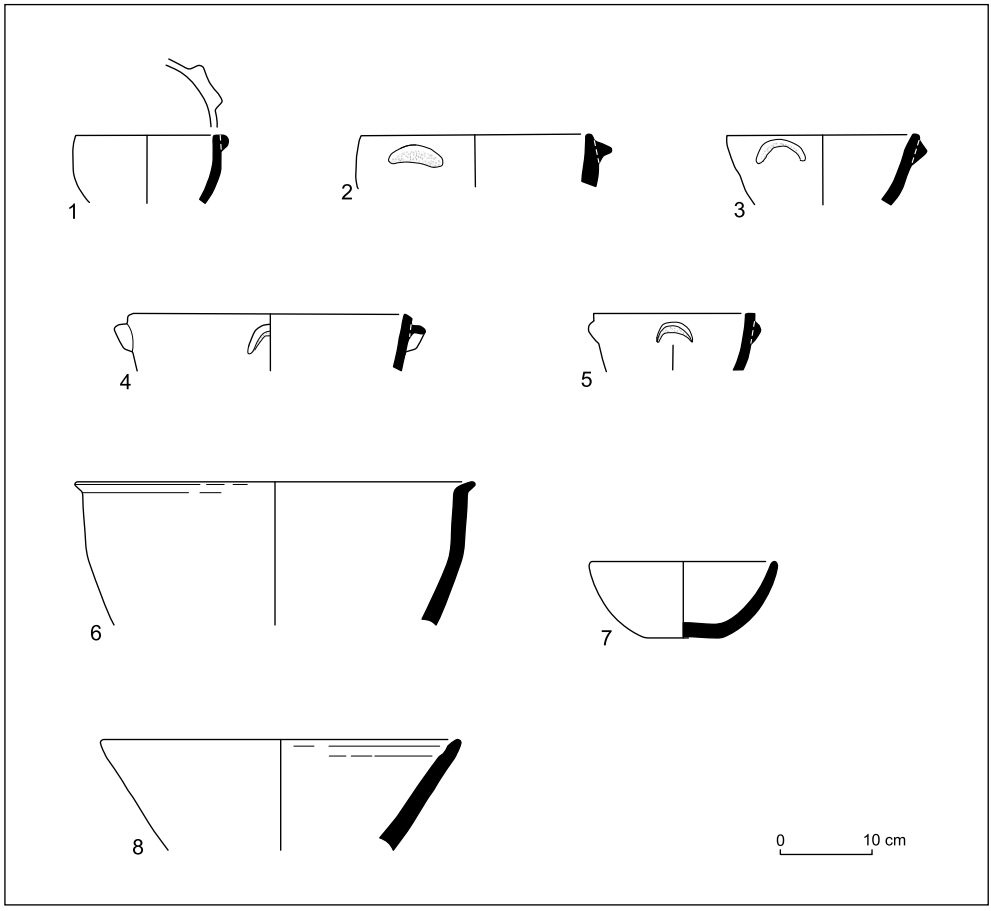

Fig. 8. Bowls of Ninevite 5 kitchen ware (for descriptions, see Table 5)

Table 6. Lids [Fig. 9]

Fig.: No.	Dia. rim	Fabric; color	Surface treatment	Remarks	Site, dating (references)
9:1	14 cm	Chaff temper; light brown 7.5YR 6/3	—	Dark grey core	Tell Arbid EJI
9:2	12 cm	Chaff temper; light reddish brown 5YR 6/3	—	Chaff-faced	Tell Arbid EJI
9:3	20 cm	Abundant chaff temper; light brown 7.5YR 6/3	—	Dark grey core	Tell Arbid EJII
9:4	24 cm	Abundant chaff temper; light brown 7.5YR 6/3	—	Dark grey core	Tell Arbid EJII
9:5	37 cm	Chaff temper; light reddish brown 5YR 6/4	—	Chaff-faced	Tell Arbid EJI
9:6	(handle)	Chaff temper; light reddish brown 5YR 6/3	—	—	Tell Arbid EJI
9:7	(handle)	Chaff temper; light reddish brown 5YR 6/3	—	—	Tell Arbid EJI
9:8	28 cm	—	—	—	Tell Kutan (Bachelot 2003: Fig. 34:1)
9:9	14 cm	—	—	—	Tell Kutan (Bachelot 2003: Fig. 35:5)
9:10	16 cm	—	—	—	Telul eth-Thalathat (Fukai, Horiuchi, Matsutani 1974: Pl. LVIII:2)
9:11	21 cm	—	—	—	Telul eth-Thalathat (Fukai, Horiuchi, Matsutani 1974: Pl. LVIII:1)
9:12	26 cm	Coarse straw temper; brown buff surface	—	Dark grey core	Tell Leilan IIIb (Schwartz 1988: Fig. 45:5)
9:13	26 cm	Fine to coarse grit; light brown	—	Dark grey core	Tell Raqa'i, Level 3 (Curvers, Schwartz 1990: Fig. 19:14)
9:14	21 cm	Chaff temper; pinkish brown	—	Dark grey core	Tell Raqa'i, Level 4 (Schwartz, Curvers 1992: Fig. 22:13)

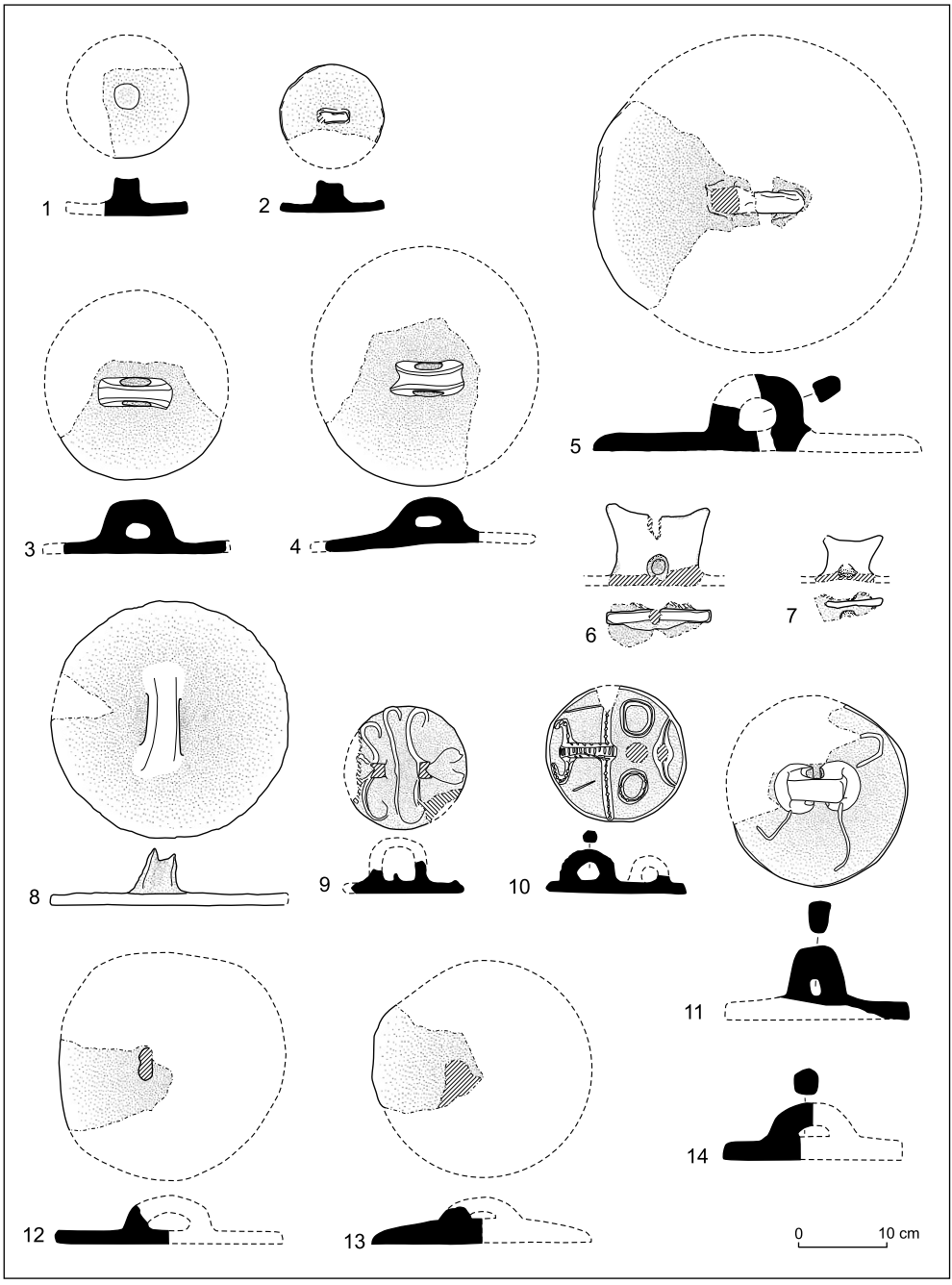

Fig. 9. Lids of Ninevite 5 kitchen ware (for descriptions, see Table 6)

VESSEL FORM FREQUENCY AND SIZE

An assessment was made of the frequency of occurrence of individual vessel forms in the kitchen-ware assemblage from the late Ninevite 5 dwelling quarter (EJII) in Sector D on Tell Arbid. Hole-mouth pots prevailed, accounting for 90% of the collection. Wide-mouth jars with short, curved necks and rounded bases made up approximately 10% of the collected kitchen ware. Both shapes had either crescent or horizontal lugs.

The kitchen-ware assemblage coming from a presumed kitchen dated to the incised and excised Ninevite 5 pottery phase (EJI) in Sector W of the excavations on Tell Arbid (Reiche, Smogorzewska 2013) consisted of practically one form, the hole-mouth cooking pot, furnished with either crescent-shaped or horizontal lugs under the rim (12 examples). The collection yielded also a few bowls and no kitchen-ware jars.

Vessel size was often difficult to ascertain owing to the fragmentary state of preservation. In consequence, overall size could be usually estimated only based on rim diameter. Average cooking pot diameters, calculated on the grounds of data from Tell Arbid as well as available data from other sites, ranged from 8 cm to 35 cm. Cooking pots with rim diameters of 13–25 cm were the most common. Pots with rim diameters of over 30 cm were rare (e.g., cooking pots with triangular and horizontal lugs from Tell Kutan with rim diameters of about 32 cm) [*Fig. 4B:22,23*], just as small cooking pots with rim diameters of approximately 10 cm or less (e.g., cooking pots from Tell Leilan and Tell Fisna with rim diameters of about 8 cm) [*Fig. 5:4*] or pots from Tell Arbid with rim diameters of 9 cm) [*Fig. 5:5*]. When complete, hole-mouth pots represented a few main sizes in terms of both height and rim diameter (compare cooking pots P1A, P1B and P2) [see *Fig. 1*]. The largest pots were observed in the P1A group (rim diameter roughly 30 cm), while the P1B group comprised the smallest ones (rim diameters about 8 cm).

The pots from the assemblage of cooking pots found in Sector D on Tell Arbid came in two main sizes, the most numerous one being pots with rim diameters of 20–25 cm (n=35, which makes for 58% of the cooking pot assemblage from Sector D), followed by smaller pots, with diameters ranging around 15 cm (n=15, which constitutes 25% of the assemblage). Jar rim diameters in the Sector D assemblage ranged from 18 cm to 27 cm.

The vessels in the assemblage of pots from the kitchen in Sector W (n=12) also came generally in two size categories: pots with a rim diameter of 14–16 cm and pots with a rim diameter of about 20–25 cm.

The differences in cooking pot capacity, especially comparing the extra small pots with 8-cm diameters with the large ones attaining 35 cm in diameter, could have reflected not only amounts of food prepared for different numbers of consumers, but also the kind of food that they were customarily used for.

MODE D'EMPLOI

The size and shape of a cooking pot is usually determined by the intended use of the vessel on the one hand, and by the kind of fire installations it will be used with on the other. In the Ninevite 5 period, the standard size of cooking pots (that is, maximum diameter of approximately 20–35 cm) corresponded with the size of some ovens which may have been used as cooking stoves, and with the size of horseshoe-shaped andirons that may have supported the vessels over a hearth (Smogorzewska 2012). Cooking stoves (some with inner lugs) seem to have been standard cooking facilities in the Ninevite 5 period at Tell Arbid [*Fig. 10*].

Most Ninevite 5 cooking pots usually had rounded bases, so they needed a hearth stand for supporting them over a fire. Ninevite 5-period andirons, both the horseshoe-shaped ones and the curved props, attest to the practice of using such stands (Smogorzewska 2010a) [*Fig. 11*]. Soot deposits preserved on the base and on the sides in the bottom part of some pots indicate that they were suspended above a fire [see *Fig. 4B:17*]. However, traces of sooting preserved on other pots indicate that they may have also been placed directly in the hot embers [*Figs 4B:17,19; 5:6*] (Reiche, Smogorzewska 2013). The way a pot was placed over the fire influenced the cooking process, with the food just simmering inside it or rapidly brought to a boil in high temperatures.

The size, shape and differences of proportion among the cooking pots were a derivative of the kind and amount of food cooked inside them and of the method of food preparation (boiling, simmering or frying). Most of the Ninevite 5 cooking pots have heights equal to diameters and may have been used for boiling. The deepest Ninevite 5 cooking pots have a height-to-rim-diameter ratio of 1.4:1 and this is what is to be expected of pots for boiling. Stews, which are prepared by simmering or slow

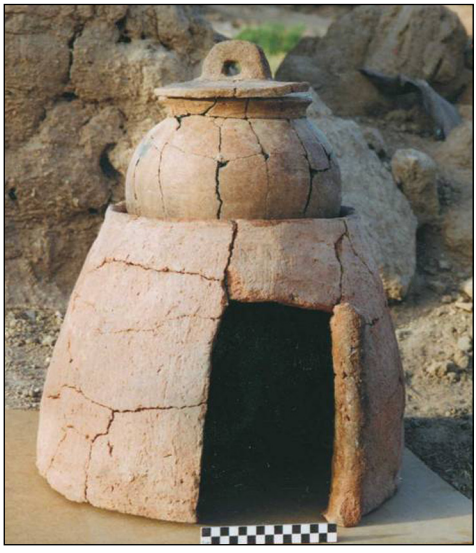

Fig. 10. Cooking stove from Tell Arbid (reconstructed) (Photo A. Smogorzewska)

Fig. 11. Props used for supporting cooking pots (Tell Arbid) (Photo A. Smogorzewska)

boiling, could have been cooked in some of the pots. In such cases, heat is applied to the bottom of a cooking vessel, so it should be suspended over a fire, either on a hearth stand or a cooking stove. Frying seems not to be attested in the Ninevite 5 kitchenware assemblage as there are no pans, that is, wide and shallow vessels that could have been used for roasting. Roasting (of meat or other food products) could have been done directly on a hearth. Flat (rectangular and circular) as well as horseshoe-shaped hearths are attested from the Ninevite 5 period.

FACTORS SHAPING VESSEL FORM

There is an association between the shape of a cooking pot and its thermal shock resistance and heating efficiency. Cooking pots are therefore expected to be of globular shape, without sharp angles, and round-based to reduce thermal stress (Rice 1987: 237). Most Ninevite 5 cooking pots comply with these criteria of a perfect form. It has also been suggested that thin walls are preferable over thick ones in cooking vessels. Thin walls increase thermal shock resistance, reduce thermal gradient between the surfaces and conduct heat better than thicker ones (Rice 1987: 227). However, ethnographic data show that cooking pots can also have flat bases and are often thick-walled (Hendrickson, McDonald 1983: 632–634).

Cooking pots from the Ninevite 5 period are not particularly thin-walled. Their wall thickness usually ranges around 1 cm, but specimens with walls of up to 1.5 cm also occasionally occur, whereas examples of thin walls (0.5–0.7 cm) are in fact particularly rare, despite their purported suitability to withstand thermal shock. The reason for this may lie in vessel-making technology. Ninevite 5 cooking pots were fired at low temperatures, and their walls had usually a porous structure with some inclusions in the paste, therefore the walls needed to be thicker so as to be able to withstand mechanical stress and reduce the risk of breaking while exposed to high temperatures (Le Miére, Picon 1999: 17).

TECHNOLOGY

Technological studies of Ninevite 5 kitchen ware are hampered by inaccurate descriptions of cooking pot technology in many archaeological reports. Nonetheless, the following characteristic of Ninevite 5 cooking pots is proposed based on the available data.

Cooking pots were handmade and the coiling method was probably most commonly employed in their manufacture. Technological marks, such as carelessly joined coils or horizontal cracks along the coils can be traced occasionally on the vessel surface [*Fig. 12*]. The cracks can result from over-drying of the clay before the two coils are joined, which weakens the joint.

Based on the available technological descriptions, it seems that organic temper added to the clay in various quantities (abundant and moderate chaff temper) is the most typical admixture in Ninevite 5 kitchen ware. Mineral temper (except for "grit" and some lime particles) seems

not to have been used in larger quantities in most Ninevite 5 cooking pots. The mineral inclusions did not need to be a deliberately added temper but could have been present in the clay source used for the production of the pots. Micaceous clay sources also seem to have been favored by some pottery workshops for cooking pot manufacture in this period. Abundant mica in the paste makes it likely that the pottery was made from a micaceous clay or tempered with crushed micaceous rock rather than being tempered with mica alone (Shepard 1976: 162).

Three main technological groups can be distinguished in the late Ninevite 5 kitchen ware from Tell Arbid (Sector D) (n=78), which vary in the raw material and temper used. Lids have been excluded from this analysis of technological groups and are treated separately below.

The most popular technological group is distinguished by chaff temper (n=51, which constitutes 65% of the kitchen ware assemblage in Sector D). Various clay sources could have been used for the production of these vessels. Apart from the chaff, black mineral grains and mica can also be observed. These may have been present naturally in the clay rather than intentionally added to the paste. Fine and medium lime particles are occasionally present in the fabric as well.

Another popular group of kitchen ware is distinguished by the presence of mica, which probably found its way into the paste from a micaceous clay (n=20, making up 26% of the assemblage). The clay with mica was also tempered with chaff, but to a lesser degree, compared with the first group. Fine and medium mineral inclusions (dark and white grains) can also be observed.

The least numerous technological group was distinguished by a mineral temper (well-sorted basalt and dark grains) and mica; it became popular in post-Ninevite 5 kitchen ware (EJIII). Cooking pots of this group accounted for barely 9% of late Ninevite 5 kitchen ware in the discussed assemblage (n=7).

At Tell Arbid, chaff was the most characteristic temper also for kitchen ware from the earlier phase of the Ninevite 5 period (with incised and excised pottery,

Fig. 12. Traces of coils on the surface of cooking pots (Late Ninevite 5 period, Tell Arbid) (Photo A. Smogorzewska)

EJI), with grit, lime and mica also occasionally visible in the paste.

Chaff and/or grit-tempered cooking pots were recorded at other sites with Ninevite 5 occupation. At Tell Leilan, Ninevite 5 cooking pots were made of clay tempered with chaff (medium and coarse straw), or a medium straw and grit temper (Schwartz 1985: 54, Fig. 3; 1988: 50–51). Cooking pots with mica and chaff inclusions are also known from Tell Leilan (Weiss 1990: Fig. 13). At Tell Raqa'i, cooking pots were mainly grit-tempered, while vegetal temper is only sporadically mentioned. Both vegetal and mineral temper is mentioned in the description of Ninevite 5 cooking pots from Tell Brak. Cooking pots from Tell Atij were made of clay tempered with mineral and/or vegetal inclusions, usually numerous, unsorted and coarse-grained (Boileau 2005: 44).

Lids were usually made of clay heavily tempered with chaff. Dark grains can be sometimes observed in the clay, having presumably been present naturally in the clay, rather than intentionally added. The large amount of organic temper significantly increased porosity, which in some lids from Tell Arbid reached approximately 50%.[1] The inner surface of the lids was usually more carefully smoothed as compared with the outer surface, which featured numerous voids from burnt-out chaff temper.

In studies devoted to the technological aspects of pots intended for cooking, the role of temper is stressed as an important factor providing thermal shock resistance (Skibo, Schiffer, Reid 1989: 133; Bronitsky, Hamer 1986). The choice of temper is assumed to have technological implications, but also to be influenced by cultural factors. To reduce thermal shock, clay used for cooking pot manufacture is likely to be tempered with materials characterized by a low thermal expansion coefficient (similar to, or smaller than that of clay) (Rice 1987: 229).

Organic temper, which is characteristic of much of the Ninevite 5 kitchen ware, was found to provide several advantages during manufacture and use of these vessels as cooking pots. Adding organic materials reduced shrinkage, and improved workability of excessively plastic clay (Rye 1981: 34; Skibo, Schiffer, Reid 1989: 140). Vegetal temper makes the fabric more porous after firing. Porosity is a factor in reducing thermal stress, since pores provide an elasticity in the body that allows for sudden expansion of the material (Rice 1987: 230). Laboratory tests have shown that cooking pots from Tell Arbid have an open porosity ranging from 22.2% to 33%.

Ninevite 5 cooking pots were fired at uniformly low temperatures. A dark grey core that is often visible in the break is the effect of a short firing time or of firing at low temperature [***Fig. 13***]. Ninevite 5 cooking pots from Tell Arbid submitted to laboratory analyses were found to have been fired at 600–700°C.

Low firing temperatures are common for cooking pots in different pottery traditions. Laboratory analyses have demonstrated that at Tell Arbid also

[1] Laboratory tests of the Ninevite 5 kitchen-ware assemblage from Tell Arbid were carried out by M. Daszkiewicz (ARCHEA). Physical ceramic properties, including open porosity, were defined by hydrostatic weighing, original firing temperatures were estimated by MGR (Matrix Group by Refiring) and chemical composition of the clay was determined by the WD-XRF method.

cooking pots from EJIII–IV, Khabur-Ware and Mitanni periods were fired at a temperature of 600–700°C. Low firing temperatures may have influenced the functionality of cooking vessels. It has been suggested that for vessels to achieve toughness and thermal shock resistance not only high temper concentrations, but also low firing temperature are required (Tite, Kilikoglou, Vekinis 2001: 321).

Selecting low temperatures for the manufacture of cooking pots may have also been connected with the choice of material used. As proved by raw material analyses, the discussed kitchen ware from Tell Arbid (just like a vast majority of other analyzed vessels from the site, belonging to different pottery traditions, from Ninevite 5 through the Hellenistic period) was made of calcareous clay, which is typical of North Mesopotamian pottery in general. Calcareous clay is not an ideal material for the production of cooking pots, due to its higher thermal expansion coefficient as compared to non-calcareous clay (Tite, Kilikoglou, Vekinis 2001: 320). Cooking pots made of such clay ought to be fired at low temperatures to prevent the decomposition of calcite, which takes place at around 870°C (Rice 1987: 98). An ethnoarchaeological study of traditional pottery from Portugal, where both non-calcareous and calcareous clays are used for cooking pot manufacture, showed that vessels of non-calcareous clay were occasionally fired at a temperature of up to 900°C, while pots of calcareous clay were always fired at a temperature below 750°C (Tite, Kilikoglou, Vekinis 2001: 320).

Fig. 13. Section of a cooking pot with a dark grey core (Late Ninevite 5 period, Tell Arbid) (Photo A. Smogorzewska)

SURFACE TREATMENT

Burnishing and texturing were the two types of surface treatment that have been attested on Ninevite 5 cooking pots. Burnishing is made by a hard and smooth tool, such as a pebble, piece of bone or horn, usually on leather-hard clay. It results in compaction of clay particles, producing a lustrous surface with distinct facets [***Fig. 14***].

This technique was not applied to all Ninevite 5 cooking pots. In the late Ninevite 5 kitchen ware assemblage from Sector D on Tell Arbid, roughly half of the kitchen ware vessels had a burnished surface. It could be either uniform all over or appearing as isolated facets distinguishable on the surface. Typically, the procedure was applied to the outer wall surface, but

examples of burnishing on both the inner and outer surface were also attested.

Rough surfaces can be obtained by various methods, e.g., brushing, striating, impressing, combing or applying a clay solution mixed with sand or another material onto the surface of a vessel. Ninevite 5 cooking pots were textured mainly by impressions, nail impressions being attested most often. Such a rough surface is evidenced on some cooking pots from Tell Arbid, Tell Brak (Matthews [ed.] 2003: Figs 5.66:2, 5.69:22), Tell Barri (Valentini 2008: Fig. 4:1) and Tell Leilan (Schwartz 1988: Figs 35:7, 8, 9; 51:1; Weiss 2003: Figs 3:2, 6:5).[2]

Although texturing of the cooking pots from Tell Arbid was made mainly by nail impressions, specimens with circular and triangular impressions have also been registered [*Fig. 15*]. Some examples with texturing in the form of parallel scoring over the lower parts of pots were also recorded. Such a surface was made by brushing or striating; a denticulated or serrated hard-edged tool, such as a shell, chipped stone or pottery scraper, could have been used during this process. Pots with textured surface accounted for 20% of the late Ninevite 5 cooking pot assemblage from Sector D on Tell Arbid.

In the Ninevite 5 kitchen-ware tradition, impressions can be found usually on body sherds. Analogical impressions preserved on complete pots show that they covered only a part of the vessel, namely, its base and bottom parts. This is well exemplified by a cooking pot from Sector W on Tell Arbid with impressions found on the base and the bottom part, while the remaining portion of its wall was wet-smoothed [*Figs 6:9; 16*, right]. Similarly, another cooking pot from Tell Arbid (Sector D) has texturing made by brushing on the outer surface of its bottom part [see *Fig. 16*, left]. However, cooking pots, known from Tell Brak, Tell Leilan and Tell Barri among others, have a surface roughened by impressions in the

Fig. 14. Cooking pot with burnished surface (Late Ninevite 5 period, Tell Arbid) (Photo A. Smogorzewska)

[2] Nail (and other) impressions are also attested in other pottery traditions, for example in the Neolithic pottery of the Near East, see, e.g., Kosak Shamali (Nishiaki, Matsutani [eds] 2001: Fig. 7.10, Pl. 7.3) and Rouj Basin (Iwasaki, Tsuneki 2003: Figs 55–56).

upper part of their bodies (Schwartz 1988: Fig. 51:1; Mayo, Weiss 2003: Fig. 3:2; Valentini 2008: Fig. 4:1). The fragmentary preservation of these vessels leaves no way of knowing, if they had been textured just in the upper parts or all over their surface [*Fig. 6:1–3*].

Both types of surface treatment attested in Ninevite 5 cooking pots were relevant to vessel function. Texturing gave the walls extra friction making vessels less slippery and easier to grip. Surface treatment may have also been a factor modifying thermal properties. It has been suggested that texturing the outer surface of a vessel improves the rate of heating by increasing the wall surface area, which allows for speedier cooking of the contents compared to smooth-surfaced vessels (Rice 1987: 138, 232). Experimental tests on pottery with corrugated surface demonstrated, however, that exterior

Fig. 15. Kitchen ware potsherds with rough surfaces (Late Ninevite 5 period, Tell Arbid) (Photo A. Smogorzewska)

texturing did not improve the heating or cooling effectiveness of the vessel (Young, Stone 1990: 202). Texturing solely the bottom parts of cooking pots may have therefore been related to their thermal shock resistance (as these vessel parts were most directly exposed to high temperatures) and afforded a better grip, preventing slipping of vessels during handling. Still, texturing of the bottom parts has been attested also on vessels not intended for cooking, such as the large bowls from EJIII Tell Arbid, in which case the practice could not be related to the thermal properties of the bowls, but solely to practicalities of its handling (Smogorzewska 2010b).

Burnishing sealed the walls of a cooking pot, lowering its permeability. An association between permeability and heating efficiency was demonstrated in tests (Schiffer 1990). In vessels intended for cooking, any leak of the contents decreases heating efficiency and prolongs the cooking process (the larger the moisture loss, the longer it takes to heat up the contents, even though there is less to heat; Schiffer 1990: 379). Problems with heating efficiency may be caused by a porous fabric which increases the vessel's permeability. This can be countered by proper surface treatment, that is, application of resins or slips. Burnishing also increases heating efficiency, without decreasing the usefulness of porosity in reducing thermal stress (Schiffer 1990: 378).

Correlations have been observed between morphological types, fabrics and surface treatment of examples of kitchen ware from the assemblage from Sector D on Tell Arbid (EJII–IIIa). Chaff temper was found to be a distinctive technological trait of the hole-mouth pots. Only 35% of pots had mica and mineral inclusions. Moreover, burnishing was not widespread in the case of hole-mouth pots. By contrast, all jars had burnished surfaces and they belonged to a technological group that featured mica and mineral inclusions. Abundant or moderate chaff temper, which is characteristic of pots, was not encountered among jars.

Fig. 16. Cooking pots with rough surface by brushing (left) and impressions (Ninevite 5 period, Tell Arbid) (Photo A. Reiche)

CHRONOLOGICAL OBSERVATIONS

Cooking pot forms and technological features largely persisted through the subsequent phases of Ninevite 5 pottery development. Kitchen ware was a rather conservative element of the ceramic repertoire, less prone to change than other pottery types. The form of the cooking pots underwent little modification throughout the Ninevite 5 period, even though the rest of the ceramic assemblage experienced major changes (painted, incised and excised and late excised phases can be recognized).

Hole-mouth cooking pots with crescent lugs were recorded in all phases of Ninevite 5 pottery (EJ0–II). Also disk-shaped lids with handles were distinctive for EJI–II periods and may have occurred already in the EJ0 period. Hole-mouth pots with crescent lugs were attested already in the Transitional phase (Tell Karrana 3, Rova 2003: 15). Also at Tell Leilan they appeared at the very beginning of the Ninevite 5 period (EJ0) (e.g., Tell Leilan, Period IV/III, stratum 40; Mayo, Weiss 2003: Fig. 3:2).

Some trends in cooking pot shapes can be observed over time. Hole-mouth cooking pots with vertical walls (type P2) and impressions overall, as well as protruding, crescent lugs seem to have been more common in the earlier phases of Ninevite 5 pottery (EJ0–I), which can be exemplified by pots from Tell Barri Phase IV–III (Valentini 2008: Fig. 4:1), Tell Leilan IV and IIIa (Mayo, Weiss 2003: Fig. 3:2; Schwartz 1988: Fig. 51:1), Tell Brak HL2, level 1 and HF3, level 2 (Matthews 2003: Figs 5.66:2, 5.69:22).

Certain changes in the morphology and technology of kitchen ware vessels manifested themselves in the late Ninevite 5 period (EJII–EJIIIa). In this late stage of Ninevite 5 pottery, hole-mouth cooking pots were accompanied at some sites by jars with short, curved necks, which became more common in the ceramic traditions of Northern Mesopotamia in the periods to come (EJIII–IV). Jars with short, curved neck (type J1) are known from late Ninevite 5 contexts from Tell Arbid (EJII–IIIa). At Tell Raqa'i they appeared already in level 4 (Schwartz, Curvers 1992: Figs 22:7–9). Chronological analysis of kitchen ware from late Ninevite 5 period Sector D (EJII–IIIa) revealed that jars with short, curved neck constituted a ceramic link between late Ninevite 5 and EJIII kitchen ware. They appeared at the end of the Ninevite 5 period and reached greater popularity in post-Ninevite 5 periods. Although hole-mouth pots were also produced in the EJIII period, by then they were usually equipped with horizontal lugs. The crescent lug disappeared in the post-Ninevite 5 period.

Technological changes can also be observed between Ninevite 5 and EJIII periods in the kitchen ware assemblages of Northern Mesopotamia. Vessels with mineral temper began to appear next to the chaff-temper pots in the late Ninevite 5 assemblage from Sector D on Tell Arbid. Mineral temper would become more common in post-Ninevite 5 cooking pots, e.g., lime and basalt encountered in EJIII–IV cooking pots of the Khabur region, at such sites as Tell Rad Shaqrah, Tell Beydar, Tell Atij, Tell Gudeda and Tell Brak (Daszkiewicz, Schneider 1996; Broekmans, Adriaens, Pantos 2004; Boileau 2005; Fielden 1977, respectively).

MODE OF PRODUCTION

Attempts to define modes of production need to address questions of pottery technology, organization of production, role of producers, and the relationship between producers and consumers.

Taking into consideration technological and morphological attributes of Ninevite 5 kitchen ware, two modes of production can be considered: a domestic one and a household industry (Rice 1987: 184). The domestic mode can be defined as sporadic, primarily for individual use and characterized by a simple technology. Household industry involves simple technology as well, but it is of economic importance to the manufacturers. It has been referred to as "potting for profit" (Peacock 1982: 8), meaning that the pots are not only "consumed" by the inhabitants of the site but also manufactured for exchange within the immediate surroundings. Pottery is often seen as a major source of income for a household budget. Pots could have been carried to market places or distributed by the potter (or members of the potter's family) who travelled to consumers, acting as itinerant salesmen. In villages, pottery production for own use or for irregular household exchange may be sporadic or seasonal, depending on agricultural activities.

Who made the cooking pots? Pottery production on a domestic or household scale has usually been considered as being in the hands of women. Pottery manufacture could have been practiced by particular families or clans that accumulated skill and experience. Some sites in the region may have been especially involved in cooking pot manufacture. The tradition of Ninevite 5 cooking pots was long-lasting (approximately from 2900 till 2550 BC) and must have been handed down from one generation to the next. Despite some differences, it is possible to observe a techno-morphological homogeneity of Ninevite 5 kitchen ware (most prominent in the cooking pots). Cooking pots represented similar general types from one site to another in the general area where the Ninevite 5 pottery tradition has been recognized. Differences in fabrics could have resulted from using different clay sources and various materials as tempers, depending on what was available to, or favored by, individual cooking pot makers.

The technical attributes of Ninevite 5 cooking pot production indicate that they were associated with simple technology and little investment in capital equipment, such as pottery kilns and wheels. Pots were handmade and fired at low temperatures (they could even have been fired in bonfires). However, simple technology and organization of pottery production does not preclude part-time skilled potters. Ninevite 5 cooking pot manufacture may have involved women "specialists" possessing sufficient know-how for the manufacture of functional pots. Low firing temperatures need not be associated with unskilled pottery production, but rather with the specific requirements of vessels made of calcareous clay and intended for cooking. Cooking pot manufacture can be defined as specialized production within a domestic or household context. The quality of cooking pots and their usefulness in the kitchen can be measured by their thermal shock resistance and tendency to leak during cooking. These attributes are influenced mainly by the

raw material and temper used in cooking pot manufacture and also depend on vessel surface treatment. The potter's decision as to the choice of raw material and temper was the most crucial factor in cooking pot production.

Dr. Anna Smogorzewska
Institute of Archaeology, University of Warsaw
00-497 Warsaw, Poland, ul. Krakowskie Przedmieście 26/28
asmog@wp.pl

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