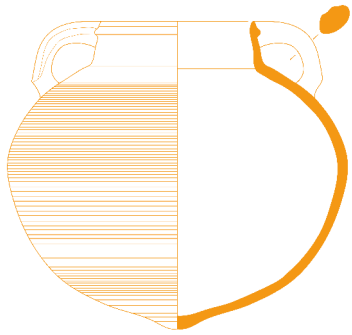
Nabataean and Roman coarse ware cooking pottery from Aila (Aqaba, Jordan)



Abstract: The Roman Aqaba Project seeks to reconstruct diachronically the economic history of the ancient port of Aila on the Red Sea (now modern Aqaba in southern Jordan). Excavations of Aila between 1994 and 2003 yielded an enormous quantity of stratified ceramic evidence. This paper focuses on coarse ware cooking vessels recovered from Aila dating to the 1st to early 5th centuries. Although the potters of Aila were influenced by the ceramic traditions of the Nabataean capital at Petra, they also developed an independent ceramic tradition. Further, the Roman annexation of Nabataea in 106 CE, including Aila, seems to have had little impact on the local ceramic industry, which continued with little change until the mid-3rd century, which seems to mark an important transition characterized by the disappearance of many long established types and the appearance of new types, including cooking vessels. Although most of these were produced locally, a significant minority was imported to Aila, mostly from the Petra region about 100 km away. This paper presents a typology of these cooking vessels and offers some explanation for the differing quantities of various types of imported cooking vessels over these centuries, with implications for the regional economy in this period.

Keywords: Aqaba, Aila, Nabataean, Roman, and Byzantine ceramic cooking vessels, trade

S. Thomas Parker

North Carolina State University

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The Roman Aqaba Project (henceforth RAP) aims to reconstruct diachronically the economy of the Roman port of Aila (modern Aqaba) on the Red Sea in southern Jordan [*Fig. 1*]. The goal is to contribute new evidence about the nature of the imperial Roman economy. At the first meeting of this round table in Berlin in 2010, I presented some preliminary results about locally produced coarse ware pottery from Aila (Parker 2014a). Continued analyses in the ensuing years have led to the present more definitive conclusions based on quantified evidence for the ceramics industry at this major international port, including a complete chronological typology from the late 1st century BCE to the early 5th century CE.

This paper will focus especially on Aila's local cooking vessels but will consider the implications of local ceramic coarse ware production more broadly. It will suggest that, although the potters of Aila were clearly influenced by the ceramic traditions of the Nabataean capital at Petra, they also developed an independent ceramic tradition. Further, the Roman annexation of Nabataea in 106 CE, including the port of Aila, seems to have had little impact on the local ceramic industry, which continued with little change until the mid-3rd century. This period seems to mark an important transition in terms of the disappearance of many long established types and the appearance of several new types, including cooking vessels. Since the analysis is advanced but still ongoing, these interpretations must be regarded as somewhat preliminary. Nevertheless, the current analysis is sufficient to support some specific conclusions and raise some broader questions, particularly for the 1st through the early 5th centuries.

Some 641,146 ceramic sherds, weighing an estimated 10,856.88 kilograms, were recovered over the course of the project's fieldwork between 1994 and 2003. The vast majority of this corpus (98.5%) derives from the excavation of Aqaba but it also includes 8130 sherds from the regional survey and a small sample (1457 sherds) from the soundings of Qasr al-Kithara, a small road fort north of Aila on the *Via Nova Traiana*. Most of these sherds were coarse wares, i.e., excluding imported fine wares, imported amphorae, and lamps. All this evidence was entered into a database by individual pottery buckets. Most of the diagnostic ceramics (i.e., all rims, bases,

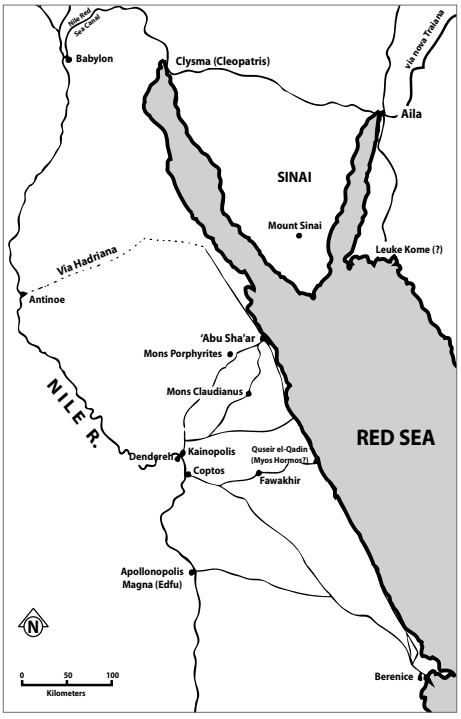

Fig. 1. Location of Aila (modern Aqaba) in the northern Red Sea

handles, spouts, and most body sherds judged to be imports) from the registered pottery from the 1st to early 5th centuries (plus a small selection of later material) was entered into a separate "sherd table" on a sherd by sherd basis, with nearly 40,000 individual sherds (*n*=39,692, or 54.7% of all saved sherds). Wishing to understand the development of the pottery over time, we focused first on pottery from the earlier periods, i.e., the late 1st century BCE to late 4th/early 5th centuries. Thus, this paper will focus on material from the early Roman/Nabataean (i.e., 1st centuries BCE and CE), late Roman (i.e., 2nd to early 4th centuries), and beginning of the early Byzantine (early 4th to early 5th centuries) periods. Detailed analysis of the ceramics from this period will appear in volume 2 of the project's final report. Excavated pottery from the later periods will be presented in a subsequent volume. A sample of pottery from the project's regional survey of southern Wadi Araba appeared in the first volume of the project's final report (Parker 2014b).

COOKING VESSELS AT NABATAEAN, ROMAN AND EARLY BYZANTINE AILA

A small sample of project pottery, including cooking vessels, was analyzed via bulk chemical analyses by energy dispersive X-ray fluorescence spectrometry (ED-XRF), microscopic and structural analysis by scanning electron microscopy with energy dispersive spectrometry (SEM-EDS) and petrographic microscopy. Most of these sherds displayed a similar chemical composition, henceforth identified as Aila/Aqaba Ware. Microstructural analysis revealed a calcareous clay matrix with a distinctively high CaO value compared to samples from elsewhere in southern Jordan and Israel. The main inclusions were generally of quartz, potassium and sodium feldspars, mica, and iron oxides. The prevalence of mica makes Aila/Aqaba Ware easy to identify even by macroscopic inspection. In general, the local clay seems to have been tempered by rock or mineral inclusions, normally of sand in terms of particle size. There is occasional evidence of organic temper such as straw. Such visual inspection by the authors (either macroscopic or at a magnification of 8x) suggests that most of the pottery from 1st–4th century contexts at Aila derives from the site itself. This conclusion is further underscored by the relative frequency of sherds identified as kiln wasters and ceramic slag from the site, both interpreted as evidence of local ceramic production. Direct evidence of local ceramic production was revealed by the excavation of two kilns carried out by a University of Chicago team (Melkawi, 'Amr, and Whitcomb 1994). Although these kilns were broadly dated to the 7th century, the wide range of forms they produced (including cooking vessels and amphorae) are now known to have been produced as early as the 5th century. Significantly, large numbers of kiln wasters and ceramic slag were recovered from all periods, suggesting more or less continuous local ceramic production from the beginning of Aila's history. But this analysis also shows that a significant

minority of the coarse ware pottery was imported to Aila, especially cooking wares from the Petra region.

All the cooking vessels were thrown on a wheel. Most vessels were slipped before firing. The slips were made of finely levigated fractions of local clays. The thinness of the slips and lack of marks left by a brush or other applicator suggest that the slips were mostly applied by dipping in a liquid clay slurry. Otherwise the only common kind of decoration among cooking vessels was ribbing, most often applied to the shoulder and/or side walls but occasionally to the base; other forms included burnishing, incising, and band combing.

Nearly all the local cooking vessels were produced in one of only two fabrics or wares: Aila/Aqaba Ware 1a was by far the most common fabric. It is red (10R 5/8 or 2.5 YR 6/6) or light red (10R 6/6) in color and usually covered by a light slip (10 YR 8/2 or 8/3, very pale brown or 7.5 YR 7/4 or 8/3 pink).[1] A minority of local cooking vessels was made of Aila/Aqaba Ware 3, the least common and most coarse of the local wares. The fabric is invariably brick red (10R 5/8 red) but sometimes with a somewhat darker slip (2.5YR 4/1 dark reddish gray). Nearly all of the vessels produced in Aila/Aqaba Ware 3 were cooking vessels, including closed cooking pots, cooking casseroles and their lids, and cooking bowls.

COOKING POTS

Beginning with the closed cooking pots, several points are noteworthy [*Table 1*].

Table 1. Closed cooking pots from Aila: quantification by type

	TOTAL ID CPs		WARE			LOCAL		IMPORTED	
Type	n	%	1a	1b	3	Total	%	Total	%
1	1301	60.0%	654	118	80	852	65.5%	449	34.5%
2	24	1.1%	21	0	3	24	100.0%	0	0.0%
3	129	6.0%	69	25	7	101	78.3%	28	21.7%
4	19	0.9%	10	2	7	19	100.0%	0	0.0%
5	13	0.6%	8	4	1	13	100.0%	0	0.0%
6	5	0.2%	2	0	1	3	60.0%	2	40.0%
7	49	2.3%	6	0	43	49	100.0%	0	0.0%
8	60	2.8%	37	6	2	45	75.0%	15	25.0%
9	180	8.3%	150	13	10	173	96.1%	7	3.9%
10	208	9.6%	185	7	7	199	95.7%	9	4.3%
11	111	5.1%	61	2	4	67	60.4%	44	39.6%
12	69	3.2%	65	2	1	68	98.6%	1	1.4%
ID CPs	**2168**	**100.0%**	**1268**	**179**	**166**	**1613**	**74.4%**	**555**	**25.6%**
Other CPs	1219		714	73	105	892	73.2%	327	26.8%
Total CPs	3387		1982	252	271	2505	74.0%	882	26.0%

1 All colors referenced here are drawn from the *Munsell Soil Colors Charts*. These rarely, if ever, correspond exactly to the colors of the sherds but merely represent useful approximations.

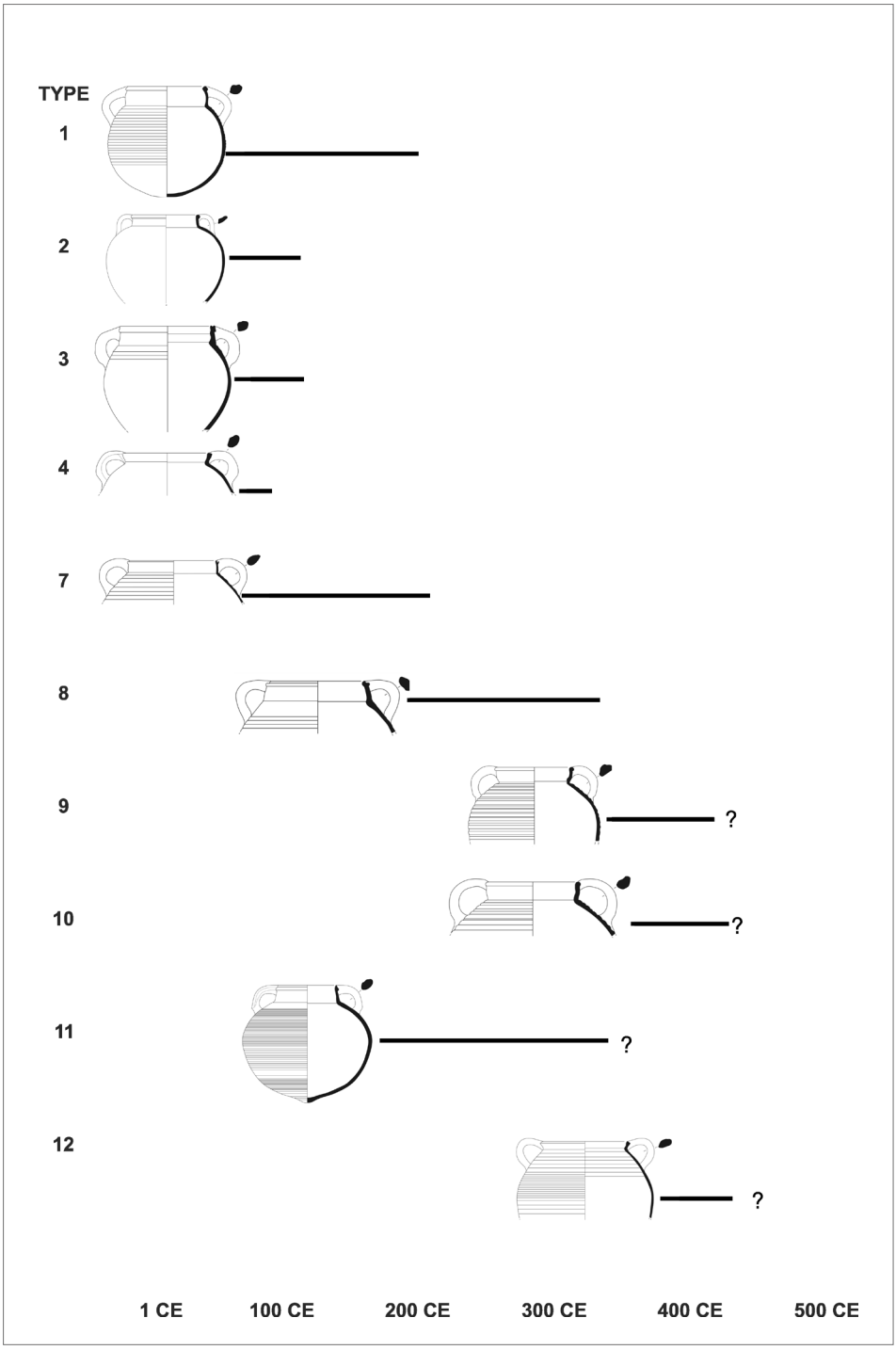

Fig. 2. Diachronic development of closed cooking pots at Aila

Most but not all of these vessels (*n*=3387) are paralleled at Petra and elsewhere in the region and were both imported and locally produced [*Fig. 2*]. First, the closed cooking pot assemblage is completely dominated by globular cooking pots with triangular rims (RAP Type 1) [*Fig. 3:1–2*], which comprise 60% of the

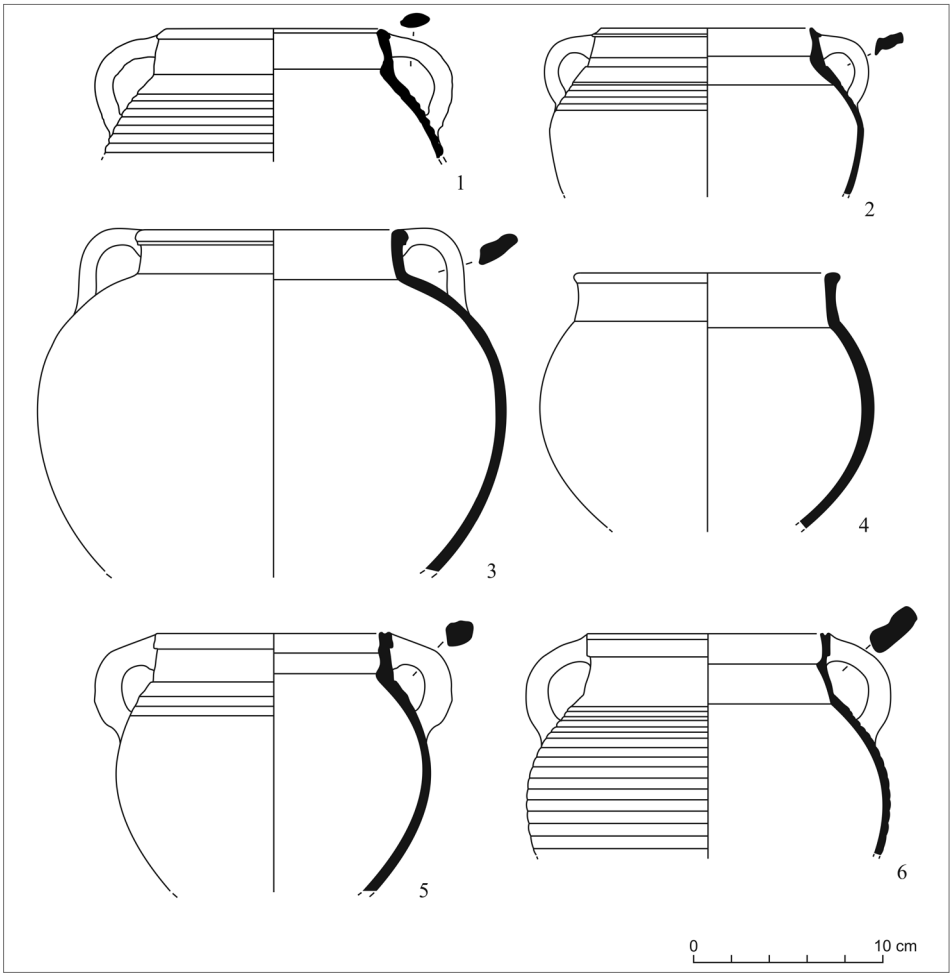

Fig. 3. Closed cooking pots: Types 1, 2, and 3

No.	Vessel	Type	Combine	Reg. No.	Ware	Paste	Exterior	Interior
1	Cooking pot	1	M.6:22.65	53644	1a	7.5 R 6/4	2.5 YR 8/4	2.5 YR 8/4
2	Cooking pot	1	B.1:48.52	10327	IMPORT	5 YR 6/6	10 YR 7/2	10 YR 8/3
3	Cooking pot	2	M.6:43.95	100912	1a	5 YR 6/6	10 YR 8/2	5 YR 6/6
4	Cooking pot	2	M.8:48.80	88911	1a	5 YR 6/6	2.5 Y 8/1	2.5 Y 8/1
5	Cooking pot	3	M.1:14.31	7643	1a	7.5 YR 6/6	10 YR 6/6	10 YR 6/6
6	Cooking pot	3	M.5:60.173	58565	IMPORT	2.5 YR 7/8	2.5 YR 8/3	2.5 YR 8/3

closed cooking pots which could be assigned to a specific type. Although most Type 1 cooking pots are local, more than a third was imported, mostly from Petra. Yvonne Gerber has dated this vessel there to the late 1st and early 2nd centuries (Gerber 1997: Fig. 7) and it is well attested at many other sites, such as Humayma (Oleson et al. 2008: 336, Fig. 22:9, 10, 11). In support of Gerber's dating is its appearance at Aila in the earliest stratified contexts, which indeed date to the late 1st century. However, the *terminus* of this type, at least in terms of local production at Aila, may date somewhat later, as it continues to appear in what seem to be much more than residual numbers through the late 2nd century and perhaps even into the early 3rd century. And a closed cooking pot with a similar triangular rim does appear at ez-Zantur in later contexts (Fellmann Brogli 1996: Figs 736–741).

Two other cooking pots also appear in the earliest stratified contexts at Aila in the late 1st century but in much smaller numbers and seemingly with a much shorter period of production [*Fig. 3:3–6*]. The relatively rare Type 2 (n=24) with a rounded rim is entirely of local origin. In contrast, over 20% of the more abundant Type 3 (n=129) cooking pots are imports. This type is characterized by its rectangular but grooved rim and is well attested at Petra (Murray and Ellis 1940: Pls 30:104, 32:129) and elsewhere (Crowfoot 1936: Pl. 4:9F; Oleson et al. 2008: 336, Fig. 22:5). Both Types 2 and 3 apparently disappear in the early 2nd century.

Before completing this review of the early Roman/Nabataean cooking pots, an observation about the *terminus* of another common early cooking pot from Petra can be offered. This type, with a flattened, squared off rim, is well attested at Petra in the 1st century BCE (Gerber 1997: 408, Fig. 1). Yet Aila yielded only three examples of this type among more than 2100 cooking pots classified by type. Two are in local ware and one is an import. Given that Aila was founded about 30 BCE, does this suggest that this type of cooking pot was no longer in production by this date? Admittedly, given the fact that the excavations did not reach stratified levels earlier than the late 1st century BCE, all three examples must be residual and it could be argued that more might appear in earlier contexts. But given the enormous quantity of residual late 1st century BCE and early 1st century CE pottery (such as early Nabataean painted fine ware), one would expect to see more residual evidence of these early cooking pots (whether imports from Petra or local imitations). In short, the almost complete absence of this common Nabataean cooking pot from Aila may suggest that its production ended shortly before approximately 30 BCE.

Closed cooking pot Types 4, 5 and 6 are much too rare (i.e., less than 20 examples of each type) to merit discussion in this paper but will be treated in the final report.

Moving to the later closed cooking pots, Type 7 is an entirely local if relatively rare (n=49) cooking vessel distinctive in both fabric and form [*Fig. 4:7–8*]. It is of coarser brick red dark ware (Aila/Aqaba Ware 3) with a reddish brown slip. The profile displays thin side walls, ribbed shoulder, a straight or slightly offset neck and a shallow grooved rim; flattened vertical loop handles extend from shoulder to rim. Although the form seems to appear

near the end of the 1st century, its main chronological range is the 2nd and 3rd centuries. All examples recovered at Aila are of local ware, which might explain an apparent lack of close published parallels.

Roughly contemporary with Type 7 is Type 11 (*n*=111) [*Fig. 4:9–10*]. It displays a slightly grooved rim, offset neck, rounded but slightly pointed base, ribbed shoulder and body, twin vertical loop handles, often double-ridged in section and sometimes pinched at the handle–shoulder join. This type is unique among all the cooking pots at Aila because nearly 40% of all identified examples are imports, the highest percentage of any type of cooking vessel from these centuries at Aila. Thus, it is hardly surprising to find close parallels at Petra (Fellmann Brogli 1996: Figs 730–732, 735), Humayma (Oleson et al. 2008: 336, Fig. 22:16; Oleson and Schick 2013: Fig. 573B: 89.36.8), Da'jāniya (Parker 2006: 325, Fig. 16.66), and Khirbet et-Tannur (Schmid, Alexander, and McKenzie 2013: Fig. 18.27.111, 124). The Type 11 cooking pot appears in

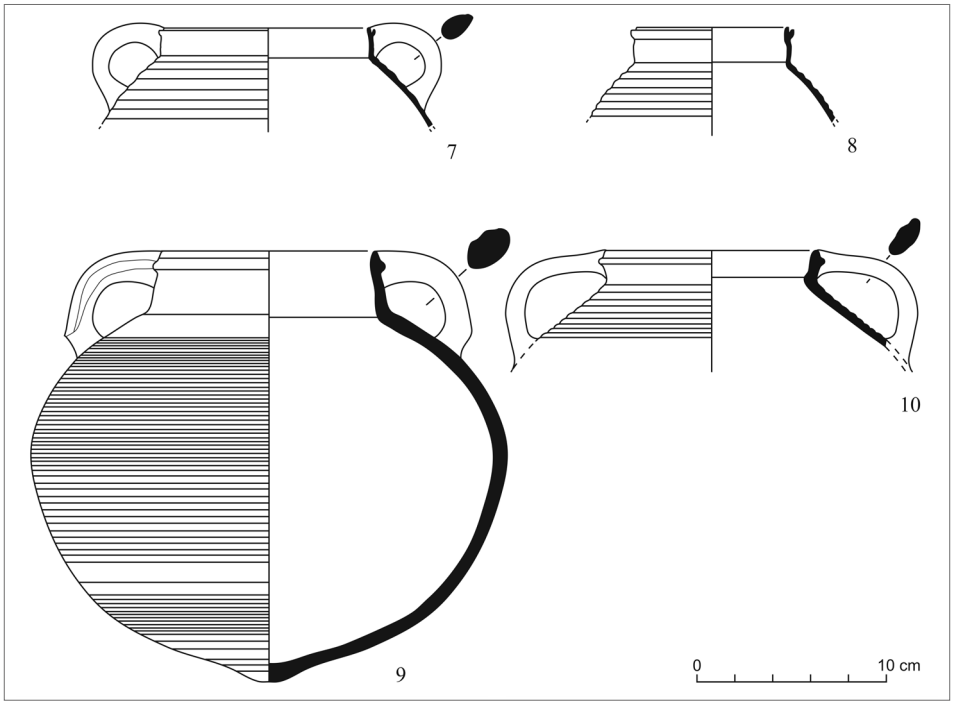

Fig. 4. Closed cooking pots: Types 7 and 11

No.	Vessel	Type	Combine	Reg. No.	Ware	Paste	Exterior	Interior
7	Cooking pot	7	M.3:55.81	53494	3	5 YR 5/6	5 YR 4/1	5 YR 5/6
8	Cooking pot	7	K.2:74.183	80324	3	10 YR 5/6	10 YR 4/6	10 YR 5/6
9	Cooking pot	11	M.1:14.31	7637	3	2.5 YR 6/6	2.5 YR 4/2	2.5 YR 6/6
10	Cooking pot	11	O.2:0.90	99146	3	10 YR 4/8	2.5 YR 5/4	10 R 5/4

the early 2nd century and continues into the early 4th century. It seems likely on morphological grounds that this vessel develops from Type 1 or triangular rim cooking pot.

Another fairly common and roughly contemporary cooking pot is Type 8 (*n*=60) [*Fig. 5:11–12*], with a deeply grooved rim, high straight or offset neck, lightly ribbed shoulder and often with pinched vertical loop handles. This form appears at Aila in the early 2nd century and continues through the 3rd and probably into the early 4th century. The basic morphology of this vessel is well known throughout Jordan, including Petra (Fellmann Brogli 1996: Fig. 741), el-Lejjūn (Parker 1987: Figs 94:34–35, 96:46–49, 101:96–98; 2006: Figs 16.1:1–3, 16.2:4–6, 16.3:7–8, 16.17:79, 16.31:148) and Khirbet et-Tannur (Schmid, Alexander, and McKenzie 2013: Figs 18.26:106–107, 18.27:109). Thus, it is of little surprise that a significant minority (25%) of these cooking pots at Aila are also imports.

Two more common and later types of cooking pots are represented by Types 9 and 10 [*Figs 5:13–14; 6:15–16*]. The former (*n*=180) is typified by its thickened, hooked rim and offset neck. The latter (*n*=208) displays a much more rounded rim. Both share offset necks and double-ridged vertical loop handles. Both appear more or less simultaneously in the early 4th century and continue into the 5th century. The present state of analysis does not yet allow us to fix the end of their production. Again the basic form of both Type 9 and Type 10 is well attested in 4th

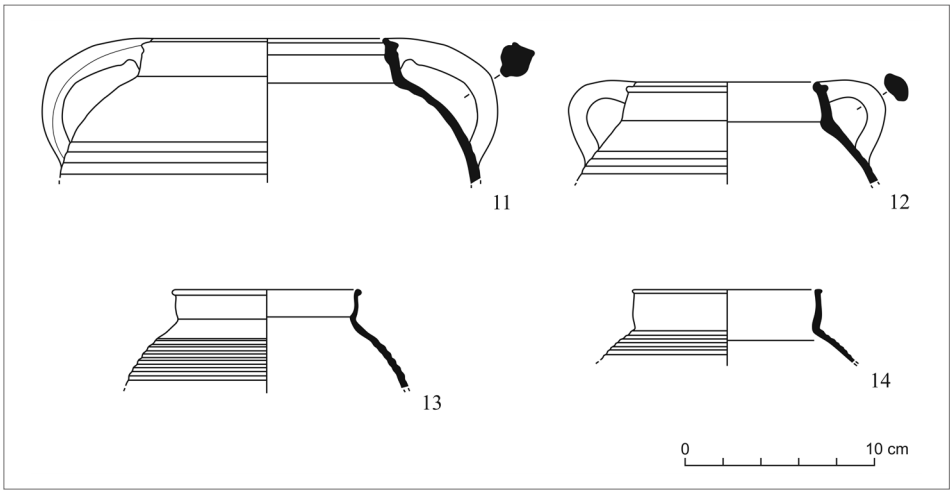

Fig. 5. Closed cooking pots: Types 8 and 9

No.	Vessel	Type	Combine	Reg. No.	Ware	Paste	Exterior	Interior
11	Cooking pot	8	A.8:37.92	19756	IMPORT	2.5 YR 6/6	10 YR 8/2	2.5 YR 6/6
12	Cooking pot	8	B.1:0.142	131340	1a	5 YR 6/6	10 YR 7/3	7.5 YR 6/4
13	Cooking pot	9	J.20:95.283	96454	3	5 YR 5/3	5 YR 4/1	5 YR 5/2
14	Cooking pot	9	J.1:18.36	10879	3	5 YR 5/6	5 YR 5/6	5 YR 5/6

century contexts elsewhere (Type 9, 'Amr et al. 1998: 509, Pl. 4:13; Parker 2006: Figs 16.3:9, 16.17:78, 16.18:80, 16.20:94, 16.33:158, 16.42:208, 211, 16.49:243; Type 10, Murray and Ellis 1940: Pl. 10:31; Fellmann Brogli 1996: Figs 742, 746; Parker 2006: Figs 16.4:11–12, 16.18:81, 16.20:93, 16.31:147, 16.35:177, 16.41:207, 16.42:212, 16.46:234, although these sometimes have pinched handles). At Aila, imports represent only about 4.0% of the total for both types.

The last closed cooking pot among these early Byzantine vessels is Type 12 [*Fig. 6:17*], characterized by a low neck and everted rim, which may be rounded or rectangular in section. The everted rim explains at least in part the slightly larger rim diameter (average 12.9 cm) compared to other closed cooking pots. The fabric is almost entirely local. Most but not all display ribbing on the shoulder. This is the latest of the classified closed cooking

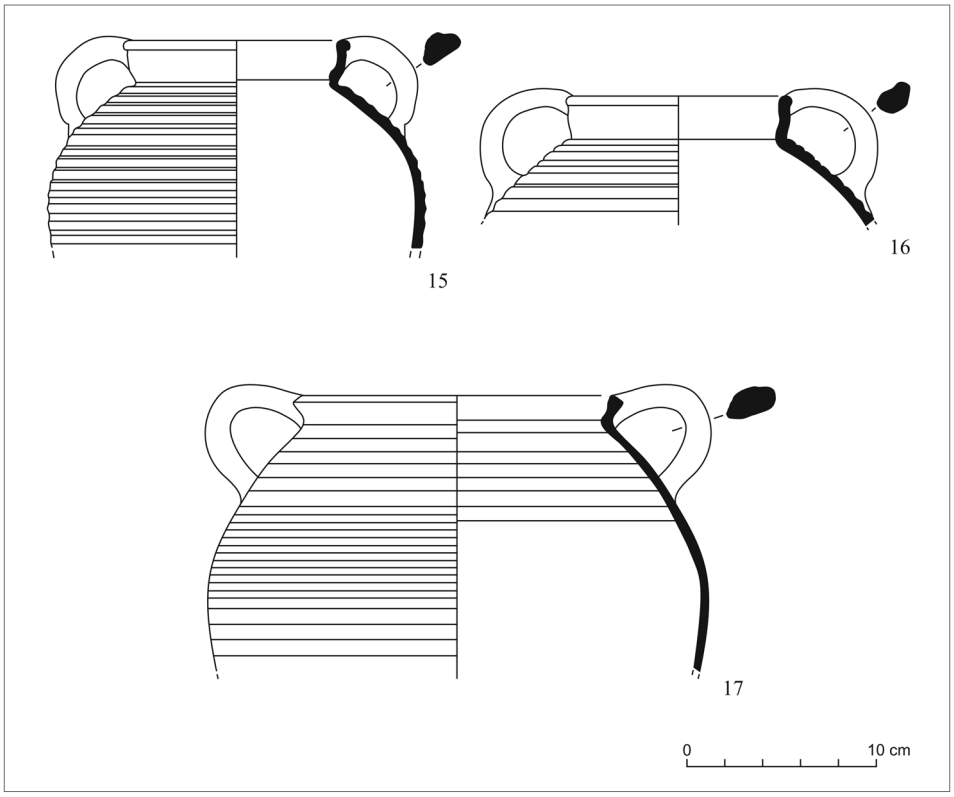

Fig. 6. Closed cooking pots: Types 10 and 12

No.	Vessel	Type	Combine	Reg. No.	Ware	Paste	Exterior	Interior
15	Cooking pot	10	J.1:11.22	5128	1a	10 R 6/4	10 YR 7/2	10 R 7/2
16	Cooking pot	10	J.1:24.75	48758	1a	2.5 Y 5/1	5 Y 5/2	2.5 Y 6/2
17	Cooking pot	12	J.2:27.76	19824	1a	5 YR 5/4	10 YR 7/2	5 YR 6/4

pots. The relatively small number (*n*=69) of vessels identified thus far derives from mid-4th century or later contexts. The type clearly continues into the early 5th century but its *terminus* is yet to be determined. Parallels may be cited from Petra (Fellmann Brogli 1996: Fig. 744) and Da'jāniya (Parker 2006: Fig. 16.62:297).

The remaining cooking vessels at Aila may be reduced to simpler typologies. There are two primary open forms: cooking casseroles and cooking bowls. Such evidence as charring patterns suggests that both types of vessels served a similar purpose. The casseroles are abundant in the earliest stratified contexts in the 1st century CE. Cooking bowls appear at the very end of the 1st century and remain popular through the 2nd and 3rd centuries, eclipsing the casseroles to a significant degree on a quantitative basis in these two centuries. However, these cooking bowls disappear by the late 3rd or early 4th century, which witnessed a corresponding revival of casseroles. In fact, the casseroles seem to exceed the closed cooking pots in popularity in the 4th century. One obviously wonders what, if anything, these changes might mean in terms of cultural implications.

CASSEROLES

Casseroles may be divided into three main groups, altogether accounting for over 92% of all casseroles which could be assigned to a specific type (*n*=1254) based on morphology [*Table 2*; *Fig. 7*].[2] All three are overwhelmingly local in origin, with only about 3% imported, mostly from Petra.

The Type 1 casserole is a relatively shallow form with a rim diameter of about 19 cm [*Fig. 8:18–21*]. The profile displays an incurved, beveled rim to support a lid, 2–3 incised grooves just below the rim exterior and a slightly pointed base. The side wall is carinated. A significant minority of this common form (172 of 411 examples, or 41.9%) can be subdivided into three subtypes based on the kind of handle. Type 1a [*Fig. 8:18–19*], by far the most common subtype (85.5%), displays twin horizontal bar handles with finger indentations. It is paralleled by examples from Petra (Murray and Ellis 1940: Pls 8:53, 9:3). The much less common Type 1b (12.0%) [*Fig. 8:20*] displays a horseshoe handle, a more rounded base, is a bit smaller in rim diameter and shallower than Type 1a. Type 1b is also paralleled at Petra (Murray and Ellis 1940: Fig. 8:25). The very rare Type 1c (4.7%) [*Fig. 8:21*] is an even shallower, pan-like vessel with a rounded rim and flat base. But it also displays the typical grooves under the rim exterior, sharply carinated side wall and horizontal bar handles with finger indentations. It is closely paralleled by an example from Khirbet et-Tannur (Schmid, Alexander, and McKenzie 2013: Fig. 18.17.72). All three subtypes date to the 1st and 2nd centuries, but eventually seem to be replaced in the 2nd century by the cooking bowls.

The casserole returns in huge quantities at the turn of the 4th century. The Type 5 casserole (*n*=421) is the most popular early Byzantine cooking vessel [*Fig. 9:22–23*]. The bulk of these are of local ware, although

2 The remaining minor types are excluded from this paper but will be included in the final report. None of these minor types accounts for more than 3% of the classified casseroles.

Table 2. Cooking casseroles from Aila: quantification by type

Type	Date (CE)	Total		Local		Imported	
		n	ID %	*n*	%	*n*	%
1	1st–2nd c.	411	32.8%	387	94.2%	24	5.8%
2	1st c.	8	0.6%	0	0.0%	8	100.0%
3	1st–2nd c.	17	1.4%	17	100.0%	0	0.0%
4	2nd–early 4th c.	40	3.2%	36	90.0%	4	10.0%
5	4th–5th c.	421	33.6%	411	97.9%	10	2.1%
6	4th–5th c.	5	0.4%	5	100.0%	0	0.0%
7	Late 4th–5th c.	30	2.4%	25	83.3%	5	16.7%
8	Late 4th–5th c.	322	25.7%	319	99.1%	3	0.9%
	Total	1254	100.0%	1200	95.7%	54	4.3%

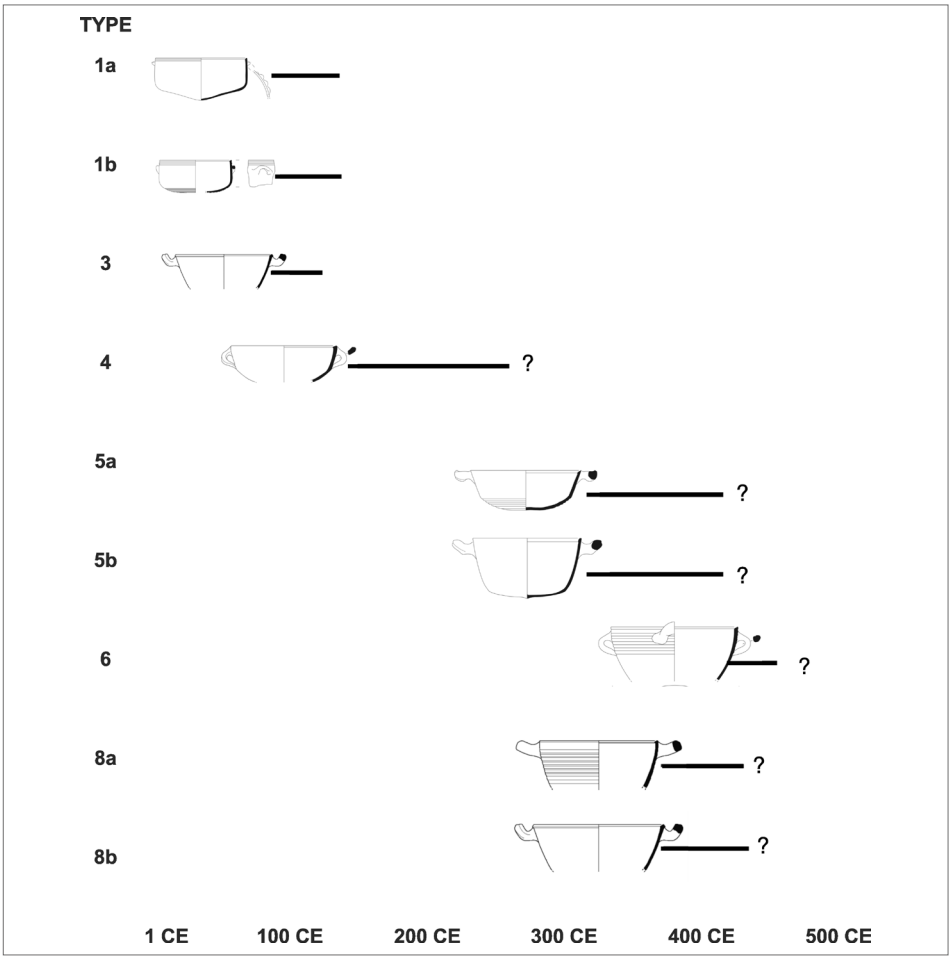

Fig. 7. Diachronic development of cooking casseroles at Aila

a few Petra imports (2.4%) are present. The basic form is similar to the Type 1a bowl with a beveled incurved rim to receive a lid [see below, *Fig. 12*]. But these early Byzantine casseroles have twin horizontal loop handles attached close to the

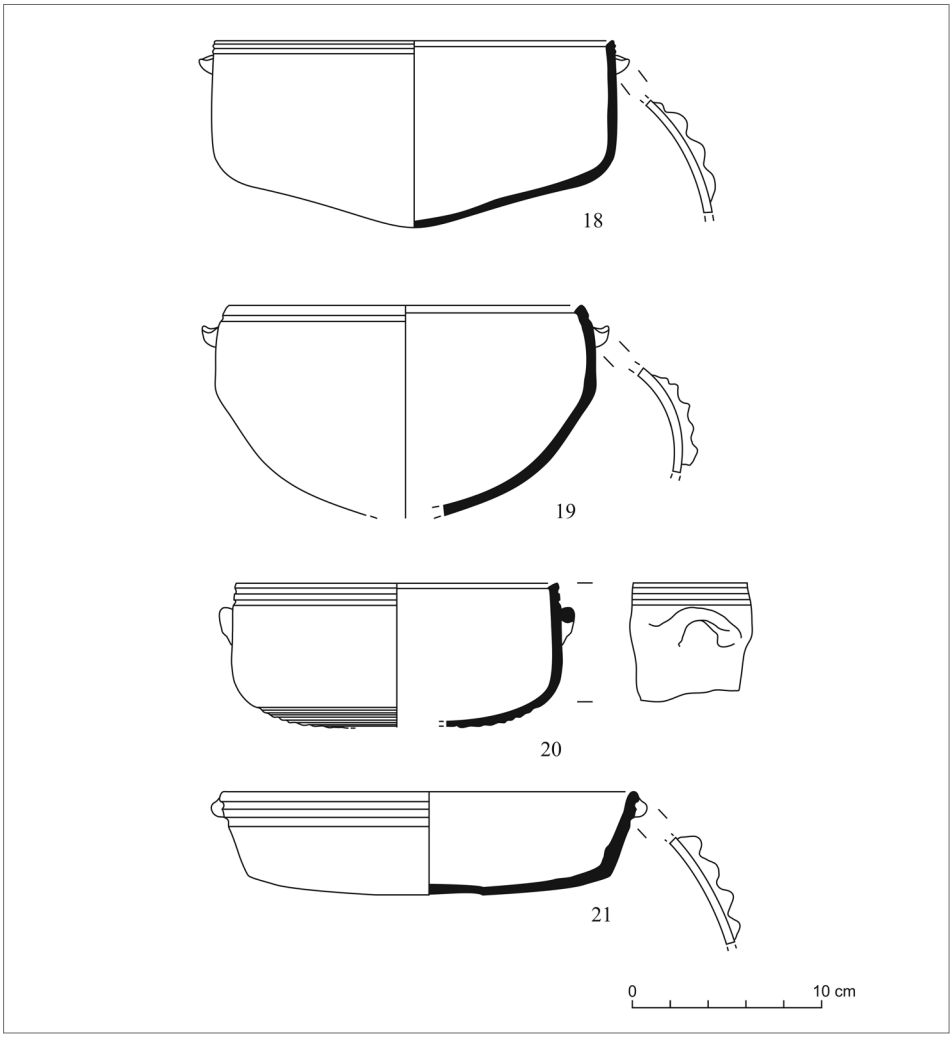

Fig. 8. Cooking casseroles: Types 1a, 1b and 1c

No.	Vessel	Type	Combine	Reg. No.	Ware	Paste	Exterior	Interior
18	Casserole	1a	O.1:8.37	51213	1a	5 YR 6/6	7.5 YR 8/3	5 YR 6/6
19	Casserole	1a	B.5:3.4	18248	1a	5 YR 6/6	5 YR 4/1	5 YR 6/6
20	Casserole	1b	M.3:38.64	23524	1a	2.5 YR 6/6	2.5 YR 8/2	7.5 YR 6/6
21	Casserole	1c	O.1:8.21	49812	1a	2.5 YR 7/6	10 YR 7/2	5 YR 7/4

rim. Two subtypes are differentiated by their vertical height and base. Both are well represented among the 111 examples whose height could be determined by the preserved profiles. Type 5a (*n*=64) [*Fig. 9:22*] is a deeper vessel with a slightly pointed base, averaging 12 cm in height. Type 5b (*n*=47) [*Fig. 9:23*] is the shallower form, averaging about 8 cm in height, with a slightly rounded base. Other than the depth of the vessel, there seems to be little difference between the two subtypes in terms of fabric, morphology, or date. This type continued in production through the 4th and into the 5th centuries; its *terminus* has yet to be determined. Parallels may be cited from Petra (Fellmann Brogli 1996: Figs 772, 775–777), el-Lejjūn (Parker 2006: Figs 16.6:18, 16.31:149, 16.35:178), and the Jordan Valley (Shmeis and Waheeb 2002: Fig. 13:3). The Type 5 casseroles are remarkably similar in rim diameter to Type 1, both averaging 19.2 cm.

A rare but interesting casserole of unusual design in the 4th century is the Type 6 [*Fig. 10:24*]. It is stylistically similar to Type 5, but is about 12% larger in rim diameter and displays four horizontal loop handles rather than the usual two. The few examples recovered at Aila (*n*=5) are all of local ware and derive from early 5th century contexts.

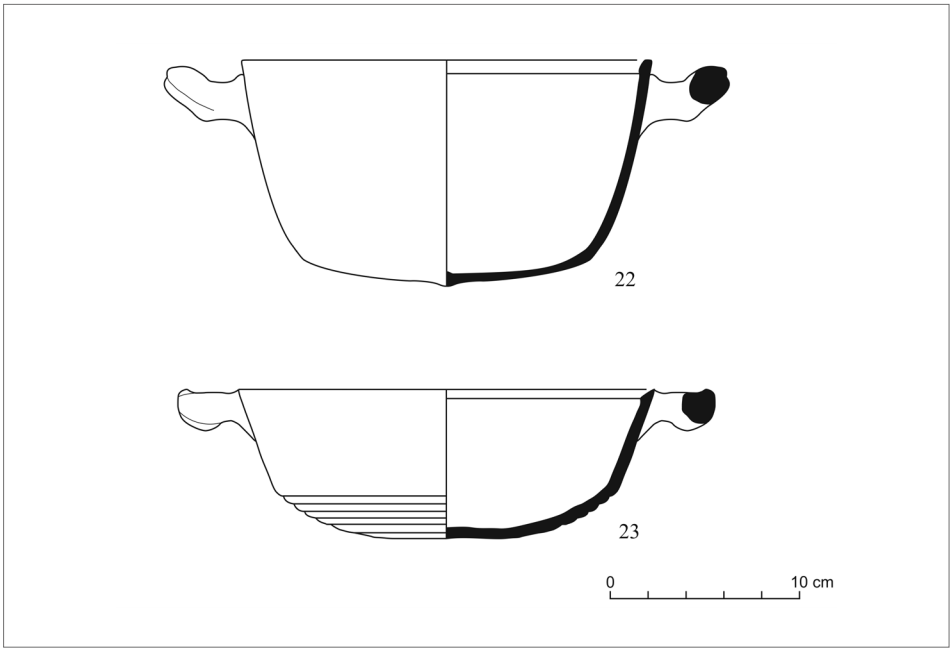

Fig. 9. Cooking casseroles: Types 5a and 5b

No.	Vessel	Type	Combine	Reg. No.	Ware	Paste	Exterior	Interior
22	Casserole	5a	J.11:59.174	52390	1a	5 YR 6/4	5 YR 2.5/1	5 YR 6/6
23	Casserole	5b	J.20:32.53	26814	1a	10 R 5/4	10 R 6/3	5 YR 6/3

Contemporary to Type 5 and only slightly less common in the 4th century is the Type 8 casserole (*n*=322) [*Fig. 11:25–28*]. Again, the vast majority of Type 8 casseroles are local, with less than 1% imported. The form shares most of the characteristics of Type 5, but is distinguished by its unique rim, which displays an exterior ledge separate from the beveled rim that projects inward. Type 8 is subdivided into two subtypes based on the prominence of the exterior ledge, i.e., Subtype 8a [*Fig. 11:25–26*] with less prominent ledge and Subtype 8b [*Fig. 11:27–28*] with a more pronounced ledge. I frankly as yet have no explanation for this unusual rim profile, i.e., the function of the exterior ledge. It does not, for example, seem to hold the lid in place more effectively. Perhaps it is merely a stylistic rather than functional feature. The main rim diameter range is 15–25 cm and the average diameter is 20.5 cm. Only a tiny minority (3.1%) is ribbed. In most cases a light-colored slip is confined to the exterior of the vessel. The primary uncertainty about the

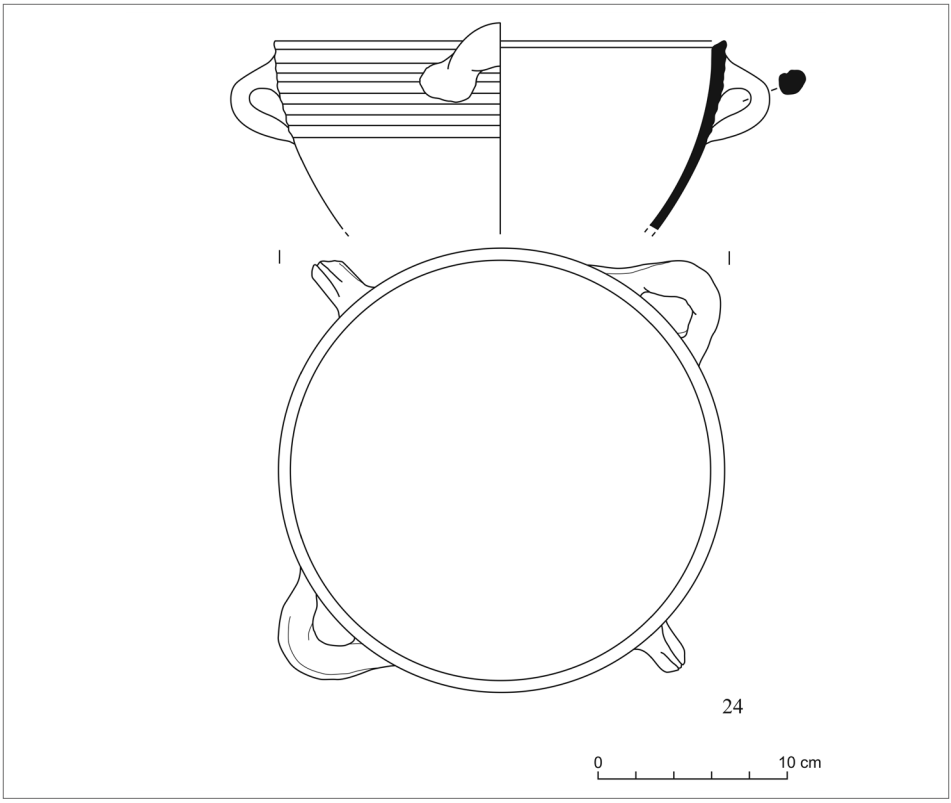

Fig. 10. Cooking casserole: Type 6

No.	Vessel	Type	Combine	Reg. No.	Ware	Paste	Exterior	Interior
24	Casserole	6	J.22:16.51	72065	1a	5 YR 5/4	10 YR 7/3	5 YR 5/4

morphology of the vessel is the base. The single profile preserved from rim to base [*Fig. 11:25*] is a misshapen kiln waster. But it appears that this type of casserole had a flat base. The appearance of this type is securely dated on stratigraphic grounds

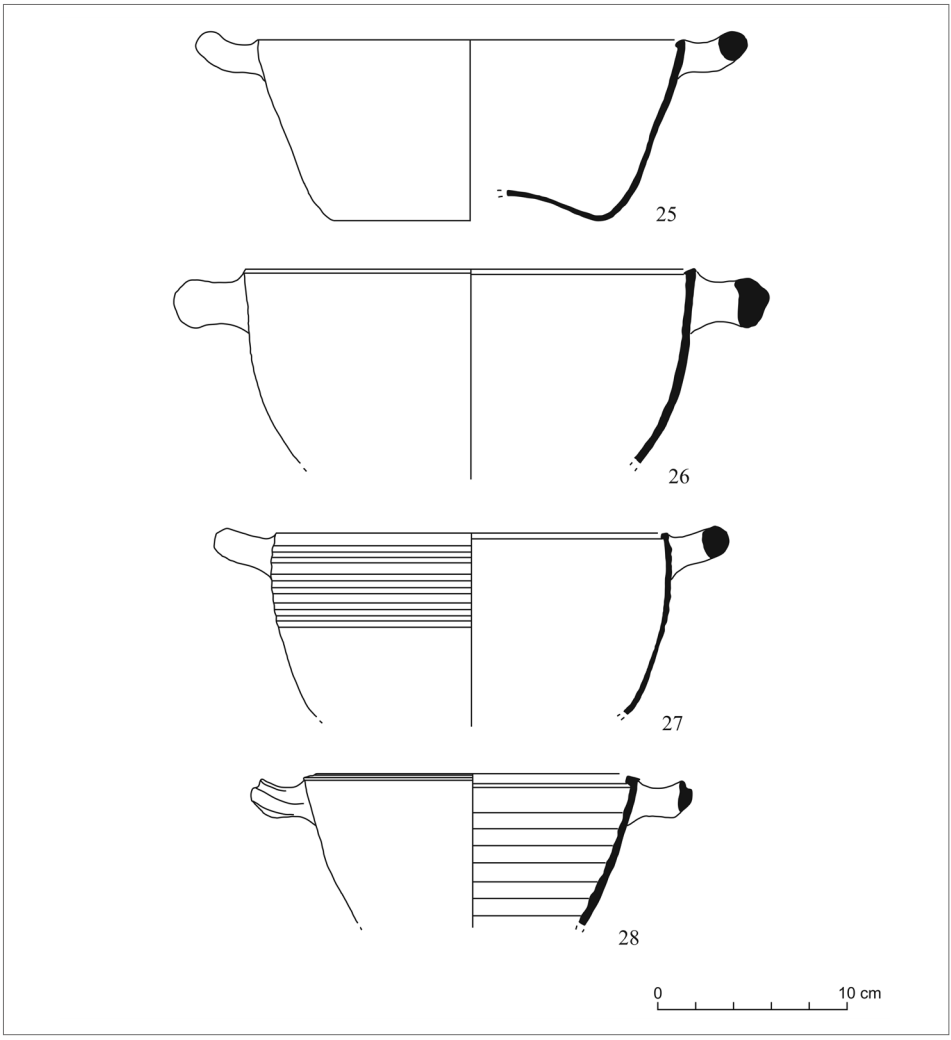

Fig. 11. Cooking casseroles: Types 8a and 8b

No.	Vessel	Type	Combine	Reg. No.	Ware	Paste	Exterior	Interior
25	Cooking bowl	8a	J.3:53.149	24667	1a	2.5 YR 5/1	2.5 YR 5/1	2.5 YR 5/1
26	Cooking bowl	8a	J.11:189.506	93312	1a	7.5 YR 6/3	7.5 YR 6/3	7.5 YR 6/4
27	Cooking bowl	8b	J.11:17.59	21981	1a	5 YR 6/6	5 YR 6/6	2.5 YR 8/62
28	Cooking bowl	8b	J.11:7.153	47914	1a	5 YR 6/6	5 YR 6/6	10 YR 8/34

to the mid-4th century. It remains common through the late 4th and into the 5th centuries. Its *terminus* remains to be determined by future analysis. These casseroles are paralleled at Petra (Gerber 2001: Fig. 1:28) and at Khirbet et-Tannur (Schmid, Alexander, and McKenzie 2013: Fig. 18.17.73).

LIDS

The lids for these casseroles reflect little change over time because their form reflects functionality. The Nabataean/early Roman cooking lids (Type 1) display a shallow profile with ribbing extending from a central knob handle part way down the side wall, which ends in a beveled rim [*Fig. 12:29–30*]. The central knob handle was pierced before firing as a steam hole. This basic type dates from the 1st to 3rd centuries. In the 4th century a new type of lid appeared, Type 3 [*Fig. 12:31–32*]. It displays a rounded knob handle that is sometimes ribbed and often with a steam hole pierced through the side wall near the knob. The rim is more diagonal in profile and probably fits more snugly to the casserole rim than the earlier type. Not surprisingly, the ratio of local vs. imported lids parallels that of the casseroles: the vast majority is local but with a significant minority of imports (8.2%), mostly from Petra.

COOKING BOWLS

Dolinka's pioneering monograph on the Nabataean pottery from Aila originally dated the appearance of cooking bowls

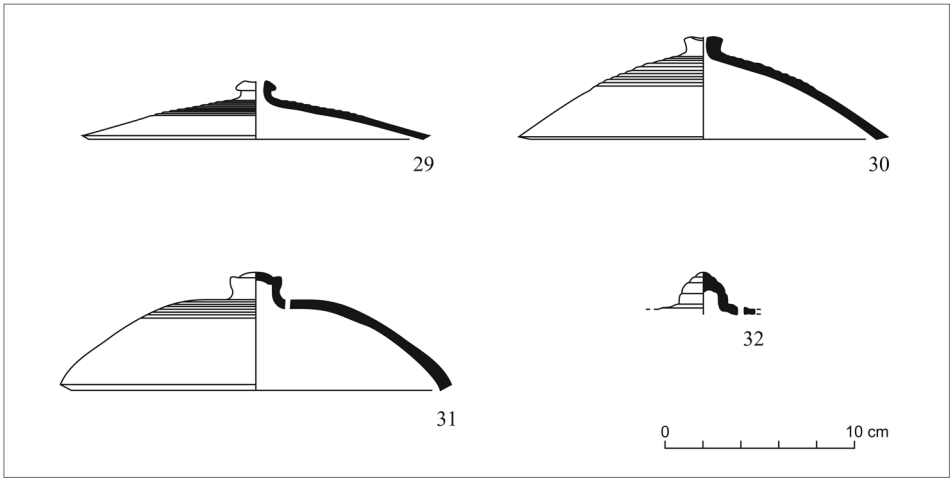

Fig. 12. Cooking casserole lids: Types 1 and 3

No.	Vessel	Type	Combine	Reg. No.	Ware	Paste	Exterior	Interior
29	Casserole lid	1	M.5:22.177	70055	3	2.5 YR 6/6	2.5 YR 5/6	2.5 YR 5/6
30	Casserole lid	1	M.8:47.77	47679	1a	2.5 YR 7/6	2.5 YR 6/6	2.5 YR 7/6
31	Casserole lid	3	K.10:0.15	79671	1a	5 YR 6/6	5 YR 6/6	5 YR 6/6
32	Casserole lid	3	K.10:1.3	47914	1a	5 YR 6/6	10 YR 8/4	5 YR 6/6

to the early 2nd century (Dolinka 2003: 65–66). But upon further analysis it now seems clear that these cooking bowls actually appeared a little earlier, that is, at the end of the 1st century. But their clear florescence was in the 2nd and 3rd centuries, when they appeared in great numbers [*Table 3*; *Fig. 13*]. The basic form displays a sharply carinated profile with a slightly incurved, flattened, and elongated rim [*Fig. 14:33–36*]. The base is usually slightly rounded or slightly pointed. The rim diameter ranges mainly from 14 cm to 25 cm, with an average of 19.7 cm, only slightly larger than the casseroles. Many cooking bowls are slipped on the exterior side wall but only from the rim to the point of carination. The cooking bowls are further divided into three main subtypes, differentiated primarily by their handles. Since most sherds lack evidence of their handles, only a little over 20% of all cooking bowls recovered could be assigned to these three subtypes.

Table 3. Cooking bowls from Aila: quantification by type

Type	Date	Total		Local		Imported	
		n	ID %	*n*	%	*n*	%
1	Late 1st–3rd c.	219	86.9%	141	64.4%	78	35.6%
2	2nd–3rd c.	14	5.6%	10	71.4%	4	28.6%
3	2nd–3rd c.	19	7.5%	15	79.0%	4	21.1%
Subtotal	Typed CBs	252	100.0%	142	56.4%	76	30.2%
Other CBs		826		477	57.7%	349	42.3%
Total		1054	100.0%	619	59.5%	425	40.5%

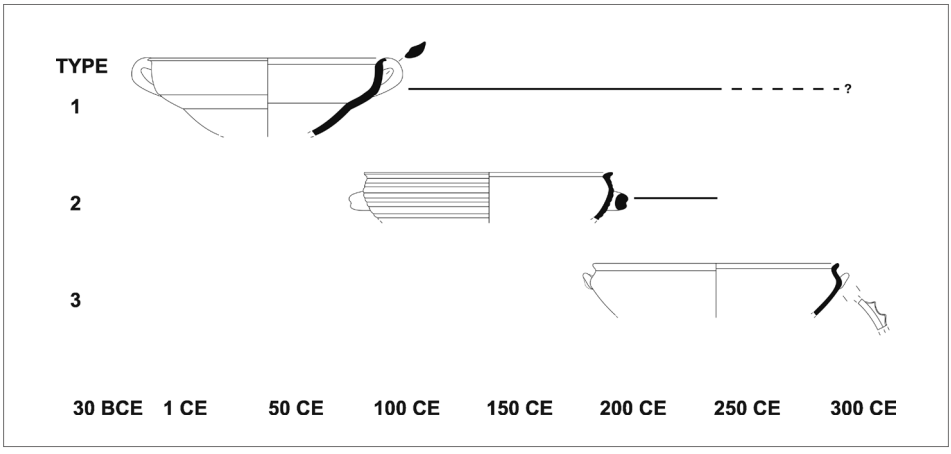

Fig. 13. Diachronic development of cooking bowls at Aila

The most common by far is Type 1, which accounts for 86.9% of the cooking bowls assigned to subtypes [*Fig. 14:33–34*]. It displays twin vertical loop handles extending from the rim to near the point of carination on the side wall. Numerous parallels include examples from several sites within Petra (Murray and Ellis 1940: Pl. 8:24; Stucky et al. 1994: Pl. 16:H, I; Gerber 1997: 410, Fig. 8; Oleson et al. 2008: 336, Fig. 22:12; Joukowsky and D'Agostino 1998: 250, Fig. 6.13:1, 2). The much rarer

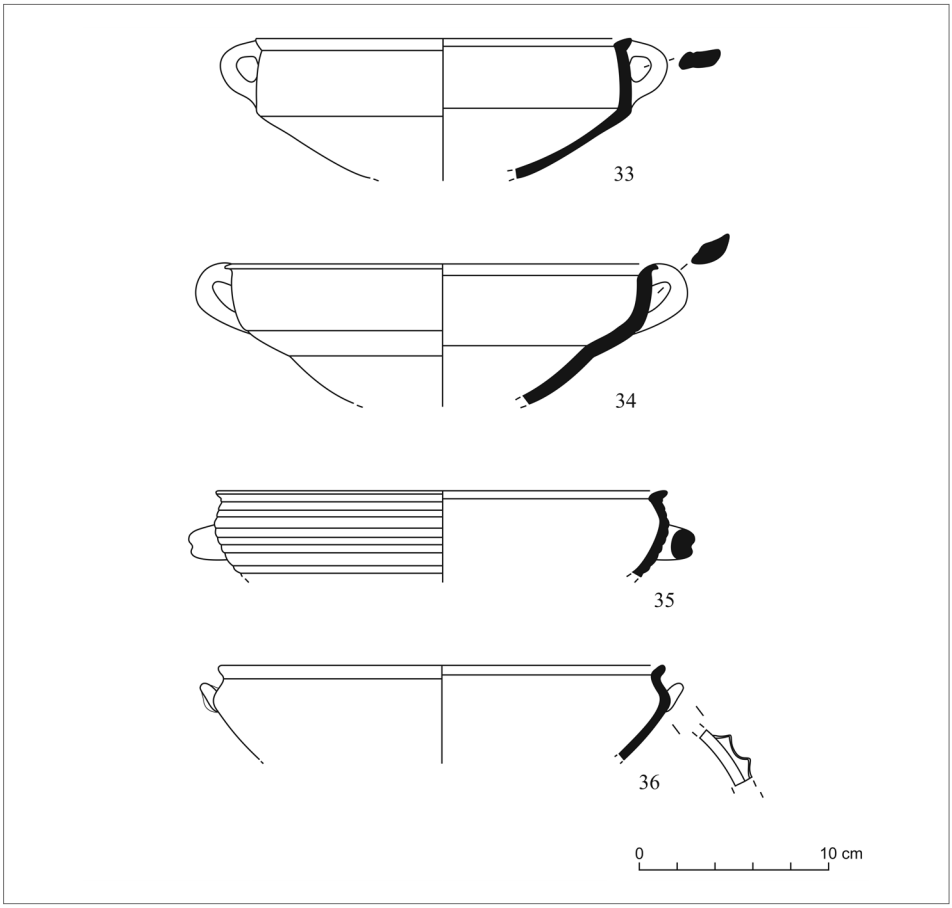

Fig. 14. Cooking bowls: Types 1, 2, and 3

No.	Vessel	Type	Combine	Reg. No.	Ware	Paste	Exterior	Interior
33	Cooking bowl	1	B.2:113.152	48651	1a	10 R 6/6	2.5 YR 2.5/1	2.5 YR 6/6
34	Cooking bowl	1	B.3:10.36	3986	1a	2.YR 5/4	2.5 YR 5/4	5 YR 5/4
35	Cooking bowl	2	B.4:17.20	11529	1a	2.5 YR 5/4	7.5 YR 7/2	7.5 YR 7/2
36	Cooking bowl	3	M.2:2.5	3369	1a	10 R 5/3	2.5 Y 7/3	10 R 6/1

Type 2 (5.6% of classified cooking bowls) has horizontal loop handles and appears in the mid-2nd century [*Fig. 14:35*]. The also rare Type 3 (7.5% of classified cooking bowls) appears only in the 3rd century and displays horizontal bar handles with 2–3 finger indentations [*Fig. 14:36*], reminiscent of Type 1a cooking casseroles [see *Fig. 8:18–19*], which had in fact already disappeared by this period. One final but significant observation about these cooking bowls: although the majority is of local ware, a surprisingly large minority (40.5%) are imports, primarily from Petra, regardless of type. The *terminus* of these cooking bowls seems clear on stratigraphic grounds; these probably disappeared around the turn of the 4th century, to be replaced by renewed production of cooking casseroles.

CONCLUSIONS

Several important conclusions may be drawn from this analysis of the cooking vessels from Aila. The potters of Aila were heavily influenced by the ceramic traditions of the Nabataean capital at Petra. But the above analysis also suggests they developed an independent ceramic tradition, as shown by several types of local cooking vessels not paralleled at Petra or apparently elsewhere in the Nabataean kingdom. The Roman annexation of Nabataea in 106 CE, apparently had little impact on the local ceramic industry at Aila, which continued with little change until the mid-3rd century. Many scholars have noticed the same phenomenon at Petra itself. But the mid-3rd century marks a significant transition when many long established types disappear along with the appearance of new types, including cooking vessels. A similar change about this date in the regional ceramic tradition has been noted elsewhere, that is, in the Negev, for example (Erickson-Gini 2010).

Both closed and open cooking vessels were commonly used in relatively equal numbers from the 1st through the early 5th centuries. Given evidence for local ceramic production throughout Aila's history, it is not surprising that locally made vessels dominate the cooking vessel assemblage in all periods. What is more surprising is the relative frequency of imported cooking vessels (both open and closed), primarily from the Petra region, as a significant minority (16.0%) of the entire cooking vessel assemblage throughout this period. But closer analysis of the evidence does reveal some stark differences among the three major types of cooking vessels in terms of imports. More than a quarter (26.1%) of the closed cooking pots dating to the 1st through 4th centuries was imported [see *Table 1*]. But a pattern of steadily declining importation appears when viewed diachronically. Imports are most common (31.2%) among the earlier closed cooking pots (Types 1–7) of the 1st through early 3rd centuries. The number of imports declines to 25.0% among the Type 8 vessels of the 3rd century. By the 4th century and the early Byzantine period (Types 9–10, and 12) the number of imports falls even further and much more dramatically to only 10.8%.

A different pattern of importation is discernable among the open cooking

vessels [see *Fig. 7*]. In the 1st and early 2nd centuries casseroles predominate but, unlike the closed cooking vessels, imported casseroles are relatively rare at Aila, comprising only 11.4% of these early types (Types 1–4). But a dramatic change is evident later in the 2nd and 3rd centuries, when cooking bowls largely replace casseroles as the predominant type of open cooking vessel at Aila. More than 40% of the cooking bowls were imported during their *floruit* in the 2nd and 3rd centuries, mostly from the Petra region. But another dramatic change is discernable in the 4th century, when the cooking bowl disappears in favor of a return to casseroles. A mere 4.3% of the early Byzantine casseroles (Types 5–8) were imported (again, probably from the Petra region) in the 4th and early 5th centuries.

How may one interpret this evidence? In other words what spurred an increase in Aila's local capability in terms of ceramic production? Cooking vessels are obviously a relatively low cost, bulk commodity. Importation from Petra required land transport over a distance of approximately 100 km, which must have added to the cost of imported as compared to the local wares. Aila and Petra are connected by two major land routes: a more westerly route extending through Wadi Araba and a more easterly route along the *Via Nova Traiana* (admittedly not completed until 111–114 but clearly following an earlier Nabataean route). Yet, as David Adan-Bayewitz (1993) demonstrated more than 20 years ago in a now classic study, overland transport of coarse wares was commonplace in a wider region, even across the Jordan Valley Rift. Nevertheless, a decline of imported cooking wares at Aila still seems apparent. The high percentage of imports in the early period might of course be explained by the newly founded city's initial lack of productive capacity in ceramics as well as other industries. As the city grew and developed, so did its productive ceramic capacity. Local clay sources and water were clearly available, but sufficient fuel for Aila's kilns must have always been a challenge. The scattered fuel sources in Aila's hyperarid landscape, such as tamarisk, acacia, and palm, would have been quickly exhausted by Aila's ceramic, metal-working, and other industries. This explains the preference for animal dung as the principal fuel for cooking. But dung could also provide sufficiently high temperatures for ceramic production (Sillar 2000).[3] The possibility of imported fuel remains, but if so from what sources? The easiest access was naturally by sea and there is much evidence for a more or less continuous influx of amphorae from Egypt from the 1st through the 3rd centuries. Small quantities of Egyptian Red Slip table ware also reached Aila in the 3rd century. A huge increase in Egyptian amphorae at Aila in the 4th century corresponds to the arrival of about 300 soldiers of the *Legio* X *Fretensis*. Yet neither Egypt nor the remainder of the Red Sea littoral is well known as a source of timber in antiquity. Another possibility would be timber brought overland on the *Via Nova Traiana* from the highlands of southern Jordan.

3 I am grateful to Jodi Magness for this information.

Another approach to this question is to consider the ceramics as proxy evidence for other types of economic exchange. In the 1st century CE, Petra was flourishing as a nexus of international trade, particularly importation of aromatics to the Mediterranean from the southern Arabian Peninsula. Continued use of the Petra-Gaza road and the continued prosperity of Petra through the 2nd and into the early 3rd centuries suggest that this trade did not cease with the Roman annexation of 106 (Erickson-Gini 2010). The recovery of Gaza amphorae, as well as quantities of much fine and coarse ware pottery produced at Petra but recovered at Aila, suggests that this latter city was participating in this commerce as a crucial transfer point between ships plying the Red Sea and the land routes to the north. The camel caravans which reached Gaza with their precious loads of aromatics had to return to Aila, some presumably via Petra. Rather than return empty, the caravans likely carried a range of ceramic products (including coarse cooking wares) as well as glass, metal, stone and many other goods unlikely to have been preserved in the archaeological record.

The sharp decline in imported ceramics from Petra to Aila by the 4th century may also be suggestive. The international trade routes now apparently bypassed the former Nabataean capital, which retained some importance as a regional administrative and ecclesiastical center into the Byzantine period but eventually sank into obscurity (Fiema 2002). Recent excavations at Petra suggest that the city was devastated by the 363 earthquake and much of the city center henceforth lay in ruins, even including major public buildings along the main colonnaded street. Aila, in sharp contrast, was flourishing in the 4th century with its own ceramics industry not only more than able to fill local needs but by the 5th century capable of producing large quantities of amphorae for export far beyond the borders of the empire (Parker 2009). Continued importation of small but significant amounts of imported cooking vessels from Petra may be explained by the presence of these Aila amphorae at Petra itself (e.g., Fellmann Brogli 1996: Figs 766–767; Gerber 2008: 299, Fig. 5:115). Whatever product these transport jars contained, their baggage animals and/or carts needed to return to Aila, carrying ceramic cooking vessels and presumably other more 'invisible' products from Petra. In short, some economic exchange between the two cities continued in the Byzantine period, albeit at a sharply reduced level.

Although there is as yet no clear answer to this problem, the growth of Aila's ceramic production in the Byzantine period is now well attested. Various coarse wares, including above all the now famous Aila amphorae, were widely exported in great quantity, especially south to the Red Sea and the western littoral of the Indian Ocean (e.g., Peacock 2007; Raith et al. 2013).

Although this study has focused on Aila's cooking wares, one final parallel of interest may be cited here. Aila imported Nabataean fine ware from Petra in large quantities and this presumably accompanied the imported cooking ware. An analysis of the chronological distribution of the Nabataean painted fine wares recovered at Aila also reveals an inter-

esting pattern. The vast majority date to the 1st and early 2nd centuries. Although reduced but still significant importation continued in the late 2nd century, this seems to have ceased almost completely by the 3rd century (Schmid's Dekor-phase 4), even though the kilns at Petra were still producing and exporting this painted fine ware far longer elsewhere in the region. In other words, the pattern of importation to Aila of Petra's fine ware seems to parallel its cooking wares. It remains to be seen whether ongoing analysis of other types of coarse wares will suggest a similar pattern of local vs. imported pottery.

S.Thomas Parker
North Carolina State University

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