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Two Early Helladic II terracotta rollers from Asine and their glyptic context

Abstract

Two Early Helladic II terracotta rollers from the Third Terrace at Asine are presented. The objects, used to impress relief decoration on *pithoi* and hearths, are unique in that no other examples are known from the Early Bronze Age Aegean. Their origin is discussed based on chemical characterization and their depositional contexts are reviewed from an archaeological perspective. Although there are no known impressions from these rollers on *pithoi* and hearths at Asine, it is shown that their owners surrounded themselves with different objects featuring similar glyptic impressions. Two such impressions find identical parallels at Tiryns and the combined evidence strongly suggest that Asine was the home for one or several potters who produced Early Helladic impressed hearths and *pithoi*.*

Keywords: Asine, Early Helladic, roller, impression, sealing, glyptic, pottery, hearth, *pithos*, Neutron Activation Analysis (NAA)

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Introduction

Predominantly clustered on the north-east Peloponnese, there is an ever-growing corpus of Early Helladic (EH) II hearths and storage jars (*pithoi*) furnished with roller impressions. Around 70 such impressions are located on hearth rims, while roughly 100 instances occur on jars, usually on raised bands (“banded *pithoi*”) on the shoulder or belly, but sometimes also on top of or even on the interior of the rim.¹ The absence of

rollers used to fashion these impressions has prompted scholars to suggest that potters used carved wooden or bone cylinders, now perished.² Until now, only one incomplete roller (R) made of terracotta has been published from the EH II Greek Mainland. The fragment (R1b) was (re)discovered in a storage room in the Archaeological Museum in Nauplion and published by Angelica Dousougli in 1989.³ The original context of the fragment was lost in the calamities of the Second World War, but from other finds stored together with the cylinder fragment it was clear that the piece must have been retrieved in pre-war excavations at either Mycenae, Tiryns, Berbati or Asine. Were it not for a 2012–2014 inventory of the Asine Collection at Uppsala University, the story might have ended there. Below we discuss the roller published by Dousougli (R1b) by literally adding another piece to it (R1a). The larger and joining fragment R1a comes from a disturbed context in House R on the Third Terrace at Asine. A third fragment of a second terracotta roller (R2) is also presented. The object was excavated on the same terrace, between Houses R and S. Their proximity is noteworthy, as they constitute the only two terracotta rollers presently known from the Early

* Marika Hedin and Anne Ingvarsson at Museum Gustavianum, Uppsala University graciously permitted us to sample the two roller fragments in the Asine Collection for neutron activation analysis while Ludmila Werkström facilitated our work in the archive. We are grateful to Alkestis Papadimitriou at the Archaeological Ephorate of the Argolid for allowing us to examine the joining fragment R1b exhibited in the Archaeological Museum in Nauplion and to Penelope Taratori for making an impression of it which we could bring to Uppsala for further study. The authors also wish to thank the staff of the research reactor of the Reactor Institute

Delft, Delft University of Technology, for their technical support. All pencil drawings were made by Vera Olsson at Uppsala University. Eva Alram-Stern, Daniel Pullen, Maria Kostoula, Olga Krzyszkowska, and Jeremy Rutter have greatly improved the manuscript by constructive suggestions. All remaining errors and shortcomings naturally remain our own.

¹ Rolled impressions on hearths are listed in Galligan 2013, 227, table 7. Additional examples are e.g. Demakopoulou *et al.* 2006–2007, 24, fig. 57 and Lindblom 2011, 74, no. 90. For occurrences on jars, see Wiencke 1970; Weisshaar 1989; Kostoula 2004, 1144, pl. 3b; Lindblom 2011, 73, no. 86. A majority of impressions on both types of objects are also assembled in CMS V 120–149, 504–508, 529–571; CMS VS 1B 376–425.

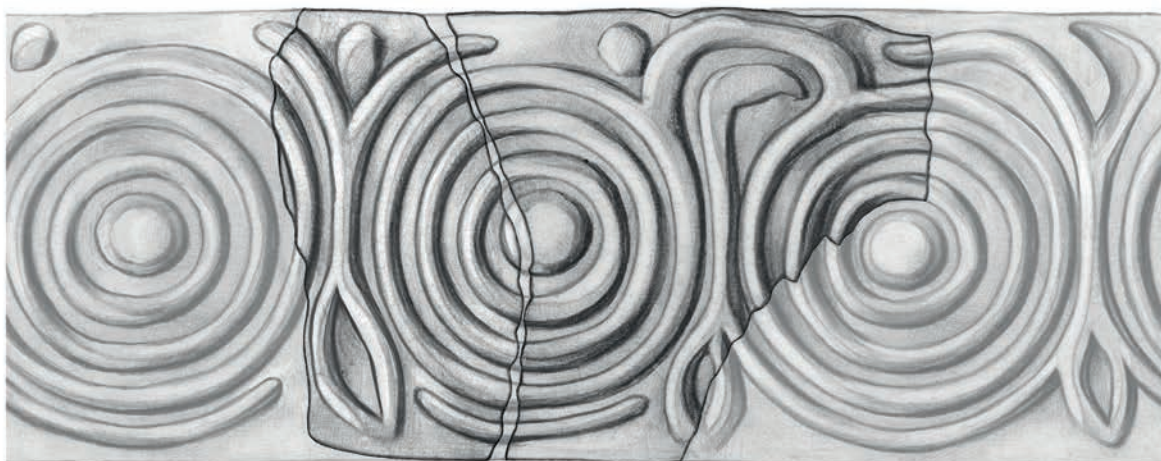
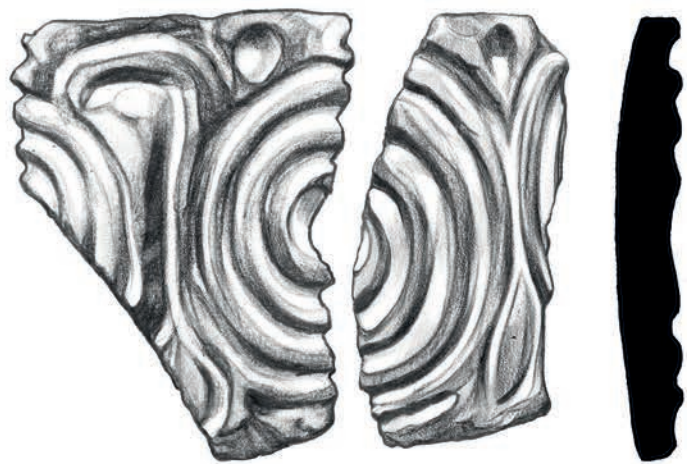
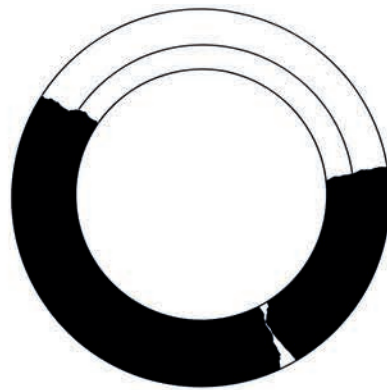
² E.g. Wiencke 1970, 108; Weingarten 1997, 155, 157.

³ Dousougli-Zachos 1989.

Fig. 1 (left). EH II Roller **R1** from the Third Terrace at Asine (**R1a**=Uppsala AS4978 and **R1b**=Nauplion inv. no. 5148). Photo by Michael Lindblom.

Fig. 2 (right). EH II Roller **R1** from the Third Terrace at Asine (**R1a**=Uppsala AS4978 and **R1b**=Nauplion inv. no. 5148). Drawing by Vera Olsson.

Fig. 3 (below). EH II Roller **R1** impression (**R1a** to the right and **R1b** to the left) in dark shade and reconstructed missing part in light shade. Drawing by Vera Olsson.



Bronze Age Aegean.⁴ Below, we describe the objects and their find circumstances, discuss their origin from a geochemical perspective and situate them in their archaeological and social context at Asine.

Descriptions and find circumstances of the rollers

The newly identified roller fragment **R1a** (Asine 1926 context no. AS4978) was excavated in May 1926. Its significance was not realized at the time and it was kept together with the other finds from the same context until April 2014, when two of the authors came across it during an inventory of the Asine Collection at Uppsala University.⁵ The partially preserved, hollow cylinder is 5.7 cm high and the maximum width of the fragment when rolled out is 6.0 cm (*Figs. 1a, 2a and 3a*). The wall is 0.8 cm thick at the centre and 0.4–0.5 cm at the edges. The curvature of the fragment reveals an almost perfect circular form. The fabric is fine grained and contains a few small (0.2–0.8 mm) dark grey grits. It is fired hard to a light brown colour (Munsell 7.5YR 6/4) and preserves surprisingly crisp surfaces. The exterior surface is dense and finely smoothed, especially on the protruding ridges which have been flattened. The interior surface is slightly rougher but still well smoothed. There are no apparent traces of wear on any surfaces. The impression shows three partially preserved circles in relief surrounding a protruding central platelet on the left side. Below, the right end of a bent line is preserved. On the right side are parts of three additional circles resembling the more fully preserved group to the left. The two groups of circles are connected at the top with a bent line. An almost completely preserved filling ornament is located between the circles. It is solid at the top, but splits at the lower end.

⁴ For a remotely similar small, solid stone cylinder, claimed to be from Kapros Grave D on Amorgos, see Sherratt 2000, 25–31, 38–42, pls. 13 & 14, cf. Krzyszkowska 2005, 55. Two solid terracotta cylinders with figural representations are also known from Middle Helladic Kolonna on Aegina: Gauss & Smetana 2010, 170f., 174, figs. 7 & 8. Rahmstorf (2006, 86f. Appendix 4) conveniently assembles references to occurrences of rolled impressions and a few imported cylinder seals in the Early Bronze Age Aegean, as well as rolled impressions on pottery in Palestine and Syria.

⁵ Already on the day of its (re)discovery in the Asine Collection, Daniel Pullen was able to identify the roller fragment **R1a** as most likely belonging to fragment **R1b** previously published by Dousougli-Zachos (1989). The tale of the Uppsala fragment not only revolves around the past, but also the present. The establishment of the Asine Collection, encompassing all settlement material excavated in 1926, rests on a bilateral agreement between the governments of Greece and Sweden signed on 26 December 1931. The collection, stored in roughly 5,000 boxes, is supervised by Museum Gustavianum at Uppsala University and housed in an excellent environment. All scholars are invited to study this material.

The previously published fragment **R1b** (Nauplion inv. no. 5148) offers additional information (*Figs. 1b and 2b*).⁶ It was examined and photographed by one of the authors in the Archaeological Museum in Nauplion in 2015 and a silicone impression was brought to the Asine Collection in Uppsala for comparison. Close visual inspection of the fired fabric, measurements, surface treatment, decoration and breakage pattern show without doubt that **R1b** not only belongs to the same roller as **R1a**, but that the two fragments actually join.⁷ This remarkable “reunion” of two fragments from the same roller contextualizes the previously unprovenanced **R1b** (see further below). Since the two fragments belong to different museum collections located in different countries, no attempts have been made to physically join them. For scientific purposes, this is not necessary however; working from one fragment in conjunction with photographs and a silicone cast of the other, it is apparent that there is, if not a perfect fit, less than a millimetre that separate the two fragments.

A line drawing of the two fragments show that slightly more than 60 percent of the circumference of **R1** is preserved. The diameter of the cylinder is 4.6–4.8 cm, slightly less than originally deduced by Dousougli-Zachos from the smaller fragment **R1b**. It would produce a rollout of slightly less than 15 cm. With the joining of the two fragments, the decoration of the cylinder now appears more fully preserved. The impression reveals that there must originally have been three groups of concentric circles (*Figs. 3a and 3b*). The filling ornaments between the three groups are not identical. On **R1b**, the filling ornament splits into two lines both at the bottom and the top, here also supplemented with an oval knob between the upper ends (*Fig. 3b*).⁸ We can only speculate what the third, lost filling ornament might have looked like. A small part of it is nevertheless preserved in the upper right corner of **R1a** (*Fig. 3a*). Considering the difference at the top of the largely preserved filling ornaments on **R1a** and **R1b**, we suggest that the third was similar but not identical to the other two. In the reconstruction, the difference between extant and hypothesized parts are clearly indicated (*Figs. 3a and 3b*).

Even though **R1** was excavated in the 1920s, we know the find circumstances well. Fragment **R1a** was unearthed on 22 May 1926 in a context labelled “Large Section, Terrace III,

⁶ Dousougli-Zachos 1989, 19–21.

⁷ Differences in lighting conditions during photography account for the slight discrepancy in colour of the two fragments shown side by side in *Figs. 1a & 1b*. The small white spots visible on the exterior of **R1b** are traces of chalk applied to facilitate the removal of the silicone impression, not inclusions in the fired clay fabric.

⁸ Could the ornament be conceived as a representation of a human body with raised arms? For the rare inclusion of animals and objects, sometimes as filling ornaments, in mainly abstract EH II glyptic decoration, see Weiberg 2010.



Fig 4. Plan of Third Terrace at Asine with EH–MH architecture, EH II glyptic objects (**R1**, **R2**, **P1**, **P2**, **H1–H8**, **S1**, **S2**) and MH graves plotted.

Grid 11, Layer 9” (Fig. 4: R1a).⁹ Grid 11 refers to a single square in a grid laid out north of House T and over House R on the Third Terrace. It is clearly sketched in Diary 3, making it possible to pinpoint the location within four square metres located east of Wall 5 of House R. In the 1980s one of the authors assigned numbers to all boxes with finds in the Asine Collection in Uppsala. The box in which **R1a** was discovered is labelled AS4978 and the sherd material contained therein offers the most immediate material context from which the roller fragment was retrieved. Around 90% of the roughly 100 sherds are from the Middle Helladic (MH) I while the remainder are fairly undiagnostic EH II–III sherds. One Late Helladic (LH) I Boeotian Bichrome (“Mainland Poly-

chrome”) sherd is present. Two EH II tile fragments complete the list of terracotta material.

The exact find circumstances of **R1b** is more problematic. On the interior surface of the fragment, “H38” is written. This notation, however, does not make any apparent sense in the preserved documentation from Asine. We must assume that the fragment was excavated either in 1922 or in 1924, since all stratigraphic finds from 1926 are in Uppsala. When the field season began on 25 March 1922, the Third Terrace was one of the areas first to be excavated, as an assumed Mycenaean chamber tomb had been identified there; it later turned out to be a large Hellenistic cistern.¹⁰ Otto Frödin describes the work in Diary 19. He notes that the interior of the “Chamber Tomb” had a disturbed layer with e.g. Mycenaean pottery and on 7 April 1922 further undated material was noted as having fallen in from layers outside the entrance. It is unclear how much of the area surrounding the opening of this presumed chamber tomb was exposed this season. However, no

⁹ Information pertaining to this context is contained in Diary 3, covering Terrace III in 1926. It was written by Erik Jo Knudtzon. It is more detailed than most of the other diaries, with many sketches, making it possible to follow the excavation and discuss the find context with a fairly high degree of certainty. All documentation from the 1926 excavations at Asine are kept in the Asine Collection at Uppsala University. The diaries (written in Swedish) can also be digitally accessed on <https://pragmata.sia.uu.se>.

¹⁰ Frödin & Persson 1938, 113f.

work is recorded in 1924 in this area. It is therefore most likely that **R1b** was found in the eastern part of the Third Terrace during the 1922 excavations of what turned out to be a large Hellenistic cistern (*Fig. 4: R1b*).¹¹ If this is correct, it follows that the two fragments of **R1** were unearthed only some nine metres apart; **R1a** in a MH I context inside the earlier House R and **R1b** somewhere inside or around the entrance of a considerably later cistern.

To our astonishment, a fragment from a second roller, **R2** (AS2244), was (re)discovered in March 2015 in the Asine Collection. Once again, it is from an incompletely preserved cylinder made of terracotta (*Figs. 5 and 6*). The edges show that the entire height of the cylinder is preserved. The fragment is 8.2 cm high and the maximum width of the rolled out impression is 4.3 cm. The wall is 1.4 cm at its thickest point in the centre and with slightly thinner ends. The fabric is fine and contains a few small rounded white (calcite?) and occasional small rounded, reddish brown grits. Although it is well fired, the core as revealed in the break is slightly darker (pinkish grey; 7.5YR 7/2) than the surfaces (pink; 7.5YR 7/3). **R2** is considerably “clumsier” in its manufacture and appearance than **R1**. Not only is it taller and more thick-walled, but also more carelessly executed. The exterior is smoothed, after which five rows of irregular zigzag have been incised 0.1–0.2 cm deep. The individual lines, sometimes slightly bent, do not always meet in their ends. The interior surface is uneven with carelessly smeared clay, much in the same manner as the interior surfaces of many closed vessels from the period.

Less than 20% of the circumference of **R2** is preserved, which makes the calculation of its original diameter less secure than for **R1**. The curvature of the exterior surface of the cylinder nevertheless suggests that it was about 6 cm in diameter and the impression thus around 18 cm long. The impression of the roller reveals the five lines of careless zigzag in relief (*Fig. 7*). If our highly tentative reconstruction of the complete rollout is correct, there were originally ten upper points in each row of zigzag.

The second roller was excavated on 9 June 1926, once again on the Third Terrace at Asine. The context in which it was found is labelled “Terrace III, North, Below Wall 18” and we can pinpoint this location fairly accurately today (*Fig. 4: R2*). Wall 18 was a poorly preserved stretch of a wall, later removed, overlaying the north wall (Wall 9) of House T.¹² On

the following day, 10 June, the layer beneath is noted to contain EH and possibly some MH pottery. Retrieved together with **R2** were a number of sherds, one EH II tile fragment and a few bones. A majority of the sherds are EH II, but there are also a few probable EH III sherds and some Fine Grey Burnished sherds of inconclusive EH III–MH I date. The wall was removed over the next few days. The distance between **R1a** and **R2** was around six metres at their recovery.

Both **R1** and **R2** derive from contexts which demonstrate (**R1**) or strongly suggest (**R2**) lateral and vertical movement of the rollers since their time of discard. **R1a** was found inside the apsidal EH IIB–III House R, but in an MH I context. **R2** comes from below Wall 18, which is probably MH II in date. It should be noted that the layers on the Third Terrace were disturbed by consecutive digging and building activities in a fairly small area. House R, which is the oldest building so far attested, was followed by the rectilinear House T in the early MH period. The narrow strip between them seems to have been turned into a pathway with supporting walls, difficult to date, but probably later MH at the earliest. The very incompletely preserved House S, further to the south-west, was built in another orientation, while a couple of small rectilinear structures (Houses U and W), overlaying the south-east wall of House T, are late MH.¹³ Among these walls a large number of infant and adult graves were dug during the MH period (*Fig. 4*). A few graves also date to Late Helladic and even Hellenistic times.¹⁴ We believe that, together with EH II sherds and tile fragments, **R1** but possibly also **R2**, were moved slightly from their original discard contexts and mixed with material from the EH III and MH I periods. We find it highly unlikely that the two rollers were discarded in an altogether different area at Asine only to be transported great distances in later periods through cultural or natural formation processes.¹⁵ We also see few reasons to doubt that the original discard contexts are not far from the use contexts of the rollers, but we will return to this below.

The decoration on **R2** consists of simple zigzag. It is apparent that it was incised with a sharp instrument, rather carelessly judging from the fact that individual lines are not always entirely straight, and ends do not always meet. The displacement of clay also shows in what direction many of the lines were executed. The decoration on **R1** is considerably more complicated in that it is modelled, not incised. Not only are

¹¹ The **R1b** fragment is illustrated together with EH II pottery in Asine photograph c7228, presumably taken during or immediately after the 1922 excavation season. This photograph was scanned and made available only after Dousougli-Zachos (1989) published the fragment.

¹² Sketch in Diary 3 on 6 May 1926. In the final publication of Asine, several walls on the Third Terrace were renumbered. Wall 18 of the diary is therefore not the east wall of House U, as it appears in Frödin & Persson 1938, 93, fig. 69.

¹³ Frödin & Persson 1938, 93, fig. 69.

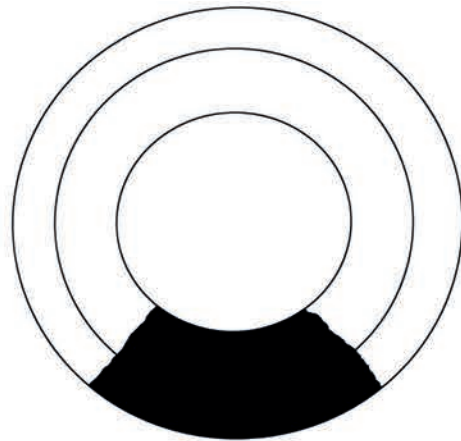
¹⁴ Frödin & Persson 1938, 92, fig. 68, 115–146 (MH 57–MH 95; LH 5–LH 11; Hell 4–Hell 5, Hell 7–Hell 9); see also Nordquist 1996, 19–38.

¹⁵ The two terraces higher up on the north side of the Kastraki Promontory remain largely unexcavated. It cannot be excluded that the rollers were brought down together with soil eroded from these areas, but it appears unlikely.

Fig. 5 (left). EH II Roller R2 (AS2244) from the Third Terrace at Asine. Photo by Michael Lindblom.

Fig. 6 (right). EH II Roller R2 (AS2244) from the Third Terrace at Asine. Drawing by Vera Olsson.

Fig. 7 (below). EH II Roller R2 impression in dark shade and reconstructed missing part in light shade. Drawing by Vera Olsson.



Exterior

Interior

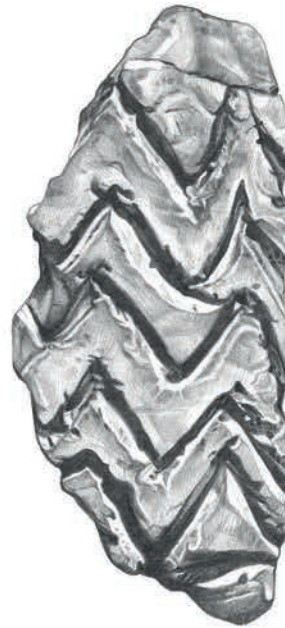


Table 1. Neutron activation analysis data of the two EH II terracotta rollers **R1** (Asin 31) and **R2** (Asin 33). Given are elemental concentrations *C* in µg/g (ppm), if not indicated otherwise. The average measurement uncertainties (errors) are also quoted, also in percent of *C*.

Sample	As	Ba	Br	Ca%	Ce	Co	Cr	Cs	Eu	Fe%
Asin 31	28.8	520.	6.57	2.60	70.9	18.2	149.	8.29	1.10	4.68
Asin 33	32.8	535.	21.5	11.8	46.8	35.7	267.	5.36	0.87	4.44
ave. error	0.26	27.	0.97	0.16	0.39	0.14	0.91	0.10	0.019	0.014
in%	0.8	5.2	6.9	2.3	0.7	0.5	0.4	1.5	2.0	0.3

Sample	Ga	Hf	K %	La	Lu	Na%	Nd	Ni	Rb	Sb
Asin 31	24.5	5.78	2.58	33.8	0.46	1.14	28.1	105.	153.	0.86
Asin 33	20.5	2.79	2.11	23.0	0.39	0.46	23.2	343.	105.	0.53
ave. error	7.8	0.056	0.093	0.11	0.016	0.012	1.9	29.	2.8	0.028
in%	37.	1.3	4.0	0.4	3.8	1.5	7.7	13.	2.2	4.1

Sample	Sc	Sm	Ta	Tb	Th	U	W	Yb	Zn	Zr
Asin 31	18.5	5.01	1.05	0.77	12.6	2.72	4.57	3.18	116.	192.
Asin 33	16.9	3.85	0.52	0.55	8.22	2.01	2.66	2.06	128.	88.2
ave. error	0.021	0.090	0.041	0.054	0.068	0.21	0.37	0.049	2.2	22.
in%	0.1	2.0	5.3	8.2	0.7	8.8	10.	1.9	1.8	16.

the individual elements very evenly executed and with considerable care, but the topmost surfaces are evenly flattened. There is no displacement of clay. Dousougli-Zachos noted this preciseness in execution of **R1b** in 1989 and suggested that the positive decoration was, in fact, a “daughter” impression of negative “mother” decoration originally carved on a piece of wood. Considering the difficulties in fashioning the cylinder, this is an attractive suggestion. Just as *pithoi* and hearths could be impressed during manufacture, so could a roller. As far as we have been able to discern with the aid of a ten times magnifying lens, **R1a** does not betray unintentional traces like cracks or veining from a wooden template, but this does not negate the possibility.

Geochemistry of the rollers

The generally very uneven resting surfaces of EH II hearths suggest that potters manufactured and fired them on the spot where they were subsequently used. When they broke, their fragments were discarded in another context. Along similar lines of reasoning, although less well grounded, it is usually also assumed that large *pithoi* with banded roller impressions, due to their weight and bulky appearance, were not transported very far after their production.¹⁶ The identification

of impressions made from the same cylinder at EH II Lerna, Tiryns and Zygouries on these types of objects has therefore led scholars to envision itinerant potters travelling between different settlements and manufacturing roller-decorated hearths and *pithoi*.¹⁷

As far as we are aware, neither of the rollers **R1** and **R2** from the Third Terrace at Asine have left impressions on jars or *pithoi* published from other settlements. Since the two rollers are without parallels, their place of manufacture—which is not necessarily the same place as their use and discard—is also interesting. Did the owner(s) of **R1** and **R2** live at EH II Asine or were they temporary visitor(s) from potting communities in the broader area? Could the rollers have been brought to Asine as gifts originating from somewhere else? Although ultimately impossible to answer, some progress can be made through chemical characterization of the two rollers. In addition to a visual inspection of the fired clay fabrics of **R1** and **R2**, small samples drilled from their interior surfaces were thus submitted to neutron activation analysis (NAA) at the Helmholtz-Institut für Strahlen- und Kernphysik at the University of Bonn.

of neutron activation analysis results from EH II *pithoi* at Keramidhaki, Korakou and Lerna.

¹⁷ Wiencke 2000, 579. Identical roller impressions with running spirals and quadrupeds are found on fragments at Lerna (*pithos* CMS V 120), Tiryns (*pithos* and hearth CMS V 529) and Zygouries (*pithos* CMS V 504). See also Kostoula 2000, 137 for the possible use of the same roller stamp on *pithoi* at Tiryns (CMS VS 1B 403, 405) and Petri.

¹⁶ Krzyszkowska 2005, 55. The ethnographic study of potters in the Koroni District in Messenia by Blitzer (1990) is a healthy reminder, however, that also large jars can travel great distances in pre-mechanized communities. See also Attas *et al.* 1987, 86f. for alternative interpretations

	Asin 31-4978 1 sample factor 0.99			X021 21 samples factor 1.00		
	C	$\pm\delta$	$\delta(\%)$	M	$\pm\sigma$	$\sigma(\%)$
Ba	515.	25.1	4.9	499.	93.7	19.
Ca\%	2.58	0.13	5.1	4.14	1.26	30.
Ce	70.2	0.37	0.5	71.0	0.81	1.1
Co	18.0	0.10	0.6	17.6	0.71	4.0
Cr	147.	0.72	0.5	146.	10.9	7.5
Cs	8.21	0.10	1.2	8.43	0.45	5.3
Eu	1.09	0.019	1.8	1.21	0.067	5.5
Fe\%	4.64	0.013	0.3	4.44	0.19	4.3
Ga	24.2	12.3	51.	23.9	4.71	20.
Hf	5.72	0.056	1.0	5.44	0.51	9.3
K\%	2.55	0.12	4.8	2.83	0.23	8.0
La	33.5	0.12	0.4	33.8	0.52	1.5
Lu	0.46	0.014	3.1	0.44	0.019	4.3
Na\%	1.13	0.015	1.4	0.81	0.12	15.
Nd	27.8	2.35	8.4	28.5	0.90	3.2
Ni	104.	27.4	26.	107.	17.2	16.
Rb	151.	2.67	1.8	166.	11.7	7.0
Sb	0.85	0.029	3.4	0.59	0.094	16.
Sc	18.3	0.020	0.1	18.0	0.41	2.3
Sm	4.96	0.064	1.3	5.30	0.17	3.2
Ta	1.03	0.041	4.0	1.03	0.052	5.0
Tb	0.76	0.051	6.7	0.71	0.039	5.4
Th	12.5	0.066	0.5	12.3	0.17	1.4
U	2.69	0.20	7.6	2.88	0.53	18.
W	4.52	0.42	9.3	2.62	0.70	27.
Yb	3.15	0.049	1.5	2.95	0.11	3.8
Zn	115.	1.97	1.7	107.	6.02	5.6
Zr	190.	20.6	11.	225.	36.8	16.

Table 2. Elemental patterns of the EH II terracotta rollers **R1** (Asin 31) and Group X021. Given are concentrations of elements C for the sample and average concentrations M for the group in $\mu\text{g/g}$ (ppm), if not indicated otherwise, and measurement uncertainties δ for the sample and spreads (root mean square deviations) σ for the group, also in percent of M or C, respectively. The individual samples of the group have been corrected with the best relative fit factor with respect to M. The best relative fit factor of the sample from **R1** (Asin 31) with respect to Group X021 is 0.99.

R1 (AS4978, Bonn label Asin 31, run Q046, irradiated 17 October 2014) and **R2** (AS2244, Bonn label Asin 33, run Q065, irradiated 11 December 2015) were measured with the standardized NAA procedure using the research reactor in Delft. The method has been applied routinely in the labora-

tory for more than 25 years.¹⁸ The raw NAA data obtained are presented in Table 1. It is apparent that **R1** and **R2** have different chemical compositions and are made from different clay pastes. The sample from **R2** has an elemental concentration pattern that has not been recorded before; it is a chemical singleton among the 12,000 samples from the Eastern Mediterranean registered in the Bonn and Berkeley reference data banks. This fact says more about the known frequency with which clay from this source was used than its origin. Sample **R1**, however, is a member of a group of samples presently known as X021. The measured values for sample **R1** are compared in Table 2 with the data of Group X021 containing 21 datasets from 16 vessels (including five repeated measurements) and the agreement is obvious.

The chemistry in the clay of **R1** is thus very similar to that of other sherds sampled over the past decades. Many of these have not been published. Two published group members derive from the prehistoric settlement at Prophitis Ilias (Katsin-gri), about 10 km east of Tiryns.¹⁹ The first (Kats 4) is a body sherd from a Dark Burnished (“Argive Minyan”) vessel of MH date. The second (Kats 6) is an unpainted, pale-surfaced sherd of medium coarse fabric, described as being of “Middle Helladic tradition”. It was also noted that its fabric is not of an Aeginetan origin. The chemical composition of these two sherds, in turn, were compared to twelve measurements of samples from seven sherds (five samples measured twice) found at Kandia, less than 10 km east of Asine.²⁰ Among these, we have additional information about six members. Five samples (Kand 14–16, 20, and 23) are from MH–LH I pale-surfaced and burnished “Yellow Minyan” vessels and one (Kand 39) derives from a LH III B–C vessel. Unpublished members of Group X021 are five additional sherds from Prophitis Ilias. Two (Kats 121 and 153) are MH–LH I Matt Painted sherds. Yet another two (Kats 164 and 165) are MH–LH II pale-surfaced and burnished. Finally, there is one MH–LH I Grey Minyan sherd (Kats 186). The current formation of Group X021 shows that Kats 6 is close to this group, but not a good member (low in Cs and Rb). It may be called “associated”, whereas Kats 4 is now more distant in several elements and statistically outside this group. Future samples may show that Kats 4 and 6 can be added as members again.²¹

¹⁸ Mommsen *et al.* 1991, 57–65; Demakopoulou *et al.* 2017, 8–9.

¹⁹ Mommsen *et al.* 1994, 164, table 1, nos. 4 and 6 (Group D). In the study the sherds are described as deriving from a closed LH II context, but the presence of Argive Minyan, Grey Minyan, and two classes of Bichrome Painted sherds show that there is a fair amount of earlier MH II–LH I sherds in the assemblages as well.

²⁰ Mommsen *et al.* 1994, 166, table 3 (Group D) & 170.

²¹ A chemical group containing relatively few members is liable to adjustment when data from new samples are added to the reference data



Fig. 8. Excavation photograph of Third Terrace at Asine with (1) entrance to the Hellenistic cistern near which **R1b** was found, (2) EH IIB–III House R in which **R1a** was found, (3) MH House T, (4) MH House S, and (5) rectilinear structures above SE end of House T, inside which **R2** was found.

The membership of **R1** in Group X021 thus shows that the corresponding clay fabric was used over a very long period (EH II–LH IIIB/C). Its elemental pattern is well separated from others, including the two most amply attested chemical groups of the Argolid called Mycenae-Berbati (MYBE) and Tiryns (TIR).²² The core members in X021, consisting of MH–LH II Yellow Minyan, Grey Minyan, and Matt Painted sherds, as well as one LH IIIB–C sherd suggest that Group X021 was at home on the north-east Peloponnese. The strong connection of the group with the eastern side of the Argive Plain—Prophitis Ilias and Kandia with the intermediary Asine—might be coincidental, but is intriguing. Considering also the spatial distribution of known roller impressions in the Early Bronze Age Aegean, the origin of **R1** somewhere in the Argolid appears very likely. The rarity of its chemical signature nevertheless suggests that the claybed(s) from which it was manufactured were never utilized to a large extent in prehistory.

Contextual analysis of the rollers

As mentioned above, work on the Third Terrace at Asine was commenced in limited scale in 1922. The main season of exploration, however, was in 1926. The excavators encountered the partial remains of no fewer than five houses belonging to four or five different phases. In addition, 13 EH III–MH I storage or refuse pits (*bothroi*) and 37 MH graves cut through the layers.²³ Houses R (Walls 1–5) and S (Walls 6–8), both founded on bedrock, are the oldest and were dated to the EH period in the 1938 publication. House T (Walls 9–15), situated between them at a slightly higher level, is early MH (Figs. 4 and 8). The content inside *Bothros* 3, cut into bedrock below Wall 7, provides a *terminus post quem* for House S. It contained a mixture of EH II and III sherds and an animal bone sample from the pit has recently been radiocarbon dated to 2275–2024 BC at 95.4% probability (Oxcal v 4.2 calibration).²⁴ Similarly, many sherd deposits inside and around Houses R and S typically contain both EH II and III sherds with a small amount of MH I/II material as well. This suggests to us extensive later levelling and digging activities, further substantiated by the impartial and flimsy preservation of Walls 6–8 of House S.

bank. What were originally core members might after the addition of new samples become only “associated”, or even be excluded.

²² For the chemical definition of MYBE and TIR, see Mommsen *et al.* 1988; 2002, 620–623.

²³ Frödin & Persson 1938, 91–95; Nordquist 1987, 71–74; Macheridis 2016.

²⁴ Macheridis 2016, 78, table 78:BS3b.



Fig. 9. Impressed Pithos **P1** (AS4810) with spiral decoration from the Third Terrace at Asine. Photo by Michael Lindblom and drawing by Vena Olsson.

The date of House R has been subject to some controversy. From its three rooms an assemblage of 20 more or less complete EH II (18) and EH III (2) vessels were recovered (as well as one MH I vessel).²⁵ Scholars have suggested that the house is (an early example of) an EH II apsidal building in the region,²⁶ a typical early EH III dwelling (with a partial make-up of typologically older vessels),²⁷ or a multi-phased, rebuilt structure (possibly spanning the EH II/III transition).²⁸

It is thus very difficult to isolate unambiguous EH II domestic spaces with which to associate **R1** and **R2**.²⁹ While House S is EH III by the earliest and can be excluded from consideration, House R is a possible candidate. To make matters even more complicated, there are also 480 retained fragments of fired EH II tiles on the Third Terrace. The tiles, including edges and corners, display a large variation in fabric, thickness, and size. Most are plain, but solidly painted examples occur as well. It is commonly assumed that the tiles functioned exclusively as roof tiles on monumental rectangular (not average-sized apsidal) buildings. Because of the many types, we suspect that some tiles might have been

used on floors as well, but there is admittedly no indication that this was the case in House R and there are no apparent wear marks on the tile fragments. Some might have eroded downslope from the Second Terrace. It is equally possible that there are one or several yet unexcavated EH II houses further to the south-west on the Third Terrace which could have been roofed with tiles, or that the area harboured such buildings which were completely obliterated when House R and, presumably slightly later, House S were built.

There are, however, other finds in the area which situate the two rollers in a context we would expect them to appear. In a recent study, Erin Galligan forcefully argues for a conceptual connection especially between impressed storage jars (“Banded *pithoi*”) and hearths but, to a lesser extent, also stamped sealings.³⁰ Below we briefly touch upon these three categories of objects. We argue that the rollers **R1** and **R2** were at home on the Third Terrace.

Two fragments from roller-impressed *pithoi* (P) have been found in close proximity to **R1** and **R2** (Fig 4: P1–P2).³¹ The first (**P1**, AS4810) was retrieved on 17 March 1926 on the south side of the south wall of House T, approximately 50 cm below the surface. It appeared together with sherds datable to EH II (70%) and EH III–MH I (30%), as well as one painted EH II tile fragment. The coarse shoulder fragment is decorated with a partially preserved band of red (2.5YR 5/6) paint at the top.³² Like **R1**, it features impressed circles, but

²⁵ Frödin & Persson 1938, 214–219.

²⁶ Caskey 1960, 301. For a discussion on the introduction and early occurrences of apsidal buildings, see Forsén 1992, 197–203 (Greek Mainland in general); Alram-Stern 2004, 682–686 (Thebes); Theodorou-Mavrommatidi 2004, 1175–1176 (Epidauros).

²⁷ Weisshaar 1982, 463; MacGillivray 1983, 82, n. 9.

²⁸ Pullen 1987, 538–541.

²⁹ From a contextual perspective, it would thus be possible to argue that **R1** and **R2** might postdate the EH II period. Younger (1991) points out that there are no compelling reasons why decorative impressions on terracotta objects could not have outlived EH II sealing practices but, most importantly, fails to identify any instances of EH III or MH rolled (*contra* stamped) impressions.

³⁰ Galligan 2013, 189–201.

³¹ Additional roller impressed jars without published contexts at Asine are found in Frödin & Persson 1938, 231–232, fig. 169:3–5.

³² According to Wiencke 2000, 578, almost half of the necked *pithos* sherds and slightly fewer of the bowl type are decorated with dark paint at Lerna III.



Fig. 10. Impressed Pithos **P2** (AS2391) with panels and zigzags from the Third Terrace at Asine. Photo by Michael Lindblom and drawing by Vera Olsson.

they are smaller and haphazardly connected with curving lines (Fig. 9).³³ It is impossible to estimate the size of the vessel from this small fragment.

The second fragment (**P2**, AS2391) is also a shoulder of a large jar. It was found on 3 June 1926 in Layer two or three in Square 14b north of the mid point of Wall 3 in House R together with only ten sherds of EH II–MH date. The fragment features no fewer than three distinct modes of decoration. Firstly, it is decorated in relief with *taenia* bands of tightly arranged, small clay discs above and below a broad, raised horizontal band (Fig. 10). Secondly, except for the raised band, the whole surface is painted reddish brown (2.5YR 4/4), presumably in broad horizontal bands. Finally, on the unpainted, raised band is a roller impression, 6 cm high. It consists of vertical panels framed by zigzags and small dots.

The distinct and well-preserved pattern on **P2** has made it possible to identify an identical impression among previously published instances at Tiryns. The same roller was used to decorate a *pithos* at this settlement as well.³⁴ The potter applied the same type of *taenia* band and broad, painted bands on the vessel. This replication of the decorative modes in conjunction with the same roller being used suggests that the same potter made both vessels; he or she followed a mental template based on previous practices. The Tiryns *pithos* was included in a NAA sampling campaign carried out by Hans Mommsen and Joseph Maran in 1995 (sample no. Tiry 140). It belongs

to the chemical group TIRW. It can tentatively be assigned to Tiryns but should not be regarded as a subgroup of TIR.³⁵

The two fragments **P1** and **P2** suggest that at least two large *pithoi* with impressed roller decoration originally stood on the Third Terrace at Asine. To this should be added a previously published jar from House R with 25 stamped seal impressions around the shoulder.³⁶

A surprisingly large number of terracotta hearths (H) were found in the 1926 excavations on the Third Terrace as well. We have identified fragments of 14 different hearths scattered across the excavated trenches. Considering their original size, they could hardly have been in simultaneous use, but must have been replaced by new ones over time. Four of the hearths, located in House R (AS4793 and AS5131), between Houses T and R (AS4481), and just south of Wall 2 of House R (AS5198), are undecorated and are omitted here.³⁷ An additional three hearths carry incised or impressed decoration. They were found south of House R (AS2128), south of House T (AS4772), and close to the surface above House S (AS4982). Although interesting, these are also not discussed further below.

No fewer than eight hearth fragments, however, carry impressed roller decoration (Table 3; Figs. 4: H1–H8 & 11). Two of the hearths, **H1** (AS2222) and **H2** (AS4942), feature curvilinear decoration, but neither is an impression of the only vaguely similar roller **R1**. Of considerable interest, however, is

³³ Similar, but not identical to e.g. CMS V 387–388; CMS V 540.

³⁴ CMS VS 1B 420.

³⁵ We thank Susanne Prillwitz for bringing to our attention sample Tiry 140. Together with five other EH II members of the group TIRW, this sample will be presented in her forthcoming Ph.D. dissertation on pottery production in Tiryns.

³⁶ Frödin & Persson 1938, 217, no. 15, 218, fig. 160:1–2.

³⁷ Wall 2 is referred to as Wall 21 in the field documentation.

	<i>AS no.</i>	<i>Impression</i>	<i>Find context</i>	<i>Associated finds</i>	<i>Date</i>
H1	AS2222	Lunettes	Upper layer south of the south wall of House T	100% EH III–MH I, 1 EH II tile fr.	22 May
H2	AS4942	Spirals(?); possibly a pan	In rectilinear structures above SE end of House T	80% MH I–II, 20% EH, 2 EH II painted tile frs.	5 June
H3	AS4471	Zigzag	Square 18, inside House R	98% EH II–III, 2% MH, 2 EH II tile frs. (1 with an edge)	17 June
H4	AS4557	Zigzag	N of House T and W of House R, layer 12	70% EH II, 30% EH III, (<i>pthos</i> frs.), 1 tile fr.	26 April
H5	AS4968	Zigzag	In rectilinear structures above SE end of House T, in layer deeper than H2	60% MH, 40% EH, 2 EH II tile frs.	5 June
H6	AS4537	Zigzag	N of House T and W of House R, layer 11	60% EH III–MH I, 40% EH II, 2 EH tile frs.	24 April
H7	AS5058	Zigzag	N of House T and W of House R, upper layer	60% EH II, 30% MH, 6% LH III, 4% Byz., 3 EH II tile frs.	24 April
H8	AS2902	Wavy lines	Between House T and House R, layer 5	95% MH–LH, 5% EH II–III, 1 EH II tile fr.	31 March

Table 3. *AS numbers, decoration, find contexts and associated sherd material of impressed EH II Hearths H1–H8 from the 1926 excavation on the Third Terrace at Asine.*

the fact that the impression on **H1** is identical to those found on two hearths and one *pthos* at Tiryns.³⁸ The central part of the Asine fragment, accommodated on an 8 cm-wide hearth rim, shows two lunettes with double positive curves, mid points almost meeting (Fig. 11: H1a and b). Part of a third, opposing lunette is located on the far left. The flat edges of the two hearths and the *pthos* rim at Tiryns are not wide enough to accommodate the whole height of the cylinder, but there cannot be any doubt that the same roller was used.³⁹ Including **P2** described above, there is thus evidence for the same two rollers being used to produce minimally two *pthoi* and three hearths found at Asine and Tiryns. If the hearths, as assumed, were produced at the place of subsequent use, it follows that the same potter was at both places.

The spiral or circles on fragment **H2**, perhaps better described as a baking pan, is very incompletely preserved; the closest parallel might be from two *pthos* fragments, once again from Tiryns.⁴⁰ Five hearth fragments (**H3–H7**) have different relief impressions of positive zigzag, just like the negative roller **R2**. Although especially **H3** (AS4471) and **H4** (AS4557) are similar to **R2**, there is no perfect match between the five impressions and this roller. Zigzag in different versions is the most popular decoration on impressed hearths, so its abundant appearance on the terrace is not surprising. While **H6** (AS4537) has only two widely spaced zigzags, **H5** (AS4968) and **H7** (AS5058) were decorated with a roller fea-

turing at least five zigzags. A long sequence of wavy bands (or blunt zigzag) is rendered on **H8** (AS2902). Little effort has been made to search for identical zigzag impressions at other settlements.⁴¹

Three of the impressed hearths (**H4**, **H6** and **H7**) were found north of House T and west of House R (Fig. 4). The area is slightly downslope and opposite the entrance of House R and might have been used as a discard area in the EH period. Two other hearth fragments, **H2** and **H5**, were found on the opposite side of the terrace along a later retaining wall and inside/below the late MH Houses U and W (Walls 18–23). **H1**, **H8** and **H3** are evenly spread out on the central part of the terrace, the last squarely inside Room II of House R. Once again, it is difficult to envision where these hearths were originally used. While it is usually assumed that they were situated indoors for the purposes of cooking, light and/or heating, the first two functions might well apply outdoor as well. For our study, however, the most important thing to note is that people living on the terrace were surrounded by glyptic decoration, not only on the two rollers **R1** and **R2**, but also on *pthoi* and hearths.

To complete the list of glyptic objects on the Third Terrace, two hitherto unpublished stamped sealings should be mentioned as well (Fig. 4: S1–S2). The first sealing (**S1**; AS2758) was recovered in House R, Room II, Layer 17 on 17 June 1926. It preserves traces of one stamp impression with an unrecognizable motif. The back side has a rope impression (Fig. 12: S1). It was found in a mixed context with EH II (65%), EH III–MH I (30%), and LH (5%) sherds, as well as

³⁸ CMS V 563:a–b (two different hearths) and c (*pthos*), contra Galigan 2013, 178 who mistakes the *pthos* for a third hearth.

³⁹ Compare especially Fig. 11: H1a & b and CMS V 563:b which appear to preserve the same part of the roller impression.

⁴⁰ CMS V1B 398.

⁴¹ For zigzag roller impressions, see e.g. CMS V 136–138, 140, 145, 148–149, 556, 558–560; VS 1B 411–415.



Fig. 11. Impressed Hearths H1–H8 with different kinds of decoration from the Third Terrace at Asine. Photo by Michael Lindblom and drawing by Vera Olsson. For inv. nos. see Table 3.

some fragmentary mudbricks. A second sealing (S2; AS2824) has a circular depression which suggest an almost completely obliterated stamp impression (Fig. 12: S2). Judging from its back side, it was attached to some kind of thick wickerwork. It came to light between Houses R and T on 14 March 1926 together with EH II–III sherds and one tile fragment.

Unlike roller impressions on hearths and *pithoi*, stamped sealings are generally thought to articulate individual or group values. According to scholars, sealings restricted and/or recorded access to contents stored in jars, chests or rooms and thereby hint at complex economic activities.⁴² The impressions on sealings (S), probably with metal stamps, bear

⁴² Summaries of EH II seal use, their possible functions and relevant studies are found in Peperaki 2007, 95–111 and Maran & Kostoula 2014.

only limited resemblance to those made by rollers but both kinds of impressions occur together at Asine, Lerna, Tiryns, Corinth, and Petri.⁴³ Olympia Peperaki argues convincingly that inside many of the sealed containers or rooms, there were probably agrarian products eaten at special occasions.⁴⁴ If so, there might well have been associations between sealings

⁴³ For an EH II lead seal from Tsoungiza, see Pullen 1994. An overview of the spatial overlap of roller and seal stamp impressions is found in Galligan 2013, 313, fig. 7.7. Examples from the five settlements listed are found in Frödin & Persson 1938, 232, fig. 169:2–5, 235, fig. 172; Weiberg 2010 (Asine); Wiencke 1958; 1969; 1970; 2000, 302–304 (Lerna); Weisshaar 1989; CMS V S1B 371–374 (Tiryns); Lavezzi 1979; Galligan 2013, 72–80; CMS V S1A 398 (Corinth); Kostoula 2000; 2004, 1144f., pl. 3b (Petri). A large number sealings at Geraki, however, is not matched by roller impressions: Weingarten *et al.* 1999; Weingarten *et al.* 2011.

⁴⁴ Peperaki 2007, 111–114.

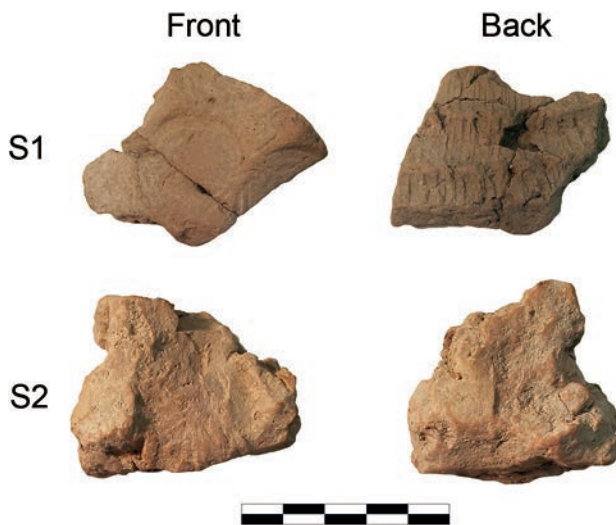


Fig. 12. Stamped Sealings **S1** (AS2758) and **S2** (AS2824) from the Third and Second Terraces at Asine. Photo by Michael Lindblom.

(monitored access to food) on the one hand, and impressed *pithoi* (food storage) and hearths (food preparation and commensality) on the other hand.⁴⁵ It is outside the scope of this study to offer new insights into possible functions of EH II glyptic, but the two new sealings **S1** and **S2** from the Third Terrace strengthen the spatial and therefore also possible associative connections between representations on different media.

Rollers, potters, and a place called home

The remarkable finds of the two terracotta rollers **R1** and **R2** on the Third Terrace at Asine show that not all were made from wood or bone, as long believed by scholars. We would not go so far as to suggest that all were made of terracotta, but it appears likely that additional pieces will surface in the future. Although no impressions of the two rollers on *pithoi* and hearths are known so far at Asine or elsewhere, this is probably also just a matter of time, especially from the very distinct **R1**. In combination with geochemical characterization and other glyptic finds from the Third Terrace, the rollers nevertheless invite some brief comments already at this point of the production places of EH II impressed *pithoi* and hearths or, rather, the home of potters manufacturing these objects.

As described above, **R2** was manufactured from clay that finds no chemical parallel, while **R1** belongs to a Group called X021. The group is formed by a small number of samples, but their present spatial distribution suggests an epicentre some-

where on the east side of the Argive Plain on the north-east Peloponnese. The vicinities of Asine, intermediary between Prophitis Ilias and Kandia, is an attractive suggestion. The two rollers were probably owned by one or several individuals living on the terrace, perhaps in House R. These persons probably manufactured and certainly surrounded themselves with objects impressed with at least ten additional rollers, now lost. The identification of identical impressions on *pithoi* and hearths from this terrace and from Tiryns show that not only did these potters manufacture objects for themselves, but also for people in surrounding settlements. The assumption that the *pithoi* and hearths at Tiryns were manufactured there rather than at Asine is open to testing by ways of petrography and geochemical characterization, but that is a separate study.⁴⁶ For the moment, however, it is a reasonable conjecture that large hearths were always stationary. It follows that potters at Asine travelled to Tiryns and probably other places as well, equipped with little else than rollers and expertise, only to return to a place called home again after some time.

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⁴⁵ Galligan 2013, 189–201.

⁴⁶ See the promising but limited data by Attas (1982, 393) where two *pithoi* sherds impressed by the same roller at Zygyouries and Lerna belong to different geochemical groups, possibly suggesting different production locales for the jars.

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