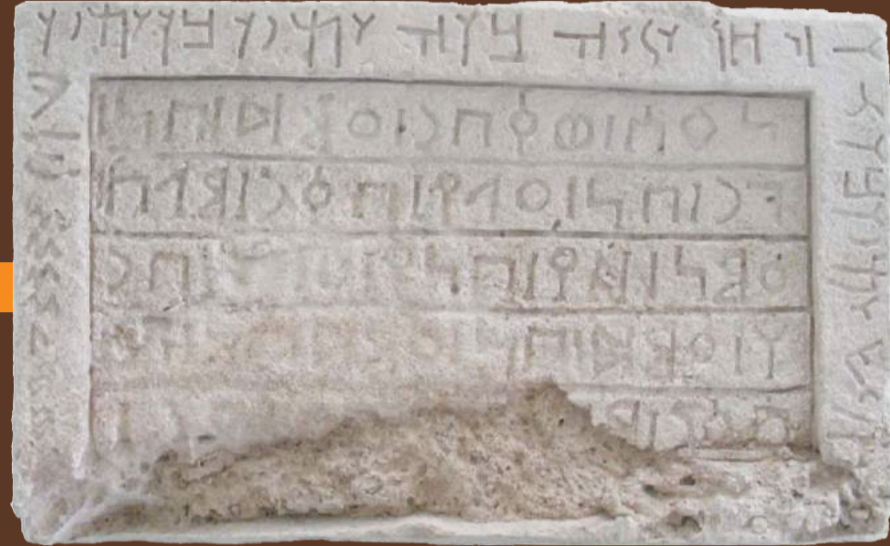




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 **Report on the  
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 Knut Bretzke

**Report on the  
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**Preliminary Re  
 Excavations at  
 (UAE)**  
 Bruno Overlaet,





# Sharjah Archaeology

Annual Magazine concerned with publication of the results of archaeological excavations and researches in the Emirate of Sharjah Archaeology Authority



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## Introduction

Since the previous issue of “Sharjah Antiquities” was published in 2015, the field of archaeology in Sharjah has witnessed important events and developments.

Perhaps the most important event saw the accomplishment and inauguration of the Mleiha Archaeological Centre on Wednesday 27th January 2016 by H. Highness Sheikh Dr. Sultan bin Mohammad al-Qasimi, member of the Supreme Council and Ruler of Sharjah.

The important archaeological discoveries throughout the area of Mleiha area have led to Sharjah occupying a stronghold among sites within the international archaeological map. As such, under the instruction of H. Highness, the new centre is dedicated towards archaeological research undertaken over the past twenty years in Sharjah, in particular at Mleiha and the surrounding area. A selection of artefacts, gypsum models, maps, plans, photos and documentary films are displayed throughout the centre’s galleries which recount the story of humans who lived on this land for thousands of years.

Survey and excavation campaigns have been continued by the local archaeology team, as well as by a number of foreign teams. These have resulted in important discoveries, notably the significant discovery of a large, square shaped tombstone found inside a monumental tomb at Mleiha. The tombstone contains funerary bi-lingual inscriptions engraved in South Arabian and Aramaic. The remarkably preserved text mentions the identity of the deceased, as well as the date of the construction of the tomb. The South Arabian inscription reveals that the buried man was ‘Amid son of GR son of Ali, the priest of the king of Uman. The Aramaic text on the tombstone’s frame refers to the date when the tomb was built; 90 or 96 of the Seleucid era, the equivalent of 222/221 or 215/214 BCE.

Thus the newly discovered inscription provides the oldest reference to the name of Uman. Prior to this discovery, the oldest references to the name were in classical sources from the 1st century CE.

In terms of activities and events carried out by the local archaeology team, the concentration of efforts was fully dedicated to the undertaking of maintenance, restoration and reconstruction of monuments and artefacts for the purpose of rehabilitation in connection with the opening of the Mleiha Archaeological Centre.

In the meantime, except for the Emirate of Sharjah series of preliminary reports which in turn have provided

The 1st article is a preliminary report by a team of Sharjah Archaeology. The work resulted in dates to Umm an-Na

The 2nd article is a preliminary report on a region of the Emirate

The 3rd article is a preliminary report on the Archaeological Expedition such as hand axes, sc

The 4th article is a preliminary report on Mleiha, Area AV.

The 5th article is dedicated to the findings found in excavation of

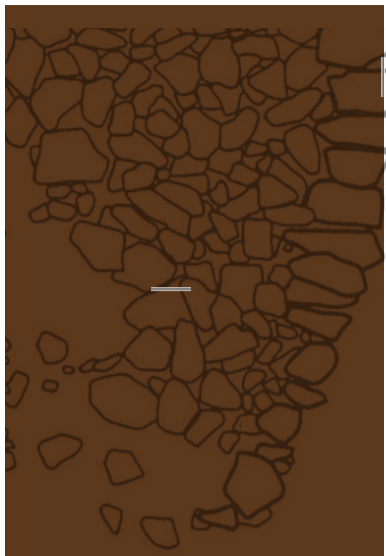
The 6th report discusses surveying and the expedition in the surrounding area.

The 7th report was dedicated to Mleiha, Area F graves discovered at the end

The 8th and final report on the Sharjah site of Wadi archaeological teams.

**Dr. Sabah Abboud J**  
Director General  
Sharjah Archaeology





In the meantime, excavation campaigns by foreign teams have continued across the Emirate of Sharjah. The results of these excavations were recorded in a series of preliminary reports submitted to the Sharjah Directorate of Antiquities which in turn have published them in this issue of "Sharjah Antiquities":

The 1st article is a preliminary report on 2005 field work conducted by the local team of Sharjah Archaeology, in the northern end of Faya mountain foothills. The work resulted in the discovery of three Bronze Age tombs; One of them dates to Umm an-Nar period and the other two belong to Wadi Suq period.

The 2nd article is a report on the 2014 Palaeolithic field work in the central region of the Emirate of Sharjah, by the German Archaeological Expedition.

The 3rd article is a report which deals with 2015 field work of the German Archaeological Expedition at the site of Suhailah where a number of stone tools such as hand axes, scrapers, points and other artefacts were discovered.

The 4th article is a preliminary report on the 2014 Belgian Excavations at Mleiha, Area AV.

The 5th article is dedicated to the results of the study of pottery and chronology found in excavation of mound A1 at Mleiha during the 2009 and 2012 campaigns.

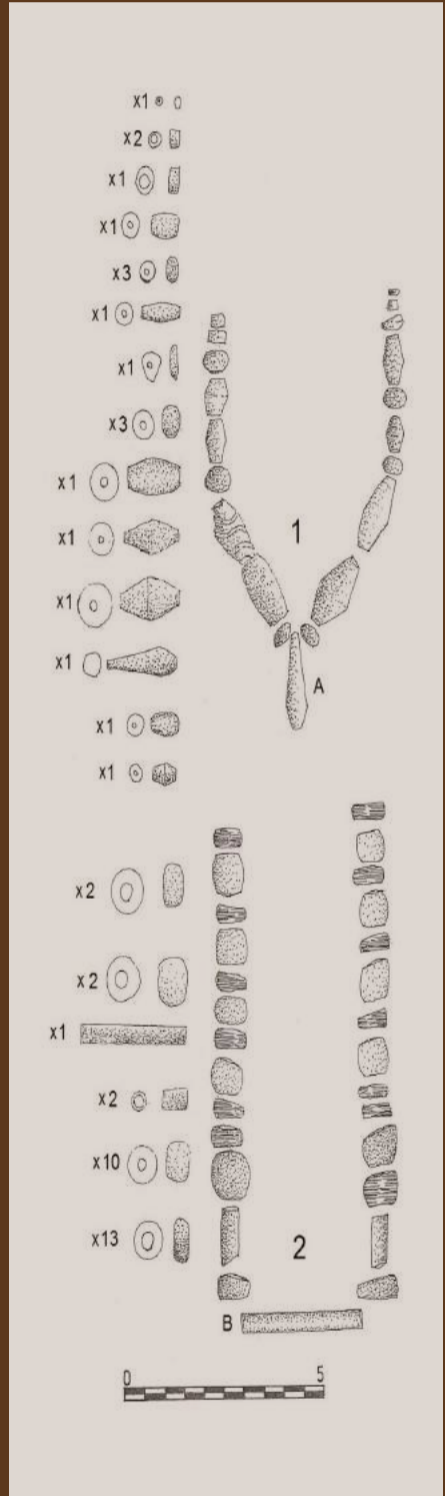
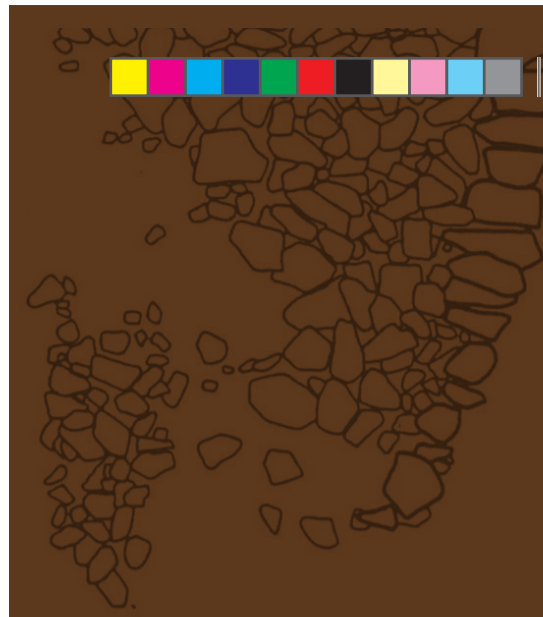
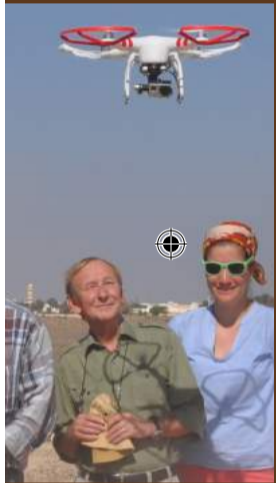
The 6th report discusses cost effectiveness of drones in archaeological surveying and the experience of the Belgian team using these in Mleiha and the surrounding area.

The 7th report was also submitted by the Belgian Expedition about work in Mleiha, Area F graveyard where an important bilingual funerary inscription was discovered at the end of 2015.

The 8th and final report is on the 2015/2016 season of excavation at the Sharjah site of Wadi al-Hilo, carried out jointly by both the local and German archaeology teams.

**Dr. Sabah Abboud Jasim**

Director General  
Sharjah Archaeology Authority





## Ernie Haenrick... Goodbye

It is with profound sadness and regret that Sharjah Archaeology Authority mourns the renowned Belgian archaeologist Ernie Haenrick, Professor of South-eastern Arabia archaeology at the University of Ghent and head of the Belgian archaeological expedition to Sharjah, who sadly passed away on Wednesday 5th October 2016.

Ernie was a pioneering archaeologist who devoted the majority of his life to his work as a professor and researcher. He conducted excavations in a number of archaeological sites throughout the region of the ancient Near East. Of these perhaps the most notable was at Ed-dour in the Emirate of Umm al-Qiwain where his work began in 1986, and where he was accompanied by his beloved wife Bernice, from whose premature death Ernie never fully recovered.

Ernie's dedication and perseverance has left us with a wealth of archaeological discoveries and given us an invaluable insight into issues ranging from cultural and trade relations to religious beliefs in ancient South-Eastern Arabia. He also authored many articles, research papers and books on archaeology and the ancient history of this region.

We are honoured that the Emirate of Sharjah was chosen by Ernie as his last station in a long and illustrious career. From 2009 until present we have had the honour of his significant contribution as head of the Belgian archaeological expedition at the site of Mleiha and we are profoundly sorry that he is not joining the rest of his team this season as planned; his departure is a tremendous loss to the field of archaeology and to his many friends and colleagues.





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**Ernie Haenrick**





Sabah Jasim & Eisa Yousif  
Sharjah Archaeology Authority

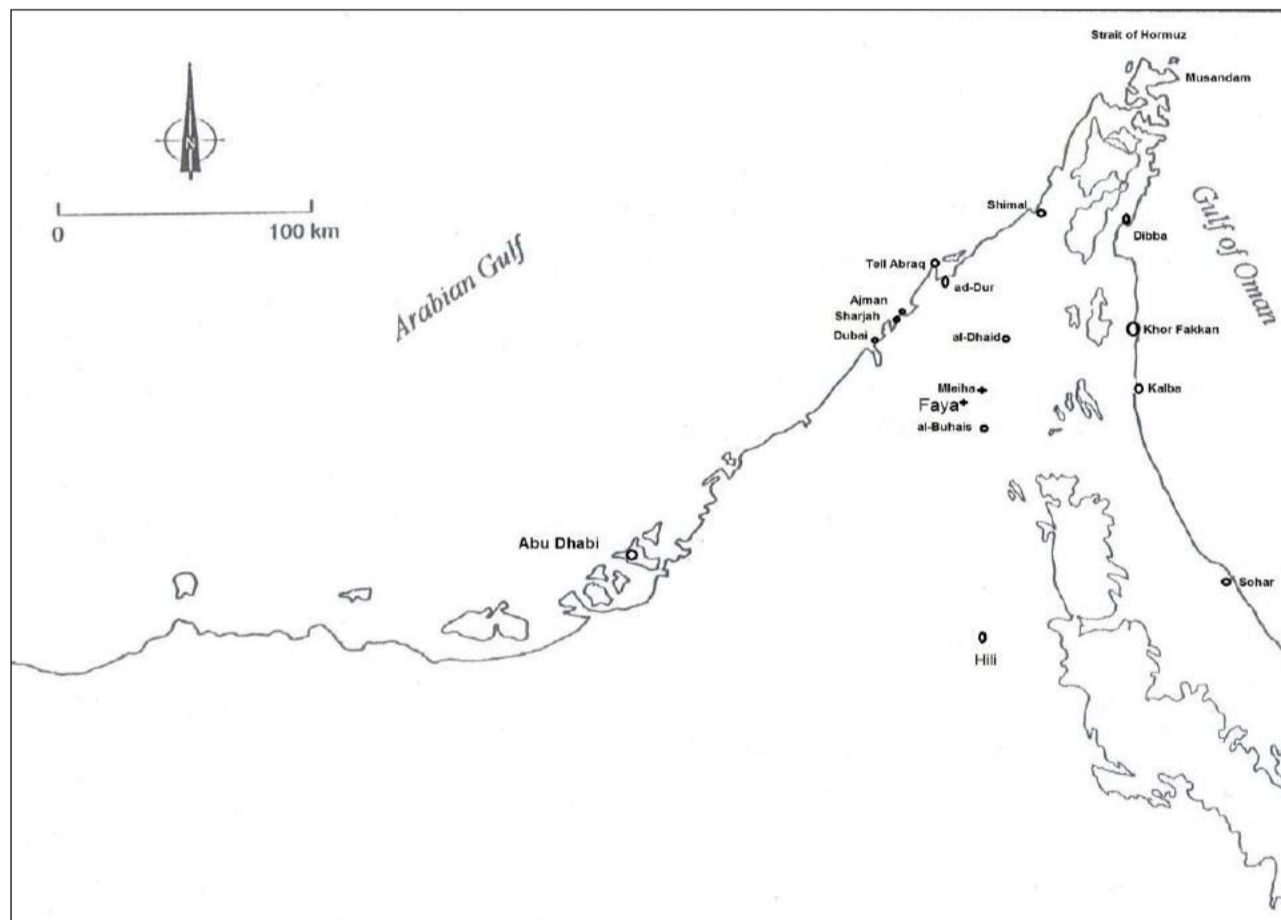


Fig 1: Map of UAE showing the location of Jebel Faya

Jebel Faya, comprised of lime stone ridges, is located at a distance of approximately 50km to the east of the town of Sharjah; west of the Hajar mountains and in close proximity to Jebel Mleiha's "Fossil Rock" (Fig. 1).

An archaeological survey conducted on foot along the foothills of Jebel Faya near its northern end, commenced in April 2005 with the objective of searching the vicinity of a large Umm an-Nar tomb which

had been unexpectedly discovered within a date palm orchard and then excavated in 1998 (Jasim 2003). We were looking for any traces of more Umm an-Nar tombs, or perhaps even a settlement belonging to that period. Our attention was initially drawn to what seemed to be construction relics; of particular interest were small stone ashlar of a type known to have been used in the construction of Umm an-Nar tombs. A limited campaign of excavations commenced

on April 13th 2005 and resulted in the discovery of three Bronze Age tombs within close proximity of each other (Fig. 2).

A trench measuring 10m x 10m was set at the location of the above mentioned ashlar. Not far down from the upper surface parts of what seemed to be irregular stone walls became apparent (Figs. 3-4) and as excavations continued an increasing number of architectural features

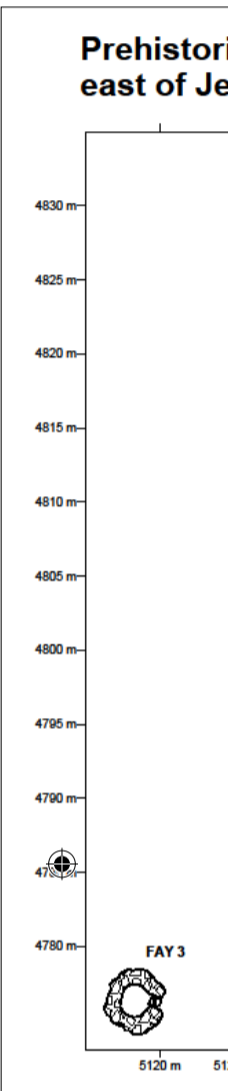


Fig 2: A plan showing the

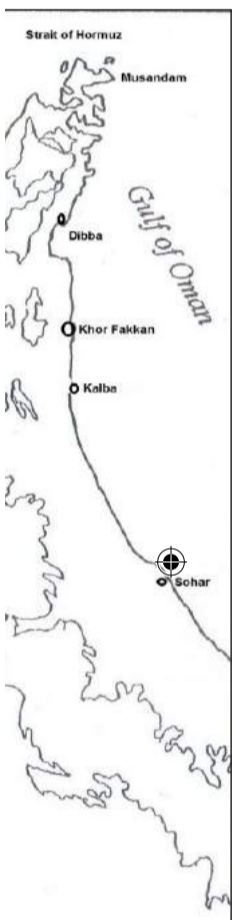
were unearthed. Up of the excavation a a very interesting ty architecture was reve

**Tomb FAY**

Coordinates: N 25° 0 50' 59.48"

This is a large tomb square or rectangle measuring 6.90m x inside (Fig. 5). TI constructed with var shaped local stone





2005 and resulted in the discovery of three Bronze Age tombs in the close proximity of each other.

During the excavation, the surface parts of what were regular stone walls were identified (Figs. 3-4) and as the excavation continued, an increasing number of architectural features

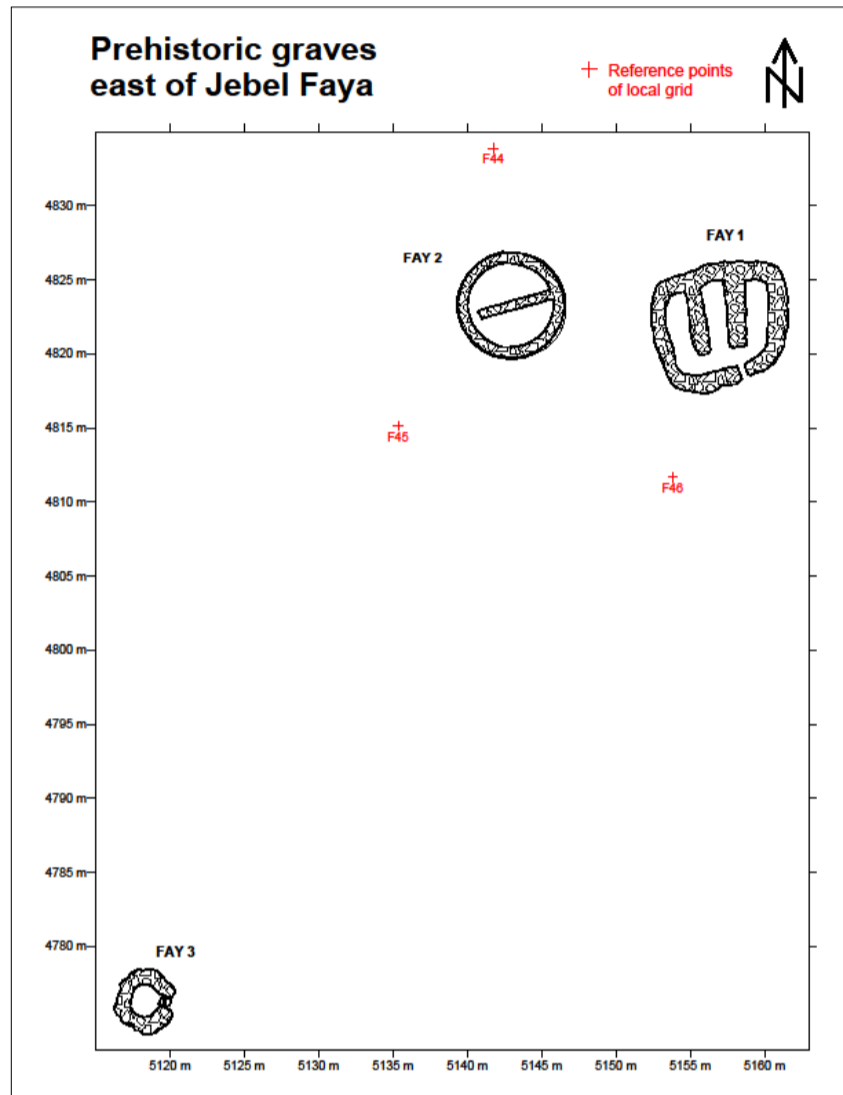


Fig 2: A plan showing the distribution of the Bronze Age tombs on the foot hill of Jebel Faya

were unearthed. Upon completion of the excavation a full picture of a very interesting type of funerary architecture was revealed.

#### Tomb FAY NE 20

Coordinates: N 25° 07' 19.30", E 55° 50' 59.48"

This is a large tomb with an almost square or rectangular shaped plan, measuring 6.90m x 6.2m from the inside (Fig. 5). The walls were constructed with various irregularly shaped local stones, which had

evidently been sourced from the nearby Jebel. It was apparent that the mason had been keen to select flat faced stones for the first row on the floor of the internal burial chamber. Some stone ashlar were also used for the construction of the western wall. In general the walls were well constructed, measuring between 1-1.37m in thickness and had survived to a height of approximately 0.70m.

The tomb's entrance is located in the south eastern corner and is approximately 0.60m wide. It is supported by large stone slabs placed

vertically on either side. The slabs are unequally sized; the one on the eastern side is larger, measuring 0.86m in length and 0.30m in height and with a thickness of 0.38m. Another slab, laid on the floor of the entrance, serves as a threshold. The entrance of the tomb provides access to the internal burial chamber which consists of three elongated compartments (A, B and C). These are separated by two partition walls; the eastern wall measuring 4.70m and the western wall measuring 4.50m. Both partitions are sprung from the northern wall and extend in a southerly direction across the internal chamber, stopping short of the southern wall at a distance of between 1.25m-1.30m. The western partition wall is faces the main entrance. The burial compartments measure 1.40m, 1.50m and 1.70m respectively from east to west (Fig. 6). The plan this tomb is closely resembles one from Qarn al-Harf at the Emirate of Ras al-Khaimah

(<https://w.w.w.dur.ac.uk/archaeology/research/projects/all/?mode=pro>).

The tomb appears to have been heavily looted and plundered in antiquity. A very small amount of fragmented bones were found, but the size and quality of this sample renders it of very limited value for study. Unearthed artefacts included bronze fragments and a small collection of various beads which are presumably part of a necklace. Little quantity of Wadi Suq potsherds were present.

#### Tomb FAY NE 21

Coordinates: N 25° 07' 19.37", E 55° 50' 58.98"

Located at a distance of 6m to the



Fig 3: View of tomb FAY NE 20 along the foothill of Jebel Faya



Fig 4: FAY NE 20 at the beginning of excavation, showing the presence of ashlar outside

west of Tomb FAY NE 20, FAY NE 21 was excavated simultaneously. Tomb FAY NE 21 is of circular plan, measuring 5.80m in diameter from the inside; the ring wall measures 7.15m and consists of sugar lump-shaped worked stones, the first row of which were had been laid on a foundation plinth at a distance of

0.10m from the outer edge of the plinth (Fig. 7). The vast majority of the first row had survived in situ, while other rows had obviously been destroyed or had collapsed and were found scattered around the tomb. It seems that a number of stone ashlar were removed and reused during the subsequent construction of the nearby

Wadi Suq tomb of FAY NE 20 (Fig. 4). It seems that stone ashlar of various sizes were used; the largest measures 0.40m x 0.21m x 0.11m and the smallest is 0.18 x 0.16 x 0.11m. The fact that only the lowest stone row had survived meant that no entrance to the tomb could be detected - it is assumed that any entrance would have been located above that level.

A straight partition wall extending in an east-west direction and measuring 5.20m x 0.50m divides the burial chamber into two equal parts. The partition wall terminates to leave a gap of 0.66m between it and the western wall of the burial chamber, thus enabling movement between the two sections of the burial chamber (Fig. 8).

The circular plan together with the ashlar masonry, suggest an Umm an-Nar date (2500-2000 BCE). This assertion is further substantiated by the presence of a small pottery jar measuring 7.5cm in both height and body diameter; with its squat shoulder, short neck, wide mouth, an out-flared rim measuring 5.5cm in diameter and simple accentuated round base measuring 4.5cm in diameter (Fig. 9) this jar resembles Black-on-Red examples from the Island of Umm an-Nar (Frifelt 1991, Figs. 103, 143-144).

The jar is wheel made with well levigated buff clay with a red coating and well fired. It bears faint traces of painted decoration consisting of two parallel horizontal bands around the neck followed by double zigzag lines running around the shoulder. Other decorative elements may have also been present on the upper half of the body but have not survived. A band of zigzag lines on the upper shoulder is the most common design to be seen on almost all pottery jars uncovered in graves from the island of Umm an-Nar and other third millennium

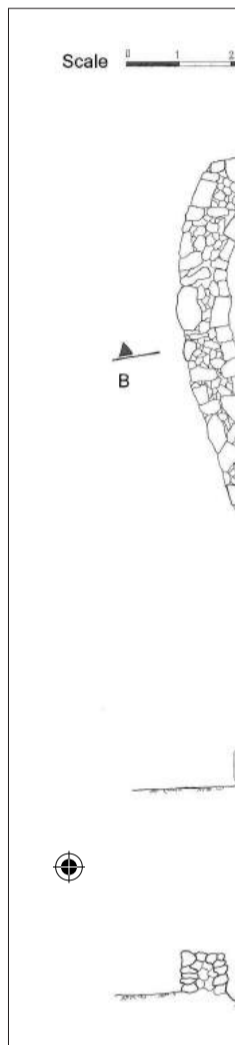


Fig 5: Plan and Cross sect



Fig 6: Tomb FAY NE 20 af





of FAY NE 20 (Fig. 4). The ashlar blocks are of various sizes; the largest measures 0.16 x 0.11m and the smallest 0.06 x 0.04m. The lowest stone row is so low that no entrance could be detected - it is only an entrance would be detected above that level.

The wall extending in section and measuring 1.1m divides the burial into two equal parts. The wall is intended to leave a gap between the two burial chambers, thus separating the two burial chambers (Fig. 8).

When taken together with the other finds, they suggest an Umm al-Qaiyarih (2000-2500 BCE). This is further substantiated by the discovery of a small pottery jar, 5.5cm in both height and diameter; with its squat neck, wide mouth, and simple accentuated rim measuring 4.5cm in diameter. This jar resembles examples from the Umm al-Qaiyarih (Frifelt 1991, 144).

The jar is made of well-burned clay with a red coating. It bears faint traces of a design consisting of two parallel bands around the body and double zigzag lines on the shoulder. Other designs may have also been on the upper half of the jar but have not survived. A band on the upper shoulder is a common design to be seen on pottery jars uncovered on the island of Umm al-Qaiyarih in the third millennium

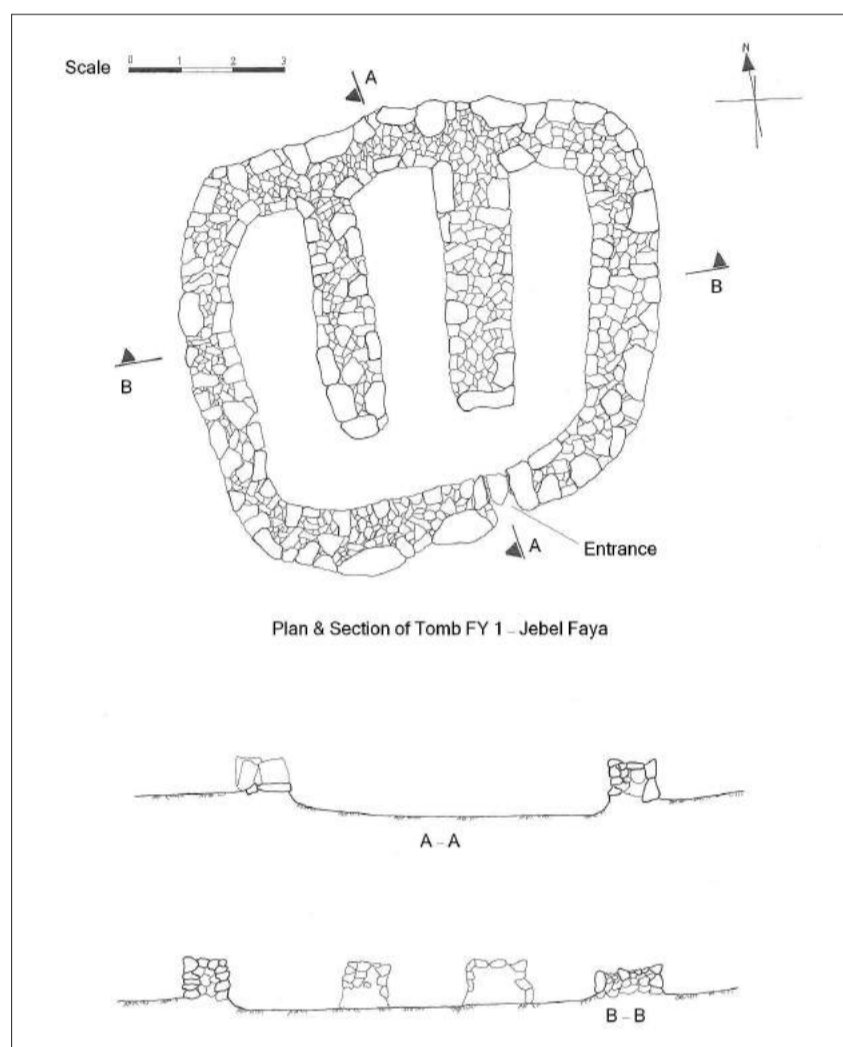


Fig 5: Plan and Cross section of tomb FAY NE 20



Fig 6: Tomb FAY NE 20 after excavation, showing the entrance (looking north)

sites throughout the peninsula such as Hili, Bat, Amlah and Ganada as well as across the Gulf in Iran (Frifelt 1991, 92). Jars bearing zigzag patterns were also reported from the site of Muweihat in Ajman (Haenrick 1991, Fig. 5), Jebel Emalah (Benton and Potts 2010, Figs. 59, 67, 69-70), and Mleiha in the Emirate of Sharjah (Jasim 2003). This design is therefore used as a chronological marker for the end of the third millennium BCE (Frifelt, *ibid.* 92).

Other finds included personal adornments such as a collection of beads of various materials, colours and shapes (Fig. 10). The interment of personal adornments with the deceased seems to have been a common practise during the Umm al-Qaiyarih period as evidenced by the variety of beads found in the tombs from that period. A total of 977 variant beads were recovered including three different types of silver/lead alloy examples, all of which were present in one particular necklace (Figs. 10: E-F; 11: 1-2) which was comprised of 19 long beads that were barrel to biconical in shape and ranged in size between 1.5 - 1.8cm in length and 0.5 - 0.6cm in diameter. Each long bead was manufactured using a single sheet of metal which had been either rolled or folded; some beads were fused, while others were not (Fig. 11: A). The necklace also included 23 short, fully fused and relatively heavy beads that were barrel to biconical in shape and ranged in size between 0.7 - 0.9cm in length and 0.4 - 0.5cm in diameter (Fig. 11: B). Similar biconical beads made of silver, lapis lazuli and carnelian were found in the royal graves of Ur in southern Mesopotamia (Reade 2003, Figs. 74e; 80). The third type of silver/lead alloy bead used in the necklace was long and tubular in shape and ranged in size between 3 - 3.7cm in length and 2.2 - 2.5mm in diameter



(Fig. 11: C). There were thirteen of these types of bead present and again they were formed from a single sheet of metal and not fused together. The tubular beads had been arranged in sets of five and terminated on either side with a plano-concave piece of metal measuring 1.00cm x 3.00mm. Five small round holes were set in a horizontal position to serve as stoppers or supports for the long tubular beads which are a perfect fit (Fig. 11: D).

A variety of 505 soft stone micro-beads were found in varying shapes, colours and sizes. Shapes vary from circular or semi-circular to square or semi-square; colour ranges from black (dominant) to greyish, light brown and whitish; size ranges between 2.2 - 2.6mm in diameter and 1.3 - 2.1mm in thickness (Fig. 12). Soft stone micro-beads from this tomb find close parallels at the sites of Jebel al-Emalah (Benton and Potts 1994, Fig. 80), Umm an-Nar (Frifelt 1991, Figs. 245, 247).

Other beads discovered included a single tortoise shaped soft stone example, with one black face and one whitish face (Fig. 12: A). Another necklace of 310 small, reddish, soft stone micro beads was also unearthed. These are generally circular in shape with two flat faces bearing a relatively wide hole in the middle and with thicknesses varying from 2mm to 6mm (Figs. 10: G; 12: 1). A few talc micro beads were also present. Soft stone and talc micro beads are both characteristic features of Umm an-Nar tombs (Frifelt 1991, Figs. 245, 247; Benton and Potts 1994, Figs. 79-80; Jasim 2003, Fig. 16). One soft stone, greyish/whitish, barrel shaped bead was also found as were a variety of some 35 carnelian beads (Figs. 10: A, C, D; 12: 2; 13: 1). The carnelian beads ranged in shape from circular, round, barrel to biconical or lozenge



Fig 7: A view of Umm al-Nar tomb showing the plinth, the ring wall and the central partition wall

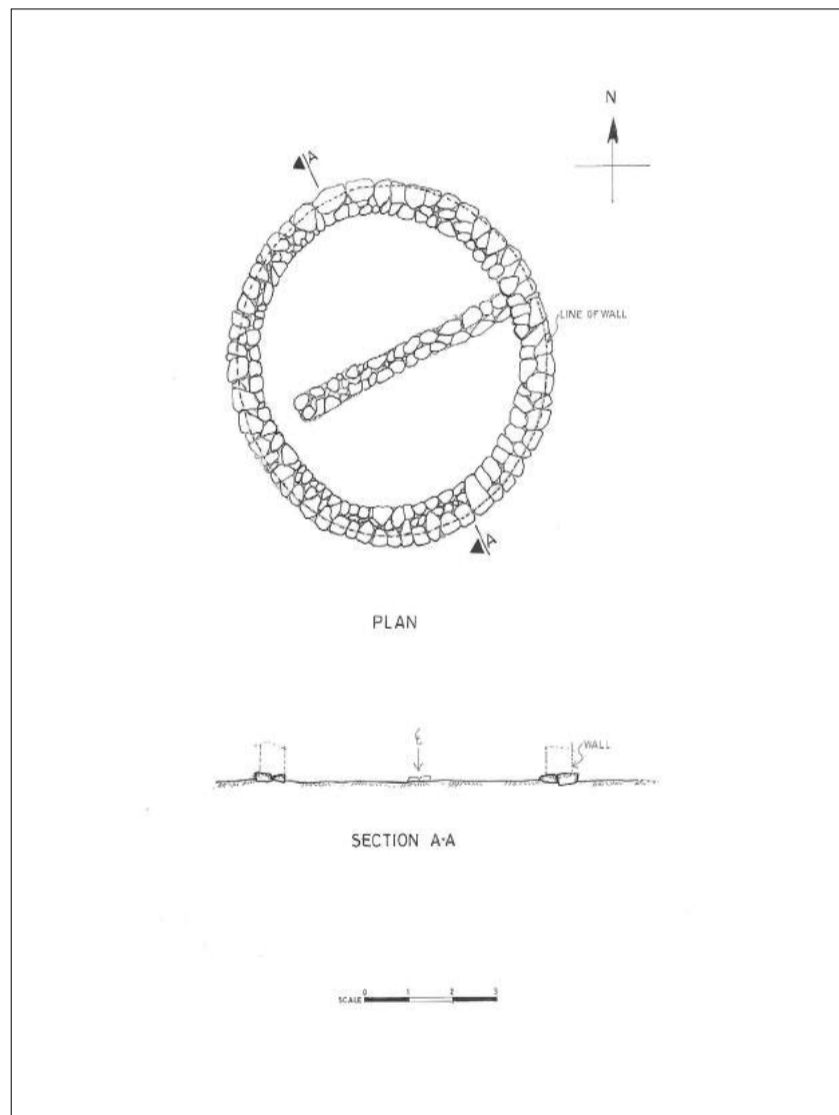


Fig 8: Plan & Section of tomb FAY NE 21

(one only) (Fig. 12: E shaped carnelian pen top for suspension w (Fig. 13: A) as well a steatite bead (Fig. 13:

### Tomb FAY

Coordinates: N 25° 0 50' 58.08"

This tomb lies at approximately 50m western side of tomb Faya 21. It is small and circular in shape with an external diameter of 1.4m. The wall is made of multiple stone rings, 0.70m in width which has an upper opening which is 0.75m in diameter (Figs. 14

The entrance is located on the eastern side, in the shape of a simple opening 0.75m in width. The entrance is situated at distance of 0.75m from the upper stone row and a second step is located below. The second step is part of the second stone row. The floor of the tomb which lies 0.40m below the

The tomb had been probably accounts for the absence of any skeletal remains. However some very few funerary objects were found inside the burial chamber. Two socketed bronze spears were found driven together on the eastern side of the wall just inside the entrance (Figs. 16; 18: 1-2). The two spear heads measure 1.5m in length, with a blade width of 0.5m. The second measures 1.2m in length with a blade width of 0.4m. Even though these types of spears had appeared by the





the central partition wall

(one only) (Fig. 12: B). A plumb bob shaped carnelian pendant pierced on top for suspension was also present (Fig. 13: A) as well as a long tubular steatite bead (Fig. 13: B).

### Tomb FAY NE 22

Coordinates: N 25° 07' 17.85", E 55° 50' 58.08"

This tomb lies at a distance of approximately 50m to the south-western side of tombs Faya 20 and Faya 21. It is small, subterranean and circular in shape with an external diameter of 3.8m. It consists of multiple stone rows measuring 0.70m in width which surround the upper opening which is 2.5m in diameter (Figs. 14-15).

The entrance is located in the middle of the eastern side, and takes the shape of a simple opening measuring 0.75m in width. There is a step situated at distance of 0.50m from the upper stone row, followed by a second step at distance of 0.12m below. The second step is actually a part of the second stone row above the floor of the burial chamber, which lies 0.40m below.

The tomb had been looted and this probably accounts for the complete absence of any skeletal remains. However some very interesting funerary objects were discovered inside the burial chamber. Two socketed bronze spear heads were found driven together into the western side of the wall just above the floor (Figs. 16; 18: 1-2). The larger of these two spear heads measure 24cm in length, with a blade width of 3.5cm. The second measures 21cm in length, with a blade width of 3.5cm. Both the spear heads possess a raised mid rib. Even though these types of weapons had appeared by the end of the third

millennium BCE (Cleuziou 1981, Fig. 11: 1-2; Potts 1998, 183), they are considered to be a characteristic feature of the Wadi Suq period in the Oman Peninsula. The Faya spear heads resemble many examples from Wadi Suq assemblages such as Jebel al-Buhais (Jasim 2011), Shimal 1 (Donaldson 1984, Fig. 14: 4), Ghalilah 2 (Donaldson 1984, Fig. 28: 10), Shimal 102 (Vogt and Franke-Vogt 1987, Fig. 21: 5-6), Shimal 6 (De Cardi 1988, Fig. 14: 10), Asimah (Vogt 1994, Figs. 23: 1; 54: 1-2; 56: 8-9), Dhayah (Kastner 1991, Fig. 3a) and other related sites in the Oman Peninsula (Potts 1998, Figs. 2a-2b).

Of particular interest is the presence of a broad bronze dagger with straight sides tapering to a curved end, and stepped shoulders that terminate in a tang which bears a single perforation. The perforation in the tang was presumably intended for a rivet which would affix the blade to a wooden shaft/handle (Fig. 17a and 17b). Two similar daggers have been reported from Alignment A grave A2 and grave A4 at the site of Asimah at Ras al-Khaimah (Vogt 1994, Figs. 54: 6; 57: 1). Our example is closely comparable to one found at Asimah, however it has a flat cross section while the cross section of the Asimah blade is a lozenge-shape that is formed by a central crest on either side. These three examples constitute the only ones of this kind to have been discovered in the entire region.

Other finds include a copper razor (Fig. 18: 3). This type of object has been reported from a late third millennium context at Mowaihat and sites in Mesopotamia (Haerinck 1991, 14, Fig. 8:28). Thin, flat blades usually characterized with fat or curved cutting edges and represented by different shapes and sizes have also been found at several Wadi Suq sites

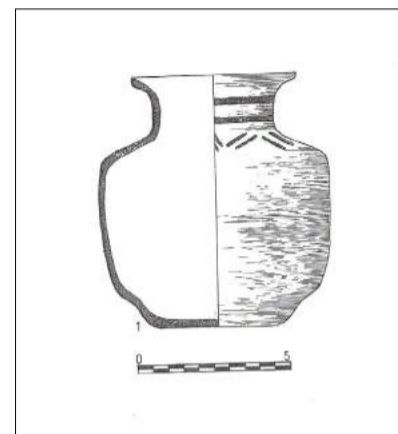


Figure 9: Umm an-Nar pottery Jar from tomb FAY NE 21

in UAE such as Jebel al-Buhais (Jasim 2011) and Shimal (Donaldson 1984, Fig. 57: 11-12; Velde 2003, Fig. 7: 5).

### Conclusion

FAY NE 20 is a large, well constructed, above ground tomb near the foothills of Jebel Faya. Although no diagnostic material was retrieved from the burial chamber, the method of its construction - and particularly the setting of the entrance - clearly suggests a Wadi Suq date. The closest parallel to this tomb in the one found at the site of Qarn al-Harf in the Emirate of Ras al-Khaimah. No other example can be cited within the region, moreover despite the presence of a large number of Wadi Suq type tombs that have been





Fig 10: A selection of personal adornments found in Tomb FAY NE 21

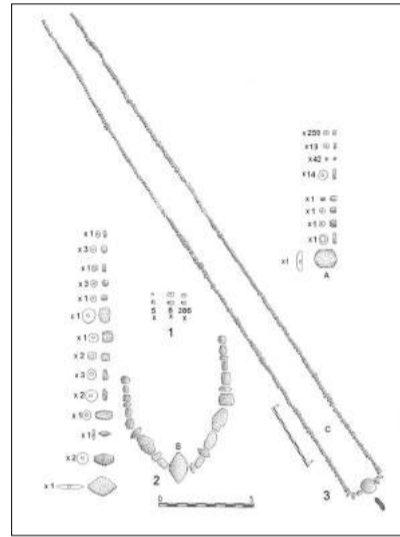


Fig 12: A variety of carnelian and stone beads from tomb FAY NE 21



Fig 14: A general view showing the tomb entrance

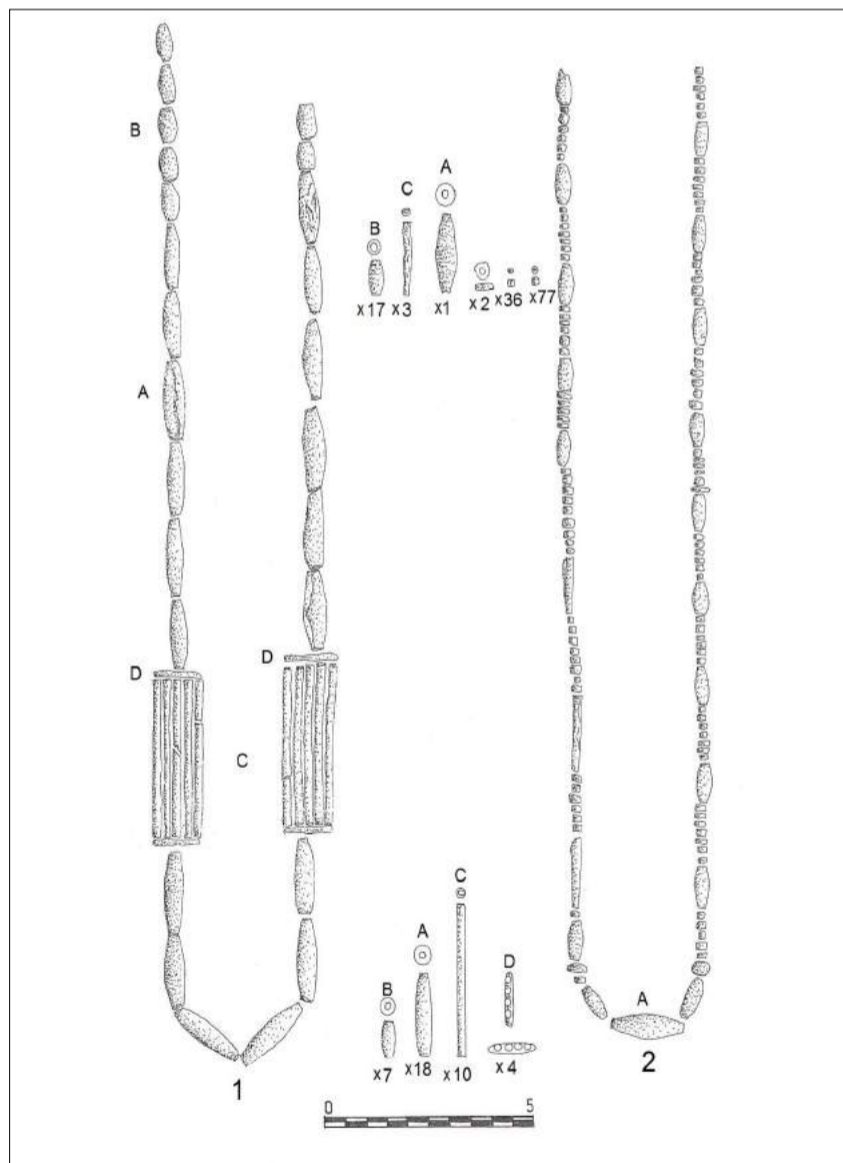


Figure 11: Necklaces made of a selection of silver/lead alloy bead types from tomb FAY NE 21

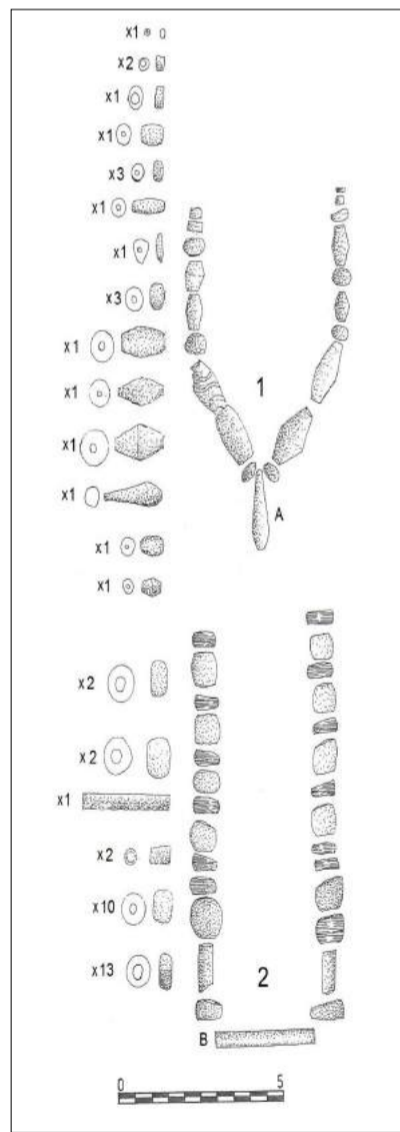


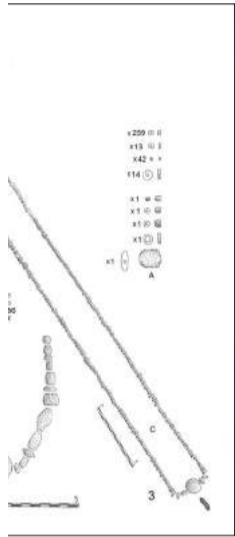
Fig 13: A variety of beads from tomb FAY NE 21



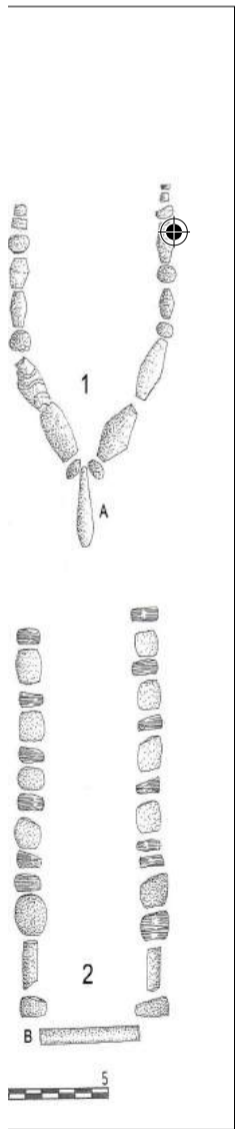
Figure 15: Tomb FAY NE 21

excavated at the necropolis of Jebel al-Buhais, only one (Tomb BHS 1) was a surface construction while the others are subterranean. Figure 15 provides compelling evidence for the contemporaneity and use of both surface and subterranean tombs in the Suq era. Although the tombs are badly plundered, their size and distinctive features suggest a prestigious burial. It can therefore be added that this extraordinary funerary complex excavated at the necropolis





carnelian and stone beads



beads from tomb FAY NE



Fig 14: A general view showing both Tomb FAY NE 20 & Tomb FAY NE 21 (looking west).



Figure 15: Tomb FAY NE 22 after excavation (looking west)

excavated at the nearby area of Jebel al-Buhais, only one example (Tomb BHS 1) was an above ground construction while the majority are subterranean. FY 20 therefore provides compelling evidence for the contemporaneous construction and use of both over-ground and subterranean tombs during the Wadi Suq era. Although the tomb has been badly plundered, both its substantial size and distinguished architecture suggest a prestigious construction and it can therefore be added to the list of extraordinary funerary monuments excavated at the necropolis of Jebel

al-Buhais (Tombs BHS 1, BHS 66 and BHS 90) (Jasim 2011).

The discovery of FAY NE 21 along the foothills of Jebel Faya and in such close proximity to the previously uncovered large Umm an-Nar tomb at Mleiha demonstrates that the Umm an-Nar culture was well established across the entire middle area of Sharjah (Fig. 12). The excavation of the necropolis of Jebel al-Buhais has revealed examples of the earliest forms of Umm an-Nar funerary architecture side by side with older and transitional forms (Jasim

2011). Transitional types of tomb, ranging from Hafit to Umm an-Nar were also unearthed at the nearby foothills of Jebel Emalah (Benton 2006). More developed tombs have been discovered at Mleiha (Jasim 2003) and recently at Faya. The discovery of this Umm an-Nar tomb in Faya has further widened the geographical distribution of Umm an-Nar culture well beyond its previously known boundaries within the Oman Peninsula. FAY NE 21 is a simple variant of ashlar masonry which characterises the funerary architecture of the late Umm an-Nar period and thus represents a new addition to the wide variety of tombs belonging to this culture.

FAY NE 22 is considered to be of special interest in terms of both its architecture and its content. Although it dates to the Wadi Suq period it also possesses features that are unique among the rest of the Wadi Suq tombs in the area. As far as the funerary architecture is concerned, it is the smallest subterranean tomb to have been thus far discovered in the area. It also differs from other Wadi Suq tombs in the shape of its entrance which takes the form of a simple opening, devoid of stone slabs against its two sides and with no lintel or threshold. The presence of two bronze spear heads driven into the wall is a familiar feature attested at other Wadi Suq tombs in the region, such as Jebel al-Buhais (Jasim 2011) and Asimah where it was postulated that they represented a complete spear attached to a wooden shaft which would have occupied the entire length of the burial chamber (Vogt 1994, 127). This phenomenon occurs in many Wadi Suq tombs and might have some religious significance (Jasim 2011).

Of special interest is the presence of the broad dagger with a stepped



shoulder and perforated tang. This is unique in type among archaeological assemblage and has no parallels elsewhere in the region apart from the Asimah examples. The Asimah blades have been roughly dated to between 2100 - 1900 BCE and would have been objects of high value that were imported into the area, probably from Central Asia and Elam (Vogt 1994, 126). Since this type of dagger shows no typological connection with the large corpus of daggers known from any Wadi Suq sites in the region, the assumption of a foreign origin for the blades seems plausible.



Fig 17: Two socketed bronze heads from tomb FAY NE 22



Fig 18a: Dagger bronze blade with stepped shoulder & perforated tang.

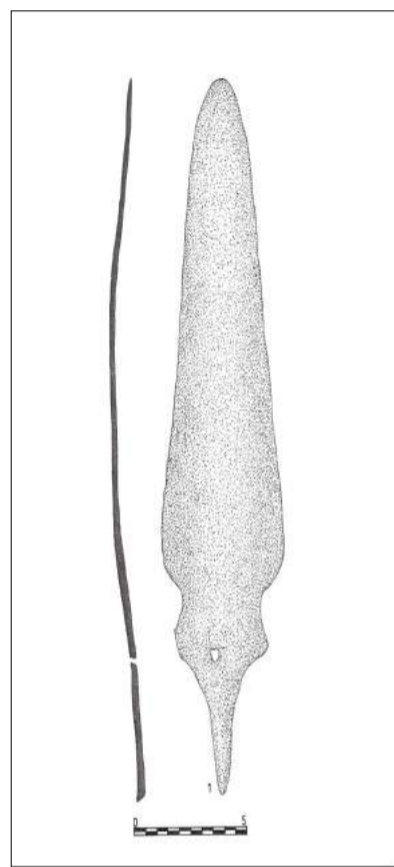


Fig 18b: Dagger blade with stepped shoulder & perforated tang.

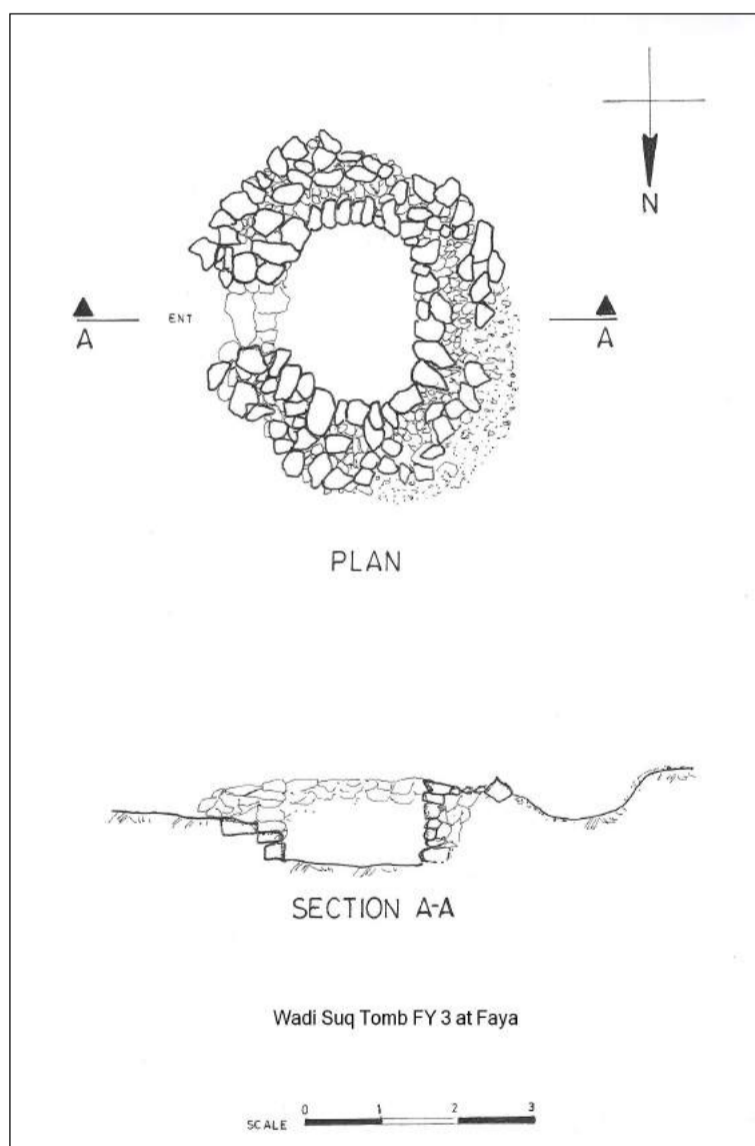


Fig 16: Plan & Section of Tomb FAY NE 22

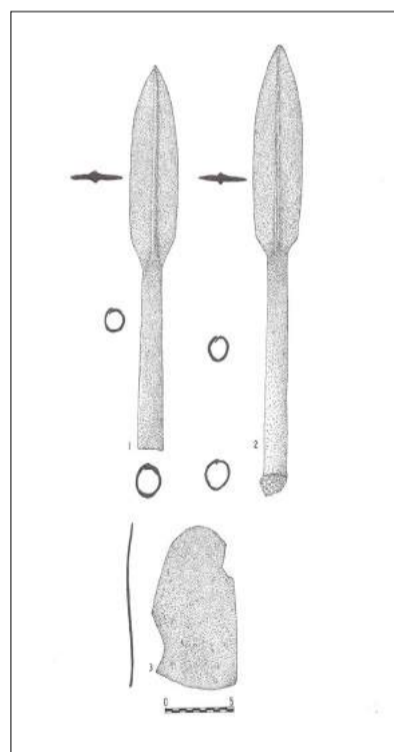


Fig 19: Bronze socketed spear heads (1-2), copper razor (3) from Tomb FAY NE 22.

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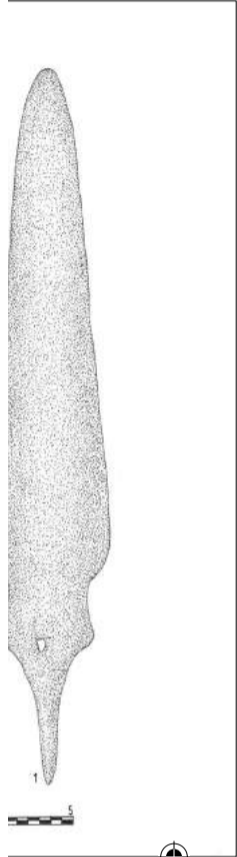
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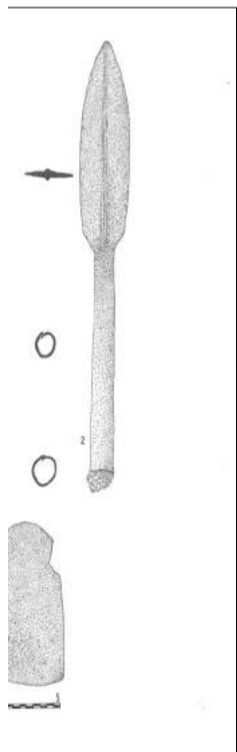
Vogt, B. 1994. Asima Emirates. Shell Mark







spearhead with stepped shoulder



stepped spear heads (1-2),  
from Tomb FAY NE 22.

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# Report on the 2014 Paleolithic field work in the Central Region of Sharjah Emirate

Report 2014 by

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## Introduction

The 2014 season was the first season of the German mission where we conducted two Paleolithic field projects in parallel. The fortune discovery of two Acheulean handaxes in Suhailah in 2012 and further findings during a visit in 2013 encouraged us to begin systematic field work here in addition to the continuation of excavation at site FAY-NE1. The 2014 team consisted of Dr. Knut Bretzke, Alexander Janas (technician) and Max Schreibers (M.A. student). We conducted field work at Jebel Faya and Suhailah between February 16 and March 14.

## Excavation at FAY-NE1

Central goals of the 2014 season at Faya included the recording of the entire archaeological sequence present in the south western part of the site and the increase of the number of artifacts related to the archaeological assemblages from AHs II and III. To reach these goals we continued excavation in trenches 38 and 24 and re-opened trench 37, which was not excavated since 2010. In 2010, excavations in trench 37 were stopped just below AH II. We thus expected to reach AH III soon after beginning to work here. Since trench 37 is just one meter wide, we

initially attempted to expand the area of trench 37 along the entire length by about 1 m to the east. After checking the local conditions, however, we decided to extend trench 37 only in the northern part by 1 m to the east over a length of 1 m (Fig. 1).

11 workmen from the department provided significant support of

our field work, which enabled the removal of about 20 to 35 cm of sediments in trenches 24 and 38 in addition to about 100 cm in trench 37. We reached bedrock in the entire area of trench 24, in the eastern part of trench 38 and in all parts of trench 37, except a small area of about 30 x 20 cm in the north of this trench. The extension area of trench 37 was

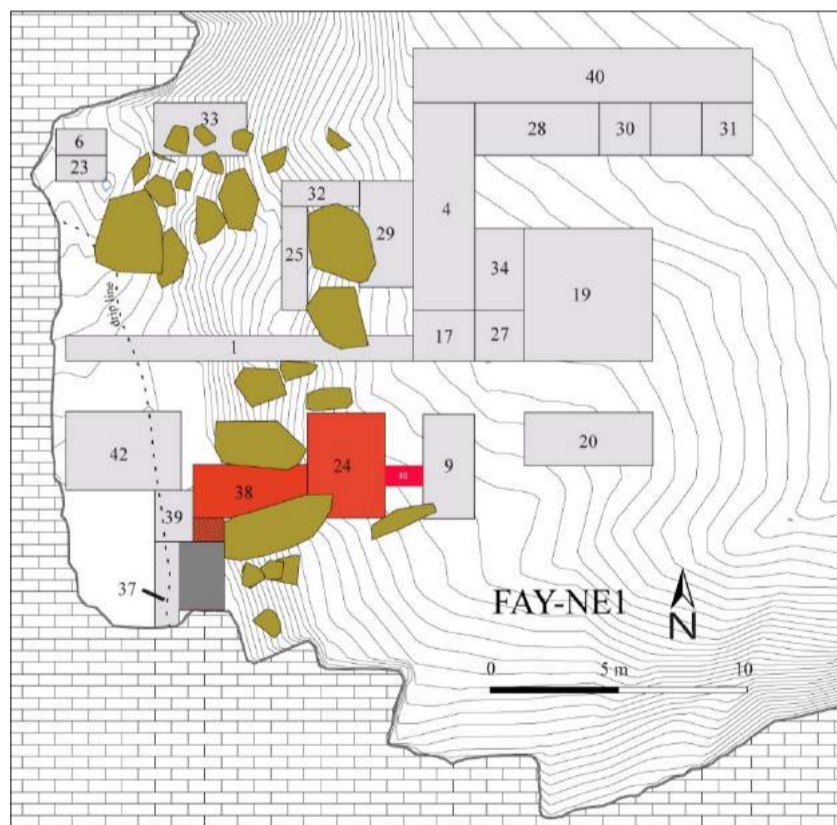


Fig. 1. Trenches at site FAY-NE1. Dark gray area east of 37 was intended to excavate in 2014, but not realized due to local conditions; red hatched area: extension of trench 37 realized this year. Shown in red areas of excavation activity in 2014, note the new trench 46 connecting trenches 24 and 9.

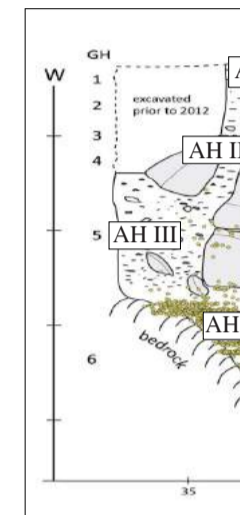
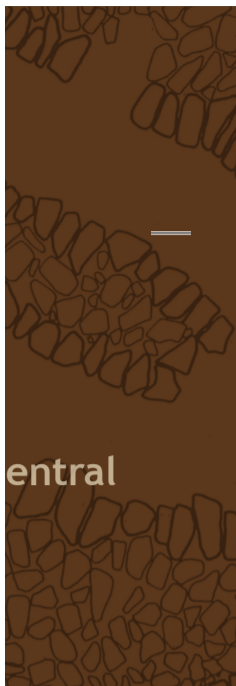


Fig. 2. Distribution of geological horizons excavated during the 2014 campaign.

excavated from present depth of about 1.50

Following the previous seasons, we defined geological horizons and archaeological horizons. All fine pieces were plotted and recorded in each area excavated (Fig 2). During 16 days we recorded 1431 liters and 1045 buckets. Given a volume of about 9 m<sup>3</sup>, the sediment removed during the excavation at Faya can be estimated at 9 m<sup>3</sup>. In addition to liters and buckets, we recorded the location of 39 features, mainly stones larger than 10 cm. We use the measurements to document holes in the soil of finds. Two of the potential hearths are accumulations of dark burnt materials.

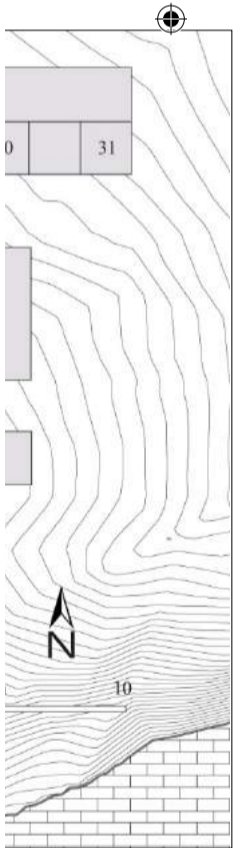
Field work during the campaigns of excavation was concentrated in trench 24. Here we stopped excavation in year in GH 6 and AH I last days of excavation noticed that the char-



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which enabled the out 20 to 35 cm of trenches 24 and 38 in trench 100 cm in trench bedrock in the entire 4, in the eastern half l in all parts of trench all area of about 30 north of this trench. rea of trench 37 was



nd to excavate in 2014, but trench 37 realized this year. 46 connecting trenches 24

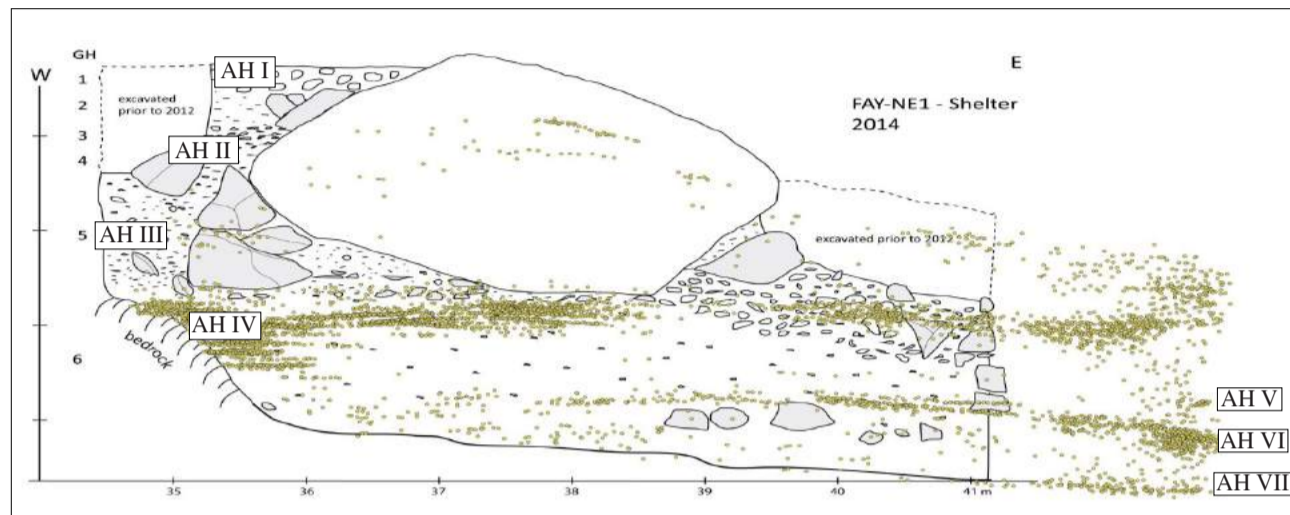


Fig. 2. Distribution of geological horizons (GHs), archaeological horizons (AHs) and lithic artifacts in trenches 38 and 24 at the end of the 2014 campaign.

excavated from present surface to a depth of about 1.50 m.

Following the procedure of the previous seasons, we excavated in defined geological horizons (GH) and archaeological horizons (AH) and piece plotted all finds larger than 2 cm and recorded the center point of each area excavated to fill one bucket (Fig 2). During 16 days of excavation we recorded 1431 lithic artifacts and 1045 buckets. Given a mean volume of about 9 l, the sediment volume removed during the 2014 campaign at Faya can be estimated to about 9 m<sup>3</sup>. In addition to lithic artifacts and buckets, we recorded the dimension and location of 39 features, which are mainly stones larger than 50 cm. We use the measurements of large stones to document holes in the distribution of finds. Two of the features were potential hearths identified by accumulations of dark sediments and burnt materials.

Field work during the last two campaigns of excavation at FAY-NE1 was concentrated in trenches 38 and 24. Here we stopped excavation last year in GH 6 and AH VI. During the last days of excavation we already noticed that the characteristics of the



Fig. 3. Trench 24 at the end of the 2014 field season. Excavation exposed bedrock in the entire area.

excavated sediments changed from the typical reddish brown color of strongly cemented fine and medium sand with some silt and sub-angular gravel-sized clasts of GH 6 to reddish sediments containing clasts of about 1 – 2 cm in size which are less strongly cemented. During the first days of this year's excavation and

with a larger area excavated featuring changed sediment characteristics, we decided to change to GH 7 after GH 6 was removed in all parts of trenches 24 and 38. In this new GH we discovered a new layer of lithic artifacts and defined AH VII. This AH is stratigraphically well separated from AH VI. All lithic artifacts excavated in 2014 belong to GH 7/ AH VII, which expand over the entire area covered by trenches 24 and 38. The assemblage of AH VII contains 243 lithic artifacts. While trench 24 was successfully dug to bedrock (Fig. 3), there is still an area of about 4 by 1 m in trench 38 where 5 to 10 cm of sediment covers bedrock. Sediments here were again extremely hard and their removal was very time consuming.

Trench 37 was filled with red sand to protect the profiles from damage. Such procedures are here of critical importance given the location of this trench just below the drip line. After removing the sand from trench 37, excavation began on day two with the removal of a large block in the northern part of trench 37. The surface below the block was about 20-30 cm higher than in the southern part. While excavations in the higher part started in GH 4, excavations in



Fig. 4. Trench 37. Left: stone accumulation at the border between GH 5 and GH 6. Right: Situation at the last day of excavation, note the small circular notch in the bedrock.



Fig. 5. Excavation in trench 46 viewed from east (left) and the southern profile at the end of the campaign viewed from north.

the southern part began in GH 5. The border between GH 4 and GH 5 is well defined by an accumulation of large stones. Moreover, the red-brown color of GH 4 changes to brown in GH 5. This change in color is accompanied by a decrease in the amount and size of limestone fragments from GH 4 to GH 5. Since the deeper southern area was larger than the higher northern one, we reached the same GH for both

parts on day four of the excavation. Already on day three we reached AH III in GH 5 in the southern part of trench 37. Unfortunately the number of finds remained relative low with a total count of 59. In the lower part of GH 5 we excavated loosely scattered lithic artifacts which are despite their relative low density a well separated AH. We call this AH III.a. A number of 31 lithic artifacts belong to this AH



Fig. 6. Protective installati

in trench 37. On day the border between C which was at  $z \approx 48$  well defined by a layer 15 cm blocks (Fig. 4 AH IV. We excavated number of 870 artifacts to AH IV in trench last week of excavation the top of the step in stopped further work despite a half circular central part of trench provided more sediment excavate (Fig. 4).

With the definition trenches 24 and 38, the sequence diverges since the sequence established terrace. To draw conclusions relationship between we would need to compare with trench 9 further ten of the excavation to remove sediments between trench 24 and here was conducted in 46 (Fig. 5). Of those our excavation only C can be identified in trench all other GHs occur





Fig. 6. Protective installations in trench 42 (left) and trench 37 (right).

in trench 37. On day 9 we reached the border between GH 5 and GH 6, which was at  $z \approx 48.6$  m and again well defined by a layer of large (10 – 15 cm) blocks (Fig. 4). GH 6 contains AH IV. We excavated a significant number of 870 artifacts that belong to AH IV in trench 37. During the last week of excavation we reached the top of the step in the bedrock and stopped further work in this trench, despite a half circular notch in the central part of trench 37 would have provided more sediments of GH 6 to excavate (Fig. 4).



Fig. 7. Potential location of two floor props to prevent the blocks from falling into trench 38.

With the definition of AH VII in trenches 24 and 38, the archaeological sequence diverges significantly from the sequence established on the terrace. To draw conclusions about the relationship between both sequences, we would need to connect trench 24 with trench 9 further east. On day ten of the excavation we thus began to remove sediments from the area between trench 24 and 9 (Fig. 1). Work here was conducted in the new trench 46 (Fig. 5). Of those GHs defined for our excavation only GH 5 and deeper can be identified in trench 46, because all other GHs occur behind the big



Fig 8. Suhailah. Overview trench 1 (left), excavated profile (right).

n profile at the end of the

ur of the excavation. three we reached AH the southern part of rtunately the number d relative low with a ). In the lower part of ated loosely scattered hich are despite their isity a well separated s AH III.a. A number acts belong to this AH





block removed in trench 38 making a stratigraphic correlation impossible. We thus decided to call the sediments in trench 46 that are above GH 5, GH 1t (GH 1 terrace), to separate them from GH 1 defined behind the big blocks. GH 1t was not further subdivided. In this GH we found AH It. On day nine of excavation we reached the border to GH 5 and finds, which occur soon after the transition to GH 5 were recorded as AH III. At the end of the excavation in trench 46 we reached a depth of about 1.20 m and stopped working in GH 5/AH III (Fig. 5). In total we found here 135 lithic artifacts where 109 belong to AH It and 26 to AH III.

Excavation in trench 37 under the present roof of the rock shelter exposed profiles of 2.30 m height. Such profile depths necessitate protection in particular when parts of the sediment column are relatively loose. This is the case in all of those trenches excavated in the southwest of FAY-NE1. Walking within the rock shelter can already lead to significant damage. Regarding trench 37 the situation is even worse. Here flowing water from the roof leads to substantial damage because trench 37 is located at the drip line. To protect the profiles under the rock shelter we decided to build stone walls in trenches 42 and 1 (Fig. 6), which allows secure access to the trenches from north while stabilizing the profiles against mechanical pressure. While the stone walls are an excellent protection and a long-term installation, in trench 37 we would need protection that can be removed easily next year. We therefore build a wall from half-filled 50 kg flour bags (Fig. 6). We filled the bags with screened sediments from the excavation. It took the workmen half a day to build this protection hence we can expect that they would be able to remove it in about

the same time if not less. We added a roof on top of this wall to control the water flow from the shelter roof and lead the water away from the fragile edges of trench 37. While we made a conscious decision toward the installation of an easy removable protection for this year, next year one should think about a long-term protection probably similar to those in trench 42.

The situation in trenches 38 and 24 is different. Here the sediments are often cemented providing thus stable profile walls even when the depth of the trenches exceeds 2 m. While I think we could leave trench 24 in the present state, the big blocks in trench 38 might better be stabilized using floor props. Placing one of these props between the block north of trench 38 and the small remainder of the removed block in trench 38 would prevent the latter from falling into trench 38. A second prop could be placed between the two large blocks (see fig. 7). This would certainly stabilize the entire situation in trench 38.

#### Field work at Suhailah

We started field work at Suhailah on February 22. Main goal was the systematic collection of those areas where we found the two handaxe in 2012. Using GPS coordinates recorded at the location of discovery, we first located the two areas of interest. To allow systematic collection and piece plotting of all collected finds, we established a north oriented grid with point  $x = 600$  m,  $y = 500$  m and  $z = 200$  m located on top of the next hill at GPS:  $25^{\circ}22'23.55''N/55^{\circ}59'23.81''E$ . With the chosen dimensions it should be possible to include finds from a wide area potentially including all find areas within this one grid.

To gain insight into the vertical and horizontal distribution of finds on the slopes, we defined a  $2 \times 10$  m trench (Fig. 8), which covered the location of handaxe one and runs up the hill. From this trench we collected every lithic artifact to determine the degree of potential mixture and whether different periods might relate to different heights on the slope. During the other two working days at Suhailah we collected artifacts from all areas adjacent to the find spots of the handaxes and measured their location within our grid. We collected 277 lithics in total, while 211 come from the trench collection and 66 from collecting the other areas.

To test the underlying geology and potential for excavation, we exposed a profile of about 1.5 m depth at  $x = 549$  m,  $y = 500$  m (Fig. 8). No artifacts were found under the present surface. The underlying geology was in the upper part dominated by sand with 1-5 cm rounded clasts, while the lower part was dominated by a conglomerate of rounded larger pieces up to 20 cm in size. The stratigraphy shows that the near wadi and the wind are probably the main agents responsible for the deposition and erosion at Suhailah.

In addition to the collection of potential Lower Paleolithic assemblages, we began documenting other sites in the direct vicinity of our working area. The 'Black Flint Scatter' I already mentioned in my report last year, is the first of these additional scatters we began to measure using our grid at Suhailah. Here we conducted no collection. A brief inspection of the artifacts again indicated that the site has great potential for excavation. Still the main issue would be to find ways for gaining insight into the chronology of the obviously different lithic scatters present at Suhailah. This remains an interesting challenge for the next years.



University of Tübingen

#### Introduction

Field work subsequent to the excavation of Acheulean like handaxes revealed Suhailah's potential for increasing our knowledge about the Paleolithic interior plain. This local evidence for archaeological sites from different periods of the Pleistocene Age. While finds from the Paleolithic range are important for the local diversity of the archaeological record, this adds further significance for Paleolithic research.

The 2015 season of the Archaeological Expedition from March 1 to April 10 focused on the documentation of artifacts related to the discovered handaxes. In addition to the attempts related to the local geology, we used our knowledge for interpreting the present archaeological context. The 2015 team consists of Alexander Janas, a technician trainee. In addition to the author, the University of Tübingen supported our field work and 10.





## Report on the 2015 field work of the German Archaeological Expedition at Suhailah

Report 2015 by  
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### Introduction

Field work subsequent the discovery of Acheulean like handaxes in 2012 revealed Suhailah's high potential for increasing our knowledge about the Paleolithic history of the interior plain. This location provides evidence for archaeological remains from different periods of the Stone Age. While finds from the Lower Paleolithic range among the most important of the locality, the present diversity of the archaeological record adds further significance to Suhailah for Paleolithic research in Sharjah.

The 2015 season of the German Archaeological Expedition lasted from March 1 to March 15 and focused on the documentation of artifacts related to the previously discovered handaxes in addition to attempts related to understanding the local geology, which is essential knowledge for interpretations of the present archaeological record. The 2015 team consists of the technician Alexander Janas, M.A. and the technician trainee Laura Bauer in addition to the author, all affiliated with the University of Tübingen. Two of the Department's workmen supported our field work on March 9 and 10.

### Field work at Suhailah

The main challenge at Suhailah is the spatial structuring of the distribution of lithic artifacts. The observed patterns include both areas with a continuous scatter of lithic artifacts and spatially discrete distributions. While the latter are rather unproblematic in terms of defining an archaeological site, the first features normally not clear borders and often extend over relative large areas. Moreover, sometimes such continuous scatters seem to extend over ridges into adjacent slopes, which make the definition of an archaeological site difficult.

Since handaxe #1 comes from such a situation, we had to define artificial boundaries to increase the chance of documenting finds chronologically related to this artifact. We defined the slope where we found the handaxe as site SUHAILAH 1 (N 25.37332°, E 55.98992°). While the northern and southern borders are well visible and represented by chert outcrops almost vertically oriented, the eastern and western limits were arbitrarily defined towards the top of the hill and the bottom (Fig. 1).

One main goal of the 2015 season was to test if artifacts occur in stratified position in Suhailah 1. Building on our work in 2014, we started excavation in trench 1, which we

defined last year to collect all artifacts from the surface. Two areas of 2x1 m at the western and eastern end of trench 1 were excavated by 3 cm spits following the natural geology (Fig. 2a and b). All sediments were screened through 5 and 7 mm mesh. Artifacts larger than 2 cm were piece plotted using a Leica total station. Finds from screening were measured at the midpoint of the excavated area.

In four days of excavation we reached in the eastern part of trench 1 a depth of about 90 cm (Fig. 3). The deposits were divided into five geological horizons (GH 1, 1a, 1b, 2, 2a) based on macroscopically observed differences in color and characteristics of the matrix and clast components. Artifacts were found only in GHs 1-1b. GH 1 is about 10 cm thick and according to the Munsell color chart light grey in color (7.5 YR 7/1). The matrix supported sediments contain fine sand and clasts with subrounded edges up to 15 mm in size. The border to GH 1a is well visible. GH 1a is a ca. 5 cm thick band with increased amount of clasts ranging in size between 3 and 6 cm. The color is significantly lighter (5 YR 8/1) than in GH 1. The 8 to 14 cm thick GH 1b features similarities with GH 1 except differences in color (light reddish brown, 5 YR 6/3) and the significantly decreased number of lithic artifacts. All layers below

into the vertical and distribution of finds on the level a 2 x 10 m trench covered the location and runs up the hill. When we collected every determine the degree texture and whether ds might relate to its on the slope. : two working days at llected artifacts from :nt to the find spots ; and measured their our grid. We collected tal, while 211 come h collection and 66 the other areas.

erlying geology and avation, we exposed a 1.5 m depth at x = 549 g. 8). No artifacts were present surface. The ogy was in the upper by sand with 1.5 cm while the lower part by a conglomerate of pieces up to 20 cm in raphy shows that the he wind are probably s responsible for the rosion at Suhailah.

collection of potential ic assemblages, we ting other sites in the of our working area. nt Scatter' I already y report last year, is e additional scatters asure using our grid re we conducted no ief inspection of the ndicated that the site tial for excavation. s. ue would be to find ng insight into the re obviously different present at Suhailah. interesting challenge rs.



Fig. 1. Site Suhailah 1. View from the west (left) and the east (right). Chert outcrops to the left and the right mark the north south extent of the site, while the western and eastern limits are represented by the excavation in the foreground and the car in the background (left).



Fig.2. Trench 1, natural surface of excavated parts in the west (left) and east (right).

GH 1b lack lithic artifacts while containing chert nodules of different shapes. This observation is related to the proximity of the site to the chert outcrop. The reddish brown (5 YR 5/4)GH 2 is 20 to 40 cm thick with a sandy matrix and clasts up to 10 mm in size. The border to GH 2a is well visible and sharp. GH 2a is composed of reddish yellow coarse sand with clasts up to 4 cm in size.

Similar to the eastern part in trench 1, we excavated to a depth of 1 m in the western part during four days (Fig. 4). In contrast to the other part, however, we continued excavating for two



Fig. 3. Trench 1 eastern excavation. Northern and (left) eastern profile (right).



Fig. 4. Trench 1 western excavation.



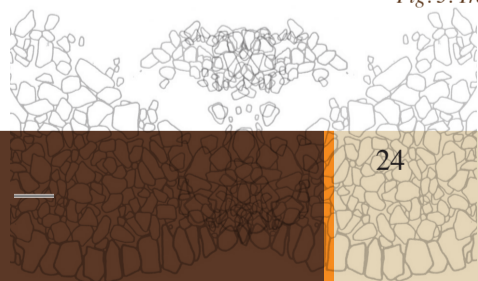
Fig. 5. Trench 1. Western excavation.



Fig. 6. Trench 2. Surface of excavation.



Fig. 7. Test pit southwest of the excavation.







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Fig. 4. Trench 1 western excavation. Northern and (left) eastern profile (right).



Fig. 5. Trench 1. Western excavation in front cleaned surface of the northern part in the center.



Fig. 6. Trench 2. Surface of GH1 (left), during excavation (right).



Fig. 7. Test pit southwest of Suhailah 1. The artifact bearing surface to the left was not discovered in our test pit.

additional days in an area of 1x1 m and reached a depth of 1.55 m. The deposits in the western part of trench 1 are subdivided into five geological horizons. GH 1 is about 25 cm thick and consists of a matrix with very fine sand pale brown (10 YR 6/3) in color and very few clasts with sizes up to 5 mm. GH 2 is about 13 cm thick and reddish yellow brown in color (7.5 YR 7/6). The matrix supported sediments are poorly sorted. The matrix is medium fine sand. Clasts are more numerous than in GH 1 and often feature rounded edges. GH 2a is 5 to 15 cm thick and light grey in color (10 YR 7/2). The medium sand matrix is interspersed with gypsum accumulations. The border to GH 2b is unclear and features wedges potentially related of desiccation cracks. GH 2b is 30 to 37 cm thick, reddish yellow in color (5 YR 6/6) and composed of poorly sorted coarse sand. Clasts are in size up to 15 mm. Crystalline deposits occur similar to GH 2a, but here shaped as network rather than spherical accumulations. The yellowish red (7.5 YR 6/8) GH 3 is about 24 cm thick and consists of poorly sorted coarse sand. Compared to GH 2b, the amount of clasts is significantly increased.





Fig. 8. Systematic collection of artifacts from the surface in Suhailah 1 (left), labeling of all collected artifacts in the lab (right).



Fig. 9. Handaxes (lower left) and other bifacial tools.



Fig. 10. Tools. Limace (upper left), points (lower and middle left), sidescraper (upper and middle right).



Fig. 11. Cores.

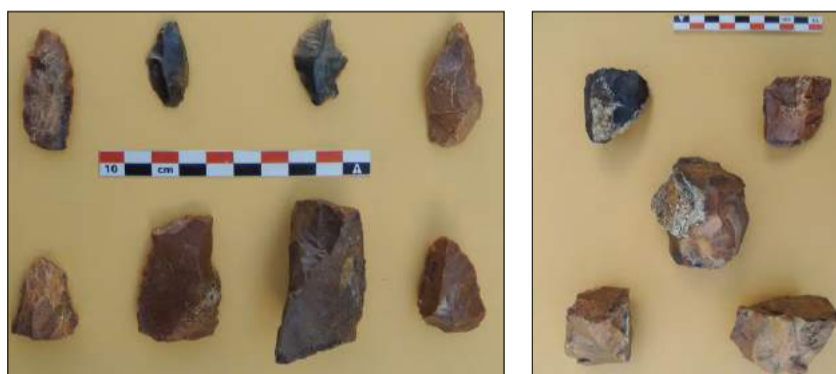


Fig. 12. Artifacts representing a component younger than the handaxe related assemblage. These artifacts might be related to the ABT.



Fig. 13. Collecting lithic a

The majority is about GH 3a is the current in our excavation at most obvious difference; the significantly increase of the sediments, with yellow (7.5 YR 6/8) and clast character relative similar to GH of the 2015 season, C depth of about 42cm

Profiles from both 1 share similarities and differences. To fully geology underlying Lower Paleolithic find to physically connect We began this work surface of the north





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related assemblage. These



Fig. 13. Collecting lithic artifacts from circle with a diameter of 5 m. Green rope indicating the diameter, hammer located at the center.

The majority is about 6 cm in size. GH 3a is the currently deepest layer in our excavation at Suhailah. The most obvious difference to GH 3a is the significantly increased hardening of the sediments, which are reddish yellow (7.5 YR 6/8) in color. Matrix and clast characteristics remain relative similar to GH 3a. At the end of the 2015 season, GH 3a reached a depth of about 42cm.

Profiles from both parts in trench 1 share similarities but feature also differences. To fully understand the geology underlying the potential Lower Paleolithic finds we would have to physically connect these profiles. We began this work by cleaning the surface of the northern part of the

so far not excavated area in trench 1 (Fig. 5). Due to the limited time available this year, we decided not to start excavation to leave this work for next year when it should be possible to reach the necessary depth in the 8x1 m area. Given the importance of stratified assemblages, from the Lower Paleolithic in particular, we decided to test another area within Suhailah 1 despite the fact that our work in trench 1 revealed no artifact bearing horizon below the surface. We identified a potentially interesting area downhill in the western part of the site. Here the chert outcrop might have protected deposits from erosion. The observation of comparably few artifacts were lying on the surface was an additional argument to start a small

test excavation in an area of 2x1 m (Fig. 6). After two days of work we stopped the excavation at a depth of about 30 cm. We found lithic artifacts in all spits, although in decreasing numbers.

Our excavations in Suhailah 1 did not discover stratified archaeological horizons. However, we were able to document artifacts within GH 1 in all three excavated areas. These artifacts did not form distinct layers but seem to be randomly distributed within the sediment column. We thus hypothesize that the development of the surface scatter of lithic artifacts is related to deflation and other erosional processes that remove sediments between artifacts but leave the latter at their position. We were

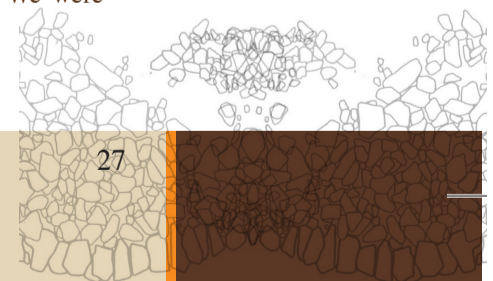




Fig. 15. Aukaida region. Handaxe (left), site overview (right).

able to collect first data to support this hypothesis by excavating a 1x1.5 m trench south west of the Suhailah 1. Here an artifact bearing surface seemed to dive under a cover (Fig. 7). Removing the cover however, revealed that the surface does not stretch under this cover. This either indicates that we have excavated not deep enough (which we are willing to test next year) or supports the deflation thesis. We believe that such geological background work and the understanding of the regions geology is critical for our archaeological work at Suhailah.

Preliminary results from the small sample of lithic artifacts collected last year clearly showed that the handaxes

in Shuhailah are no isolated finds but part of an assemblage. To gain further details about the lithic typo-technology we started collecting all finds from the surface at Suhailah1. During two days of systematic collecting, we assembled 986 artifacts (Fig. 8).

The Suhailah 1 assemblage contains flakes, cores and tools and thus provides a solid basis for a detailed typo-technological study. Preliminary results of the 2015 collection support previous statements that the handaxes found in 2012 are not isolated finds but are part of an assemblage. Finds from 2015 underlining this include two handaxes, handaxe preforms and other bifacial tools (Fig. 9). The tool assemblage includes sidescrapers,

points and a limace among other retouched artifacts (Fig. 10). The majority of cores of this assemblage feature radial scar patterns and globular shapes (Figure 11).

In addition to the clear Lower Paleolithic component visible in the lithic assemblage from Suhailah1, the collection provides evidence for the presence of a much younger component. Unidirectional bladelet cores, small bifacially retouched flakes and blades, a burin and a lateral retouched blade (Fig. 12) would argue for an assemblage related to the Arabian Bifacial Tradition (ABT). Finds from this period are very well presented in the region. Given the close proximity to outcrops of good raw material, the presence of the ABT might not be surprising.

One of the major goals of our work at Suhailah is the comprehensive documentation and characterization of the archaeological remains present in the protected area. Given the vast amount of lithic artifacts visible on the ground in almost all parts, a complete collection might not be productive. We thus began with systematic sampling of defined areas to get comparable collections (Fig. 13). Assemblages collected from a circle with a diameter of 5 m will provide data on artifact density, typo-technological characteristics and spatial patterns of typo-technological characteristics. We began with two test areas south of Suhailah 1. In the first circle (Test 1) we were able to collect 26 lithic artifacts. The assemblage from the second circle (Test 2) was with 139 artifacts significantly larger. This already indicates that the density of lithic artifacts is not the same. A brief inspection of the two assemblages showed that artifacts in Test 1 feature

technological similar to the older Suhailah 1 assemblage. The lithic artifacts from the younger period seem to be significantly different from the older and the younger assemblage at Suhailah 1.

Although the March 2015 expedition of the German Archaeological Expedition was only a preliminary, the results of the fieldwork are promising. The collection of lithic artifacts from Suhailah will allow for a more detailed understanding of hominin behavior in the region of Sharjah during the Pleistocene and thus the presence of modern humans in the NEI. Our work this season provides evidence for the presence of archaeological periods. Once we better understand the geological and depositional context of the region, this diverse small area might provide a relative chronology of different typo-technologies present at Suhailah.

#### Surveys

Similar to previous surveys conducted in the region, our own focus laid on the paleolake Abu Haid (Patron et al., 2010). These surveys provide a rare opportunity to increase our knowledge of paleoenvironmental conditions. We collected six sediment samples from three locations; including the site shown in (Fig. 14) potentially useful for future research.

Patron, A., Parker, A., et al. An early MIS3 wet period in the Seminar for Arab





image among other artifacts (Fig. 10). The presence of this assemblage, characterized by scar patterns and (Figure 11).

the clear Lower component visible in the profile from Suhailah1, provides evidence of a much younger directional bladelet bifacially retouched, a burin and a lateral (Fig. 12) would be related to the Abil Tradition (ABT). The artifacts from this period are very well preserved in the region. Given the presence of good quality outcrops of good quality, the presence of the ABT is surprising.

the goals of our work are to provide a comprehensive and detailed characterization of the archaeological remains in the protected area. Given the presence of lithic artifacts on the ground in almost all areas, the collection might be extensive. We thus began with the sampling of defined comparable collections of assemblages collected within a diameter of 5 m to assess the variation in artifact density, local characteristics and patterns of typological characteristics. We selected test areas south of the first circle (Test 1) to collect 26 lithic assemblages from the first test (Test 2) was with 139 artifacts, significantly larger. This indicates that the density of artifacts is not the same. A brief overview of the two assemblages and the facts in Test 1 feature

technological similarities with the older Suhailah 1 assemblage, while the lithic artifacts from Test 2 seem to be significantly different to both, the older and the younger component at Suhailah 1.

Although the March 2015 season of the German Archaeological Expedition was only a short season, the results of the field work are very promising. The collection of a whole assemblage related to the handaxes from Suhailah will allow us to gain a more detailed understanding of hominin behavior in the interior of Sharjah during the late Middle Pleistocene and thus before the arrival of modern humans as seen in FAYNE1. Our work this season also added evidence for the presence of different archaeological periods in Suhailah. Once we better understand the geological and depositional history of the region, this diversity over a relative small area might provide a chance for building a relative chronology for the different typo-technological entities present at Suhailah.

### Survey

Similar to previous years, we conducted surveys in the region. Our own focus laid on the sediments of the paleolake Aqabah (Parton, et al., 2010). These lake sediments provide a rare opportunity to increase our knowledge about paleoenvironmental conditions. We collected six sediment samples from three locations; including a profile (Fig. 14) potentially used by Parton et



Fig. 14. Sampled profile with lake sediments at Jebel Aqabah (N 25.03809°, E 55.80619°).

et al. (2010).

Together with Eisa Yousif we surveyed the Aukaider region west of Maleha. In close vicinity to the pipeline and power line we identified a very promising location (Fig. 15) characterized by a spatially well-defined scatter of large bifacial tools

(25° 5'33.44"N, 55°59'0.98"E). The artifact assemblage seemed to represent one period and lacks obvious signs for admixture. Given that artifacts usually occur within scatters of large extent, this site provides a unique opportunity to study an undisturbed assemblage potentially from the Middle Pleistocene.

### References

Parton, A., Parker, A.G., Farrant, A.R., Leng, M.J., Uerpman, H.-P., Schwenninger, J.-L., Galletti, C., Wells, J., 2010. An early MIS3 wet phase at palaeolake Aqabah: preliminary interpretation of the multi-proxy record. *Proceedings of the Seminar for Arabian Studies* 40, 267-276.



# Preliminary Report on the 2014 Belgian Excavations at Mleiha area AV, Sharjah (UAE)

Report 2014 by

• Bruno OVERLAET • Ernie HAERINCK • Bart DE PREZ  
• Possum PINCE • Laurence VAN GOETHEM • Patrick MONSIEUR

## Abstract

During the previous excavation season in 2013, the Belgian expedition made a Ground Penetrating Radar Survey at area AV along the eastern rim of Mleiha (Sharjah, UAE) during which a series of monumental tombs were located. The 2014 stay at Mleiha was mainly a study-campaign in view of future publications. However, during two weeks, a small team continued the excavations of two monumental tombs that were started the previous year. Both tombs were

looted but the remaining finds point to a date in the 2nd century BCE. The superstructure of the tombs had a more or less square plan, suggesting tower shaped monuments.

A Belgian Archaeological Expedition is working since 2009 at Mleiha in the Emirate of Sharjah (United Arab Emirates) in close collaboration with Sharjah's Directorate of Antiquities<sup>1</sup>. During these first five years a large surface with 7 monumental tombs and 4 more modest pit graves (zone P) was excavated<sup>2</sup> on the eastern fringes of the site (Area AV<sup>3</sup>).

A ground penetrating radar survey in the fall of 2013 targeted its surroundings, extending the research area eastwards up to the modern wadi<sup>4</sup>. This survey made it possible to locate a series of tombs with a monumental square superstructure and the following excavations revealed the presence of modest pit tombs between the clusters of these monumental tombs (Fig. 3). On one of these clusters, a low mound labelled Z, two squares of 7 by 6.5 meters were set out around two of these monumental tombs. The results of the GPR survey could thus be corroborated but a more extensive excavation had to be postponed to 2014, due to a lack of time.

## TOMBS Z1 and Z2.

During what was mainly a campaign to study the ceramics and architectural elements of the previous campaigns that are kept in the storage facility at Mleiha, a small team with a few workmen continued the research of the zone Z tombs in the fall of 2014. Tomb Z1 (square A) was further excavated



Fig. 1. Drone photography of graveyard area AV with the zones excavated by the Belgian team.

<sup>1</sup> The 2014 expedition by the Royal Museums of Art and History, Brussels, succeeds the 2009-2013 Belgian joint expedition by the Royal Museums of Art and History and Ghent University. The expedition is supported by the Royal Museums, the FWO (Research Foundation - Flanders) and the IAP VII (Greater Mesopotamia: Reconstruction of its Environment and History) and works in close collaboration with the Directorate of Antiquities of the Emirate of Sharjah, headed by Dr. Sabah Jasim, whose support has been crucial for our research. The expedition is directed by B. Overlaet (RMAH), members and collaborators of the 2014 team are E. Haerinck (senior archaeologist), B. De Prez, P. Pincé and L. Van Goethem (archaeologists), H. Steenbeke and M. Coppejans (architectural reconstructions) and Patrick Monsieur (amphora identifications).

<sup>2</sup> Haerinck & Overlaet 2011a ; 2011b / Overlaet & Haerinck 2014 / Overlaet 2015.

<sup>3</sup> The Directorate of Antiquities has recently introduced the code A V for this general area. It includes our working zones P, Qa-b-c and Z, all part of one large graveyard.

<sup>4</sup> Verdonck et al. 2014.



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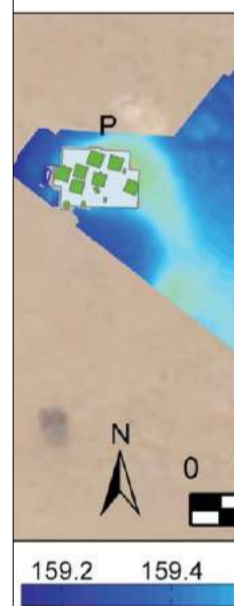
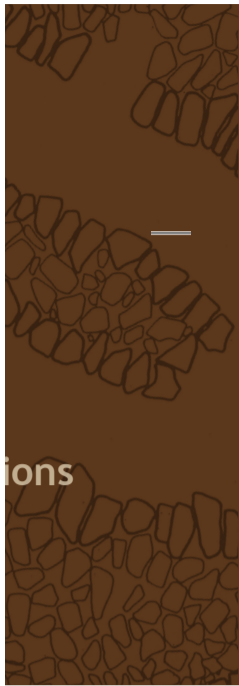


Fig. 3. The excavated zone (bottom left; after Verdonck of the 2014 excavations are



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Fig. 2. The 2014 Belgian field team and two of our trusted local workmen. From left to right: Galparosh Khan (Sharjah workman), Dr. Bruno Overlaet (director) handling the drone for aerial photography, Prof. Em. Dr. Ernie Haerinck (senior archaeologist), Laurence Van Goethem and Bart Depez (archaeologists), Hubert Steenbeke and Martine Coppejans (architectural reconstructions) and Ali Badr (Sharjah workman).

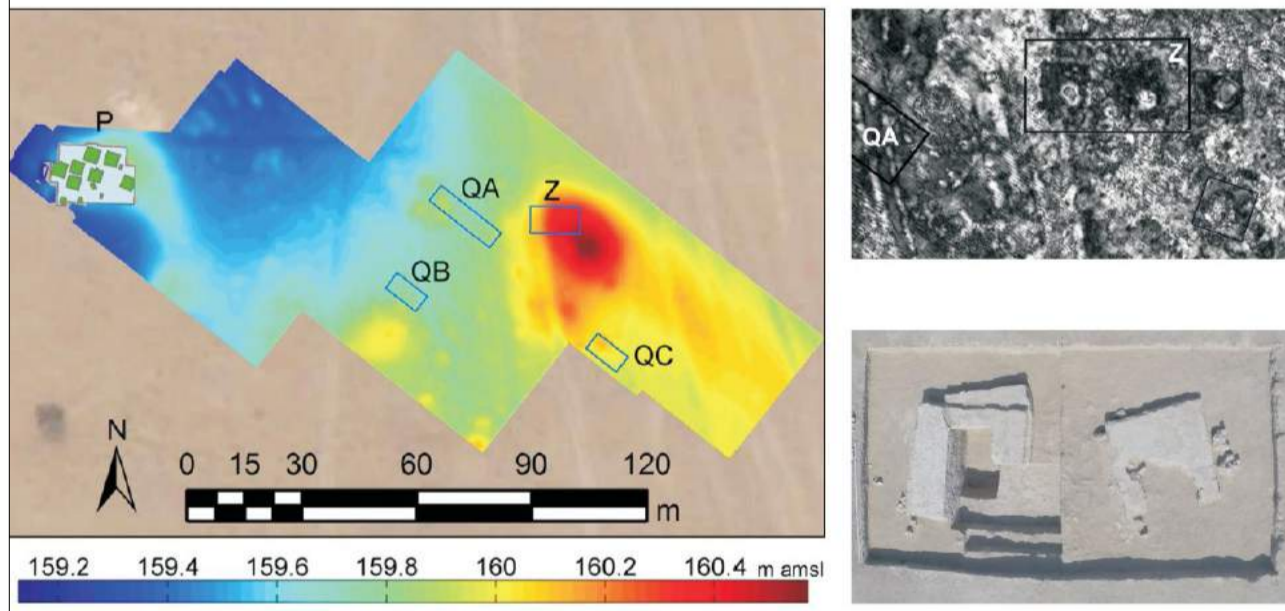
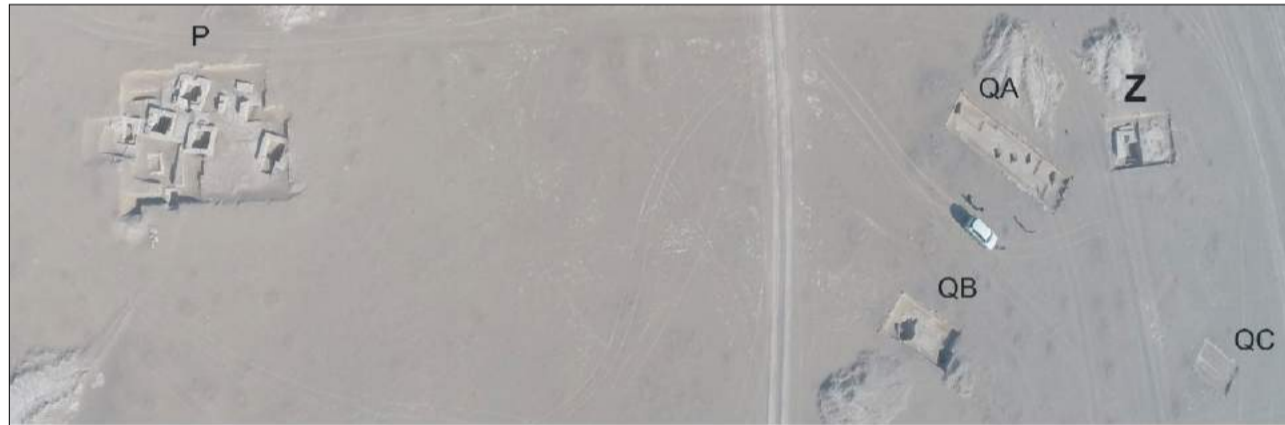
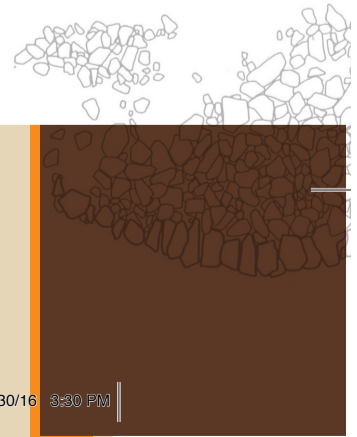


Fig. 3. The excavated zones in area AV (top) and their position on the relief map of the surface covered by the Ground Penetrating Radar Survey of 2013 (bottom left; after Verdonck et al. 2014). A detail of the GPR results showing the monumental tombs and an aerial view of the two tombs at the beginning of the 2014 excavations are shown on the right.





and the superstructure of tomb Z2 (square B) was studied (Fig. 3-4).

The sides of both tombs are directed more or less to the cardinal points and merely 2.20m separates them from each other. They are more or less aligned with a third tomb, immediately to the east. A fourth tomb with a different orientation is visible immediately to the south on the GPR results (contours delineated with black line on Fig. 3 right). The general characteristics of such monumental tombs are well known and have been described at several instances. They are usually mud brick “towers”, sometimes decorated with crenelated battlements made of gypsum brick; they can be placed on a raised podium and often have a small platform at the centre of the north side. They are usually covered with white gypsum plaster and constructed with mud brick, but sometimes also with more weather resistant gypsum bricks. The simplest type of these tombs may have been solid brick blocks, the more elaborate (and possibly later) tombs appear to have had an interior room in the upper structure<sup>5</sup>.

Since both tombs are next to one another, the finds from the disturbed sub-surface layer can not be linked to a specific tomb, but are rather representative for the whole cluster of graves and indicative of the complete period of use of this part of the graveyard. These sub-surface layer finds are items that were discarded or lost by the looters who once raided the tombs. Joining sherds of broken vessels are often found inside the grave pit and immediately around the tomb structures. Since area Z is located along the wadi, sherds could also be displaced by natural elements such as flash floods and floodings. The experience suggests, however, that sherds would not have travelled

over large distances. The nearby trench QB, close to graveyard area Z, for example, was a virgin area and did not produce a single sherd.

The proximity of some tombs to each other probably indicates some close family or tribal relationship. It is imaginable that such groups would use a specific graveyard area over a long timespan. Variations in tomb construction, shape or size from one zone to another could be chronological markers but may also be linked to specific ethnic or tribal groups.

#### MISCELLANEOUS SUB-SURFACE FINDS

Crucial finds from the sub-surface layer were two stamped Rhodian amphora handles. One was found in the southeastern quarter of square B, the other near the southwestern corner of tomb Z1. Amphora sherds found in the grave pit of tomb Z1 join to sherds that were found scattered in the surface layer of both squares, which could suggest they all may belong to one and the same amphora, once deposited in tomb Z1. Rhodian amphorae were stamped on both handles. One bears the name of the eponym, the yearly elected official, preceded by the Greek preposition

epi, meaning ‘under the term of’; the other mentions the name of the fabricant. Except for the earliest stamps, Rhodian stamps also mention the name of a month of the Rhodian calendar. Often a symbol is added, usually to the fabricant’s name (head of the sun-god Halios, an animal, an attribute of a god, etc.), which is not the case here. The name of the ‘fabricant’ represents not the potter but rather the owner of the amphora workshop, who also may have been the wine-grower.

The stamp of square B mentions the official Agemachos and the Rhodian month Dalios in the genitive. Agemachos can be quite accurately dated ca. 181 – 179 BCE<sup>6</sup>. The fabricant’s stamp is only partially preserved, but can be reconstructed as Diskos. Indeed, since before the ending of the name in the genitive ]kou there is only space left for some letters this name has to be very short and [Dis]kou is the only candidate that fits for the reconstruction. The fabricant Diskos II (there exists a homonym who has to be dated earlier and who is always associated with a Rhodian month) is well-known from the famous Villanova deposit on the island of Rhodes where he is associated on several complete amphorae with four eponyms dated



Fig. 4. General plan of the squares with tombs Z1 (left) and Z2 (right).



Fig. 5. Tombs Z1 (left, view of the sub-surface layer).

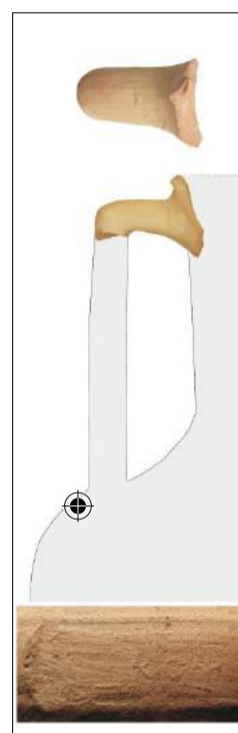


Fig. 6. Rhodian amphora f

Left: handle with stamp from surface layer in square ZB,

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Fig. 5. Tombs Z1 (left, view from the North) and Z2 (right, view from the South) after the clearing of the sub-surface layer.



Fig. 6. Rhodian amphora fragments.

Left: handle with stamp from Diskos II; centre: wall fragments from tomb Z1 and the disturbed sub-surface layer in square ZB; right: handle with stamp of Agemachos.

ca. 189-186 BCE : Xenophanes, Pratophanes, Kratidas and Ieron I<sup>7</sup>. Even if the production of the amphorae of Diskos II must have lasted longer than 4 years (maybe up to 20 years), this chronology, presented thanks to the known associations with these eponyms, still gives a considerable sharp dating range.

The two stamps of Mleiha may have belonged to the same amphora, but this remains very hard to prove. There are of course some plausible arguments : the proximity of the find spots and the fact that Diskos II could

have been perfectly related with the eponym Agemachos, that is to say ca. 181 – 179 BCE, which is only some 5 to 7 years after the eponym Ieron I with whom he is certainly associated. Nevertheless, the differences of style of the letters and of the shape of the cartouche of the stamping device, as well as the profiles of the handles don't seem to point in that direction. On the other hand, several Rhodian amphorae of the same period could have been deposited in the same tomb. Only a certain match with the missing sherds can bring a solution.

While the production of the amphora or amphorae can be accurately dated, especially by the stamp of the eponym, some of the crucial questions in the present context are the moment of the deposition in the tomb and what the function might have been. Amphorae are known to have been re-used for some time before being deposited in the tomb. The production date is only a *terminus post quem*. One of the present fragments shows repair holes, something which had also been noted on another fragment from Mleiha<sup>8</sup>. It suggests there may have been some secondary use between the production on Rhodes and its use in the funerary context.

Other finds include glazed pottery, a gold bead and stone vessel fragments. They can be less precisely dated but do support the amphora dates.

A green glazed handle belongs to an amphora type with ornamental handles that is known from several locations in Mleiha<sup>9</sup>, from Ed Dur<sup>10</sup> and al Fueda in northern Oman<sup>11</sup>. The extremities of the handle end in ridges over the shoulder of the amphora and sometimes end in human hands with extended fingers. The ridges on the present fragment end in what could be such a "hand", but without the indication of fingers. An almost complete example of such an amphora with simple straight ridges was discovered in a tomb at the nearby trench QB in association with iron swords with hook shaped grips. The same combination is encountered in the Samad Late Iron Age assemblage at al Fueda, the equivalent of the PIR A and B phase at Mleiha<sup>12</sup>. Their extreme rarity at Ed Dur, where only a few fragments were found among several thousands of registered sherds, may be explained by such an early date, well before the apex of this coastal site.

Another find of interest was a



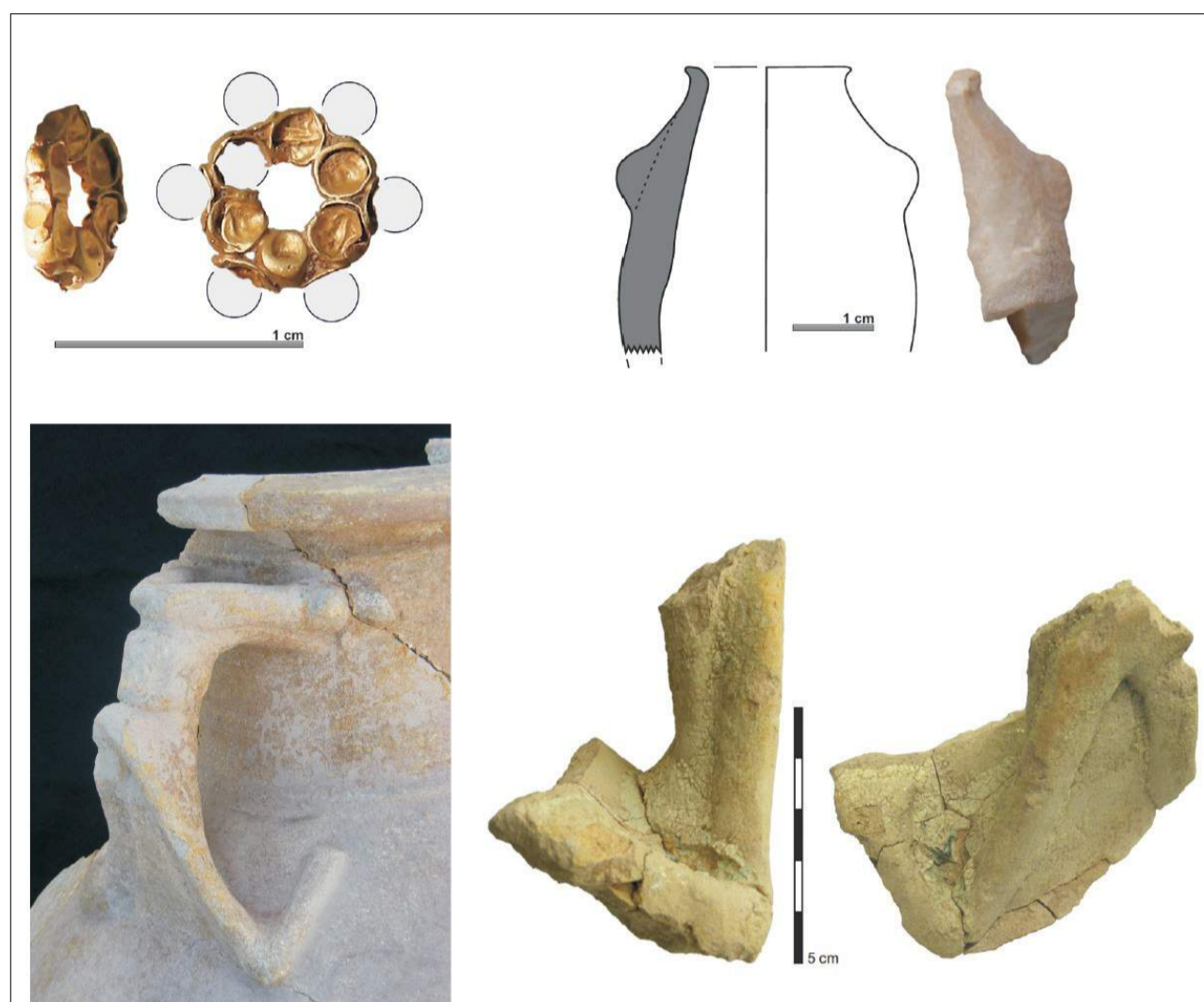


Fig. 7. Finds from the sub-surface layer of zone Z: Gold bead (top left), fragment of a beehive shaped stone vessel and fragment of a glazed amphora handle (bottom right) compared to a complete example from the 2013 zone QB excavations (bottom left).

- <sup>5</sup> Boucharlat & Mouton 1998; Mouton 1997; 2006; 2010.
- <sup>6</sup> Finkielsztein 2001, p. 193.
- <sup>7</sup> Maiuri 1924, p. 253-258.
- <sup>8</sup> Monsieur et al. 2013, p. 212-213, fig. 6.
- <sup>9</sup> Boucharlat & Mouton, 1993, p. 231, 242, fig. 13 nr. 13 / Mouton 1997, p. 68, fig. 23 nrs. 1 and 8; 2008, p. 388-389, fig. 62 nr. 22, fig. 63 nr. 2 / Mouton et al., 1992 p. 42, fig. 23. A 1st possibly even a 2<sup>nd</sup> century AD date was tentatively suggested for these glazed amphora. Several vessels of this type were also discovered by the local Sharjah team during the excavations of similar monumental tombs.
- <sup>10</sup> Rutten 2006, p. 186, cat. nrs. 1039-1046.
- <sup>11</sup> Yule 1999, p. 129, 138, 180, fig. 37, Taf. 8.
- <sup>12</sup> Yule 2013, p. 20, fig. 15.
- <sup>13</sup> Hameed al-Hashash 2006, p. 16, pl. 2.
- <sup>14</sup> Jasim 2006, p. 227, 233, 235, fig. 56, 63 nr 28.
- <sup>15</sup> Yule 2001, Taf. 95, 99.
- <sup>16</sup> Mouton 1997, p. 72; 2008, p. 59, fig. 28; Jasim 1999, p. 74, fig. 8, 11.
- <sup>17</sup> Haerincx 2001, Pl. 100, 129 nr. 84, colour pl. E4.
- <sup>18</sup> Hassell 1997.

fragmentary gold bead, originally consisting of two concentric circles of five hollow spheres, each about 2.4 mm in diameter. The outer circle is almost completely lacking – only the imprint or fragments of the globes remain – but the type is familiar from other East Arabian sites such as Thaj<sup>13</sup>, Dibbah<sup>14</sup> and Samad al Shan<sup>15</sup>. A specimen with a single circle of globes was found in a tomb at Area C at Mleiha<sup>16</sup> and ed Dur<sup>17</sup>. This type of bead was widely distributed and used over a long timespan.

An alabaster or calcite sherd with an unpierced lug on the wall belongs to a small beehive shaped vessel with a lid

with a central knob, o of a lion. Such vesse various sizes from M other sites in the Ar They are likely : southwest Arabia ( may be local imitat probably used for val or perfumes. Such bec dated from the third the first century AD<sup>1</sup>

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with a central knob, often in the shape of a lion. Such vessels are known in various sizes from Mleiha tombs and other sites in the Arabian peninsula. They are likely imported from southwest Arabia (although some may be local imitations) and were probably used for valuable ointments or perfumes. Such beehive vessels are dated from the third century BCE to the first century AD<sup>18</sup>.

These first finds point to a 2<sup>nd</sup> century BCE date (late PIR A or early PIR B), something which later turned out to be in accordance with the finds that were left by the looters in the burial pit of tomb Z1. Among these were an alabaster vessel and iron weaponry.

### TOMB Z1 : CONSTRUCTION AND FINDS

Tomb Z1 is the most western of the three tombs visible on the GPR image (Fig. 3). The square outline of the tomb became visible as soon as the top few centimeters of the surface layer were removed. A sandy patch indicating where the looters had gained entrance stood out against the mud brick material. This entrance way the looters had dug straight to the grave pit was completely filled with sand. A few gypsum fragments, pottery and alabaster vessel fragments, as well as some iron fragments were found on the floor of the grave pit and in this fill. It suggests vessels were smashed to retrieve their contents or accidentally broken during the looting, left on top of the tombs and over time ended up back into the grave pit. Some of the sherds that were found in the fill fitted to sherds that were retrieved in the sub-surface area around the two monuments (e.g. amphora wall sherds on Fig. 6).

The construction of the funerary monument is documented in Fig. 8. What looked at first impression to be an regular platform, was in reality an evenly eroded surface. The more or less horizontal top surface clearly cuts through tilted mud bricks in the center, well visible in the tomb's section.

The grave pit was dug in the solid underground that must have been just close beneath the sandy surface layer. It consisted of a compacted gravel layer on top of a thick layer of marl. The rim of the grave pit is well delineated by this gravel layer and easy to recognise. It measures ca. 1.35 by 0.65 metre. On the plan in fig. 8, it is indicated with a red dotted line. The grave pit itself bellowed out to a more rounded shape measuring 1.45 by 0.80 metre at its widest point. The complete section in fig. 8 is taken just left of the grave pit's upper rim but still cuts through the lower part (black line on the plan). The alluvial compacted

gravel layer is of uneven thickness and is not present everywhere in the graveyard area. Its variation can also be seen in the section of tomb Z1. Measured from the average top of the gravel layer, the grave pit is about 1 to 1.05 metre deep. The excavations of similar tombs showed that the grave pit was traditionally covered with wooden beams, sometimes sealed with plaster, on which mud bricks were placed. There were no traces of wooden beams preserved in the case of tomb Z1. Beams were usually placed on top of the gravel layer which explains why more of the sand around the grave pit had to be removed. The grave builders often dug out a large area that was later filled in again with sand and levelled to build the monument's mud brick upper structure on. The first two layers of mud bricks formed a sort of platform on which the square tower itself was placed. Depending on the level of the

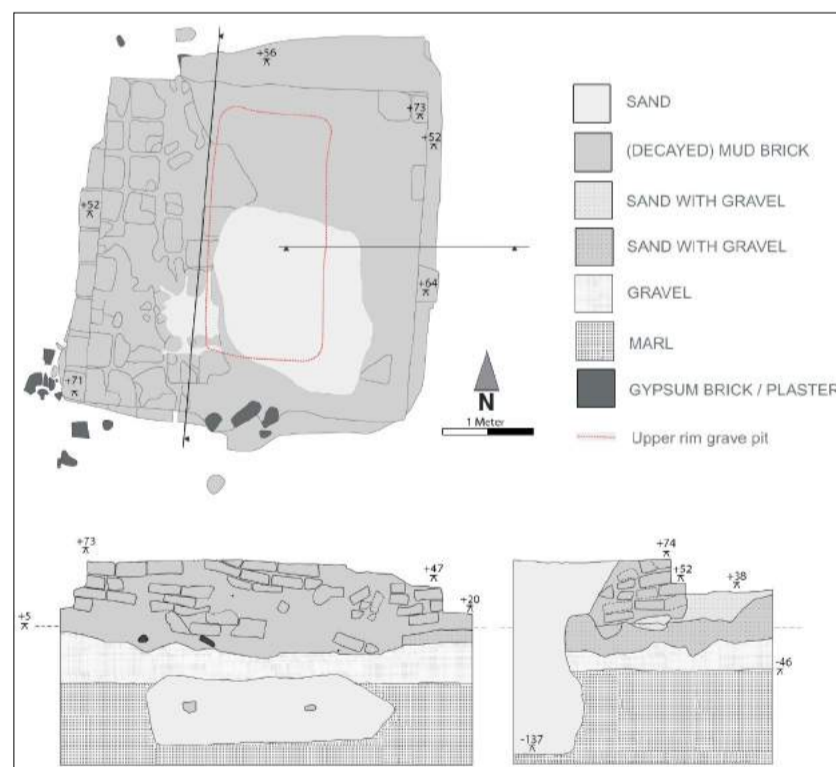


Fig. 8. Plan and sections of Tomb Z1.





surrounding surface, it may have been visible as an uneven stepped base. On the northern side this two layer mud brick base is larger and has a different orientation. Some of the monumental Mleiha tombs have a platform added against their north wall, which could explain such an anomaly. There was, however, no trace of such an “offering platform” on top of this base in the case of tomb Z1.

The original tread or antique surface is difficult, sometimes even impossible to detect and may have varied considerably around the monument since they were built in an irregular alluvial plain and dug out soil may have lingered around. The two layer base may have surfaced more on one side than on another. An amphora handle next to the south-west corner of tomb Z1 was discovered laying on level +5, indicated on the sections in fig. 8 with a dotted line. At the eastern side of the monument this level is well in the compacted gravel layer. This means that either this amphora fragment was laying in a pit or – which seems more likely – the original thread around the monument was irregular and it was built on a slight slope.

The actual “tomb tower” had a square plan with sides of ca. 3.50 metre. Two to three layers of mud bricks were preserved in some parts on top of the base platform. The original height of the square “tower” can not be established. Whether it was a solid block of mud brick or rather a walled (and possibly even roofed) area remains at present undecided. The outside of such funerary monuments are traditionally plastered and often also gypsum bricks are used for the construction of the walls and for decorative ridges and/or crenelated

battlements. A few fragments of a thick plaster layer with impressions of mud brick at the back and a single gypsum stone with a rounded front (20 x 14 x 6 cm), apparently from a decorative ridge, were found in the fill of the tomb and near the south-west corner of the monument. They may be part of the top cover of the monument but could as well be from elsewhere.

Although the tomb had been looted, some items remained in the grave pit and in the looters entrance that leads to it (Figs. 6 and 9). Like in all other tombs at Mleiha that have been studied, there were no human remains left in situ<sup>19</sup>. The finds that were made, however, are consistent with the PIR A and B periods and refer to the same timespan as the sub-surface finds discussed above.

Alabastron (Fig. 9). A slender, horizontally veined alabaster bottle was found smashed in the disturbed fill and on the floor of the grave pit. The 11.8 cm high bottle has a wall of merely 1.6 mm thick and a solid tip with a flat 8 mm wide base. A comparable alabastron but shorter and with a much broader base was discovered at the area C graveyard at Mleiha and dated to the PIR A period<sup>20</sup>.

- Gold spacer bead (Fig. 9). A delicate, 11.3 mm long gold spacer bead was found on the floor of the grave pit. It is made of 7 short tubes with a flat rim on one side that are mounted on an oval beaded wire. The central tube is closed leaving openings for six parallel strings. The item was obviously once part of a more complex jewel that was looted from the tomb.
- Wall fragments of a Rhodian amphora (Fig. 6). Sherds were

found in the fill and on the floor of the gravepit. A sherd found in the surface layer of square B joined to these sherds. Whether these sherds belong to any (or both) of the stamped handles discussed above can unfortunately not be ascertained.

- Arrowheads (Fig. 9). Fragments of 5 arrowheads were discovered. One of them has a pronounced midrib (Z-T1-F6). Their fragmentary condition does not allow a precise determination within the typology proposed by Mouton. A precise dating is not possible since they occur at Mleiha from the late 3<sup>rd</sup> century BCE onwards<sup>21</sup>.
- Sword fragments (?) (Fig. 9). Two iron fragments represent more weaponry. A small fragment belongs to the double edged blade of a sword. A small bent iron pin may be part of the tang that ran through the grip of a sword.

#### TOMB Z2 : CONSTRUCTION

Tomb Z2 was not fully excavated, only part of the upper structure could be studied in the available time span (Fig. 10). The data presented here are necessarily preliminary and will have to be completed after next excavation season.

The square tower shaped monument measured about 3 by 3 m. The outline of the ca. 2.50 m long grave pit was partially traced (red dotted line in fig. 10), but it was left to excavate in the coming year. The general construction is very similar to that of tomb Z1. A noticeable difference is the apparent absence of a mud brick base that created a stepped platform for the square tower shaped monument.

Only at the northern layers of mud brick beneath the upper layer a plaster lining against start from this level, so was at this point that the shaped monument built

The looters have destroyed the southern part of the monument but like in the case of tomb Z1 fragments of burial goods were found in the fill. More is understood in the fill of the actual monument may offer more dating. At the moment, the finds of iron weaponry from the same character as the arrowheads, fragments of sword grips.

#### FINAL REMARKS

During the two weeks of the construction of the monumental tombs of Z in area AV was the noteworthy finds dated Rhodian amphorae that provide a datum for this graveyard area BCE. The other finds of vessels, gold beads, and pottery were well dated with a 2nd -1st century BCE. Further research of this area should include the continuation of the Z2 excavation and the documentation of the exposed surface to document the construction of the graveyard (monumental and smaller tombs) and the understanding of the construction methods.

<sup>19</sup> On possible explanations, see Mouton 2008, p. 57, fig. 26  
<sup>20</sup> Mouton 2008, p. 57, fig. 26  
<sup>21</sup> Mouton 1990.





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### CONSTRUCTION

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 shaped monument.

Only at the northern side the lower  
 layers of mud brick extend slightly  
 beneath the upper layers. Remains of  
 a plaster lining against the mud bricks  
 start from this level, suggesting that it  
 was at this point that the visible tower  
 shaped monument began.

The looters have destroyed much of  
 the southern part of the monument,  
 but like in the case of tomb Z1,  
 fragments of burial goods were left in  
 the fill. More is undoubtedly present  
 in the fill of the actual grave pit and  
 may offer more dating elements. At  
 the moment, the finds are limited to  
 iron weaponry fragments of the  
 same character as those from Z1, i.e.  
 arrowheads, fragments of blades and  
 sword grips.

### FINAL REMARKS

During the two weeks of excavations,  
 the construction of two of the  
 monumental tombs of the low mound  
 Z in area AV was studied. Among  
 the noteworthy finds were two well  
 dated Rhodian amphora handles  
 that provide a datum post quem for  
 this graveyard area of around 180  
 BCE. The other finds, alabaster  
 vessels, gold beads, iron weaponry  
 and pottery were well in agreement  
 with a 2<sup>nd</sup> -1<sup>st</sup> century BCE date.  
 Further research of mound Z will  
 include the continuation of the tomb  
 Z2 excavation and the expanding  
 of the exposed surface. This aims  
 to document the composition of  
 the graveyard (monumental versus  
 smaller tombs) and to refine our  
 understanding of the time frame and  
 construction methods.

<sup>19</sup> On possible explanations, see Overlaet 2015.  
<sup>20</sup> Mouton 2008, p. 57, fig. 26 nr. 1.  
<sup>21</sup> Mouton 1990.



Fig. 9. Finds from tomb Z1: an alabastron, a gold spacer bead and iron weaponry.



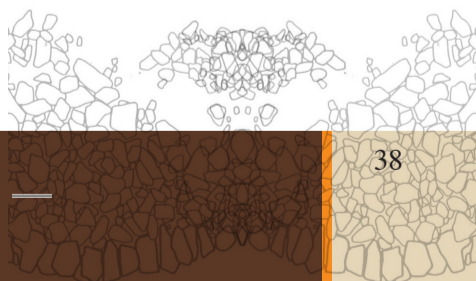
Fig. 10. Plan and section of Tomb Z2.



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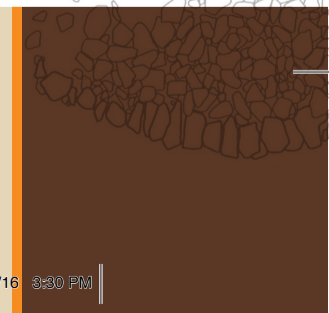
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# MLEIHA (SHARJAH, U.A.E.) : THE 2009 & 2012 BELGIAN EXCAVATIONS OF MOUND AI – POTTERY AND CHRONOLOGY

Report by

• Ernie Haerinck<sup>1</sup>

• Bruno Overlaet<sup>2</sup>

## Abstract

Mleiha (Sharjah, UAE) is the main inland site in Southeast-Arabia from the 3<sup>rd</sup> century BCE to the 3<sup>rd</sup> century AD. The ceramics from the Belgian excavations in 2009 and 2012 at Mound AI are presented. Apart from local and regional ceramics, there are imported wares mainly from Southern-Mesopotamia, Southeastern-Iran and the Eastern Mediterranean basin.

## Keywords

Mleiha, UAE, pre-Islamic Arabia, pottery, ceramics, chronology.

Mleiha has a long occupation history dating back to at least the third millennium BCE, as documented by three monumental Umm-an

Nar type tombs (fig. 1). The largest occupation of the site, however, dates from the 3<sup>rd</sup> century BCE to the mid-3<sup>rd</sup> century AD, when it was apparently the only inland site of importance in Southeast-Arabia.

A chronological framework for Southeast-Arabia and Mleiha for this period was first proposed by Michel Mouton. It distinguished four periods within the “Pré-Islamique Récent” or PIR time frame for the Oman peninsula, roughly equivalent to the Hellenistic, Parthian and early Sasanian periods in the remainder of the Near East. Their exact chronology, defined in Mouton’s PhD in 1992 (Mouton 1999; 2008: 22-35), was later revised (Cuny & Mouton 2009; Mouton 2010: 276 lowers PIR D some 75 years) but their exact chronology and significance is still

a matter of debate (fig.3).

The preceding Late Iron Age in the Oman peninsula is characterized by an apparent decline of settlements. Mud brick or stone houses seem to have ceased to exist in the PIR A period. Yet, there was no absolute break with the Iron Age since some of the Iron Age villages contain material that is related to the PIR A assemblages. To explain the changes, it has been suggested that nomadic newcomers, arriving from outside the Oman peninsula, installed themselves in the region and prospered from the exploitation of the international trade routes.

Our current views suggest the PIR A phase, a period with strong international trade activities at Mleiha, starts in the first half of the 3<sup>rd</sup> century BCE and ends around

the middle of the 2<sup>nd</sup> century AD with the onset of prolonged economic decline. Long distance trade activities have largely or even halted during the transition to the PIR B phase which lasts until the middle of the 2<sup>nd</sup> century AD. The PIR C phase of the 1<sup>st</sup> century AD is characterized in the poor archaeological record all along the Arabian

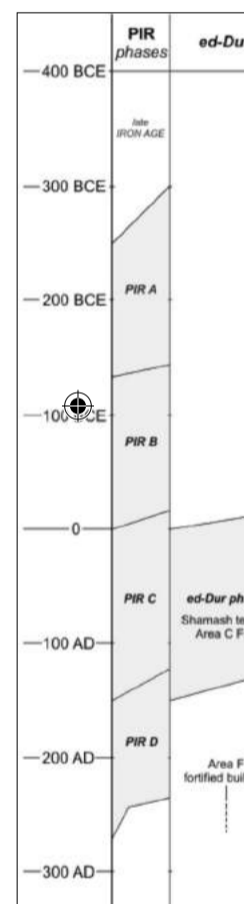


Fig. 3. General Chronology



Fig. 1. Google Earth view of the eastern part of Mleiha with the location of the Belgian excavations (red), fort CW, fortified building H and graveyards.



Fig. 2. Mound AI after the completion of the 2012 excavations. The smaller mound AJ is visible in the background.

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<sup>3</sup> B. Overlaet, E. Haerinck, P. I and Finds, (forthcoming).

<sup>4</sup> The 2009-2013 Belgian Archaeological Expedition to the UAE (Brussels), Ghent University Foundation - Flanders), the IA expedition was directed by Bruno Overlaet - draughtsman- photographer Ernie Haerinck





strate (fig.3).

Late Iron Age in the area is characterized by a decline of settlements. Stone houses seem to exist in the PIR A phase. There was no absolute Iron Age since some of the villages contain structures related to the PIR phases. To explain the changes it has been suggested that newcomers, arriving from the Oman peninsula, influenced the region through the exploitation of trade routes.

Excavations suggest that the PIR C period with strong trade activities at its peak ends around the first half of the 1st century AD and ends around

the middle of the 2<sup>nd</sup> century BCE with the onset of a severe and prolonged economic downturn. Long distance trade activities may have largely or even completely halted during the transitional PIR B phase which lasts the remainder of the 2<sup>nd</sup> century BCE and most of the 1<sup>st</sup> century BCE. It is visible in the poor archaeological records all along the Arabian coast of the

Gulf. The PIR B period may have to be considered as a transition phase between the economically prosperous phases A and C; as such without a specific set of distinct diagnostic pottery but rather recognisable through the absence of archaeological data. The PIR C phase, from the end of the 1<sup>st</sup> century BCE to the first half of the 2<sup>nd</sup> century AD, is a time of strong

economic activities. The PIR D phase represents the final stages of settlements like ed-Dur and Mleiha in the Oman peninsula. By the mid-3<sup>rd</sup> century AD they had lost all their economic importance and trade routes as activities in the Gulf were controlled by the Sasanians.

The Belgian excavations of Mound AI and of the Area AV graveyard to the east of it (fig. 1) fit within the framework of a study on the transition from the Iron Age to the PIR A phase. The present paper discusses the ceramic evidence of Mound AI. The structures and finds will be discussed in a forthcoming paper.

Mound AI is one of two low mounds adjacent to the Eastern graveyard area at Mleiha (areas AV and C, see fig. 1). The whole area is now referred to as "Area AI" after the largest of the two mounds which were registered during the first surveys of Mleiha in 1986 by the French archaeological team as "Mleiha 5 mounds AI and AJ". At the time, a magnetic survey of the two mounds had been conducted revealing the presence of "possible structures" (Boucher & Hesse 1986: 27, 32, fig. 13). A small coin hoard with local Abi'el coins had been found together with a pottery sherd with Aramaic letters of possible 1<sup>st</sup>

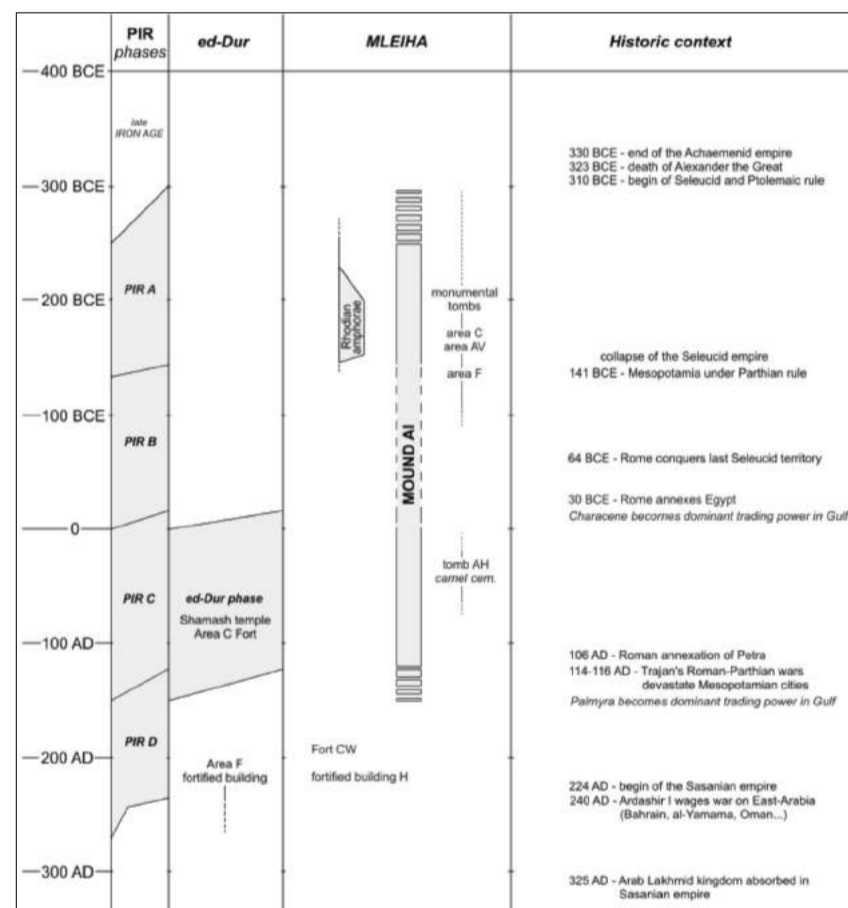


Fig. 3. General Chronology of Mleiha and ed-Dur.

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<sup>3</sup> B. Overlaet, E. Haerincx, P. Pincé, B. De Prez, L. Van Goethem & A. Timmerman: The 2009 & 2012 Belgian Excavations of Mound AI at Mleiha (Sharjah, U.A.E.) – Structures and Finds, (forthcoming).

<sup>4</sup> The 2009-2013 Belgian Archaeological Expedition at Mleiha in the Emirate of Sharjah (United Arab Emirates) was a collaboration between the Royal Museums of Art and History (Brussels), Ghent University and Sharjah's Directorate of Antiquities, headed by Dr Sabah Jasim. The research was funded by both institutions, the FWO (Research Foundation - Flanders), the IAP VII (Greater Mesopotamia: Reconstruction of its Environment and History) and the Directorate of Antiquities of the Emirate of Sharjah. The expedition was directed by Bruno Overlaet (RMAH) and Emie Haerincx (UGent), members of the team excavating on area AI were engineer-architect Annelies Timmerman, draughtsman-photographer Eric Smekens and archaeologists Bart De Prez, Mahdokht Farjami-rad, Possum Pincé, Thomas Van de Velde and Laurence Van Goethem.



2 excavations. The smaller



century CE date. However, the find of a bronze Iron Age arrowhead suggested the area's occupation could have started much earlier (Boucharlat & Garczynski 1988 (ed. 1997): 66, 93, Pl. XII) and could illustrate the transitional phase from Iron Age to PIR.

Mound AI was investigated during the first campaign of the Belgian Archaeological Expedition at Mleiha<sup>4</sup> in 2009. The presence of PIR C glazed wares and a spike of a Rhodian amphora type that is dated between 270 and 250 BCE (Pl. 12 no. 4) (Monsieur et al. 2013: 221, fig. 21) among the surface ceramics seemed to corroborate the preliminary conclusions of the French team. A small test trench of 30 m<sup>2</sup> revealed mud brick walls, a fireplace, two tannurs and some finds that confirmed an occupation during the PIR C period (Haerinck & Overlaet 2011 & 2013). In 2012 the trench was extended to 306 m<sup>2</sup> of which 256 m<sup>2</sup> were excavated down to virgin soil.

This paper presents a survey of the AI ceramics and illustrates the large variety in ceramics at the site. Although quite a number of sherds were found, only some 300 were diagnostic and were kept for study. All pottery was fragmentary; no complete vessels were recovered. Complete profiles are almost lacking. The presence of a wide array of imported wares next to local wares, however, is a clear indicator of the important position of Mleiha in the international trade network from as early as the 3rd century BCE.

It was unfortunate that mound AI did

not have a well-defined stratigraphy but turned out to be heavily disturbed. As such, it did not allow a detailed ceramic sequencing and the ceramics can only be discussed within a broad chronological framework. Still, it does allow to make some general observations on the chronology of Mleiha and, in extenso, of the Oman peninsula.

Two main groups of ceramics could be distinguished within the Mound AI repertoire. The oldest group represents the "PIR A" phase but still has some affinities with the Late Iron Age and possibly extends into Mouton's PIR B period. It was rather limited in terms of sherds and other finds, but these mostly occurred in well-defined and secure contexts. The second group represents the "PIR C" or ed-Dur phase and represents the final occupation of Mound AI. It seems thus that in area AI the PIR B period (mid/late 2<sup>nd</sup> c. – mid-1<sup>st</sup> c. BCE) is altogether lacking. We wonder if PIR B is really that clearly discernible at Mleiha as stated by the French team and one could even suggest that this period is in fact largely absent at the site. M. Mouton presented several plates with material that he identifies as PIR B (Mouton 2008: 61- 82, fig. 30-50), but it is by no means clear that it really is to be attributed to this period. Indeed, his pottery illustrations, and also the small finds fit very well into the PIR C period as it is attested at ed-Dur. Another characteristic element of Mleiha's PIR B according to the French team were the tower shaped tombs of area F with an entrance for re-use and large, subdivided underground burial chambers (Mouton 2008: 63-65, fig. 32-33, Pl. 5 no. 2). Those tombs were seen as a development

out of PIR A tower tombs with single burial chambers (for this type see Overlaet & Haerinck 2014). However, these last years the local Sharjah team directed by Dr S. Jasim and E. Yousif has excavated a large number of elaborate tombs that contained material associated with the PIR A. The identification of the PIR B phase thus becomes problematic and the period may in fact be largely absent or seems at least to be poorly represented at Mleiha (see Mouton 2014: 58 who became aware of the decrease in settlement density, with large areas of the site remaining unoccupied). The occupation of Mleiha may have been very limited during the PIR B and one should envisage the possibility that the first wave of the plundering of monumental tombs took place in this period.

This interpretation needs of course some underlying explanation. The collapse of the Seleucid empire around the mid-2nd c. BCE with the establishment of the Parthian hegemony in Mesopotamia by Mithridates I (ca. 140 BCE) created new borders on the trade routes and uncertainties that had a serious negative impact on the scale of trade activities in the Gulf and on the Oman peninsula. Characene, which would become a vassal kingdom of the Parthians, was not yet powerful enough and was involved in a conflictual relationship with the Parthians. Furthermore, it was at that time more interested in business relations with its Syrian counterparts. The establishment of Parthian power was equally not evident. The Parthians probably insufficiently realised the economic impact and importance of the international trade networks for

their treasury, or may simply be unable to get to the political situation (Overlaet 1993: 293; Schuol 2010: 292-310). At this point it is likely to draw attention to sites like Failaka and Thaj in Northern Arabia also witness certainly a reduction in size between roughly the beginning of the era. Also, the number of tombs in Bahrain that can be dated to this period is rather low compared to the number in the 1st-2nd c. AD means that the region was unstable, safety not guaranteed and that the focus had shifted or at least that they had lost their importance at this time. A large fleet of going vessels, necessitating long distance sea trade that replaced this overland trade, had not yet developed.

The pottery presents a selection of diagnostic sherds which are according to their characteristics such as slip or painted decoration and the presence of slip or painted decoration at the same time, it is difficult to classify them. Their possible production since that element is reconstructing the pottery. Dr K. Rutten (2006) used the same approach in her work of 2006 on the ceramics at ed-Dur from the 1st c. to the early/mid-2<sup>nd</sup> c. further). Her work results of phytolith





tower tombs with  
ambers (for this type  
& Haerincx 2014).  
In the last years the local  
excavation directed by Dr S.  
Mousif has excavated  
a number of elaborate tombs  
of material associated  
with the period. The identification  
of the period may  
be largely absent or seems  
poorly represented at  
Mouton 2014: 58 who  
notes the decrease in  
density, with large areas  
remaining unoccupied).  
The number of Mleiha may  
be limited during the  
period. We should envisage the  
end of the first wave of the  
monumental tombs  
of this period.

Excavation needs of course  
a good explanation. The  
end of the Seleucid empire  
in the 2nd c. BCE with  
the end of the Parthian  
Empire in Mesopotamia by  
c. 140 BCE) created  
a major change in the trade routes  
as that had a serious  
impact on the scale of trade  
in the Gulf and on the  
Arabian Peninsula. The  
Parthians, which  
was not yet powerful  
was involved in a  
relationship with the  
Roman Empire. Furthermore, it was  
more interested in  
relations with its Syrian  
allies. The establishment  
of the Parthians probably  
realised the economic  
importance of the  
trade networks for

their treasury, or maybe they were  
simply unable to gain control due  
to the political situation (Teixidor  
1993: 293; Schuol 2000: 271-274,  
292-310). At this point we would  
like to draw attention to the fact  
that sites like Failaka in Kuwait  
and Thaj in Northeast-Saudi  
Arabia also witnessed a void or  
certainly a reduction in settlement  
size between roughly 140 BCE  
and the beginning of the Christian  
era. Also, the number of tombs at  
Bahrain that can be attributed to  
this period is rather limited when  
compared to the numbers of tombs  
in the 1st-2nd c. AD. This probably  
means that the general situation  
was unstable, safety could not be  
guaranteed and that overland routes  
had shifted or at least, had largely  
lost their importance. At the same  
time, a large fleet of commercial sea  
going vessels, necessary for long  
distance sea trade that could replace  
this overland trade, was not fully  
developed yet.

The pottery presented here is  
a selection of the diagnostic  
sherds which are classified  
according to their ware and other  
characteristics such as their shape  
and the presence or absence of a  
slip or painted decoration. At the  
same time, it is also attempted  
to classify them according to  
their possible production region  
since that element can help us in  
reconstructing the trade routes.  
Dr K. Rutten (2009a) made this  
same approach in her PhD-thesis  
of 2006 on the ceramics excavated  
at Umm al-Qaiwaniyah from the late 1<sup>st</sup> c. BCE  
to the early/mid-2<sup>nd</sup> c. AD (see  
further). Her work integrated the  
results of phytolith analysis, used

to determine the ceramics' region  
of origin (De Paepe et al. 2003;  
Vrydaghs et al. 2014). On the other  
hand, the French team has done an  
exemplary job on the pottery from  
Mleiha, a pottery study with which  
we largely do agree. For some points  
we may have a different approach,  
classification or interpretation.  
Nevertheless, their approach does  
not substantially differ from ours  
although they did not systematically  
distinguish ceramics from funerary  
and settlement contexts.

In view of the wide variety in  
pottery, we opted to illustrate the  
pottery as much as possible using  
colour photographs, rather than  
only with drawings. We think it  
provides the best impression of  
the complex diversity in fabrics,  
colours and finish of the sherds.  
The scale in photographs can only  
be approximate, but we made the  
attempt to present them as much as  
possible on a uniform and relatively  
large scale.

#### PIR A - THE LOWEST LEVELS

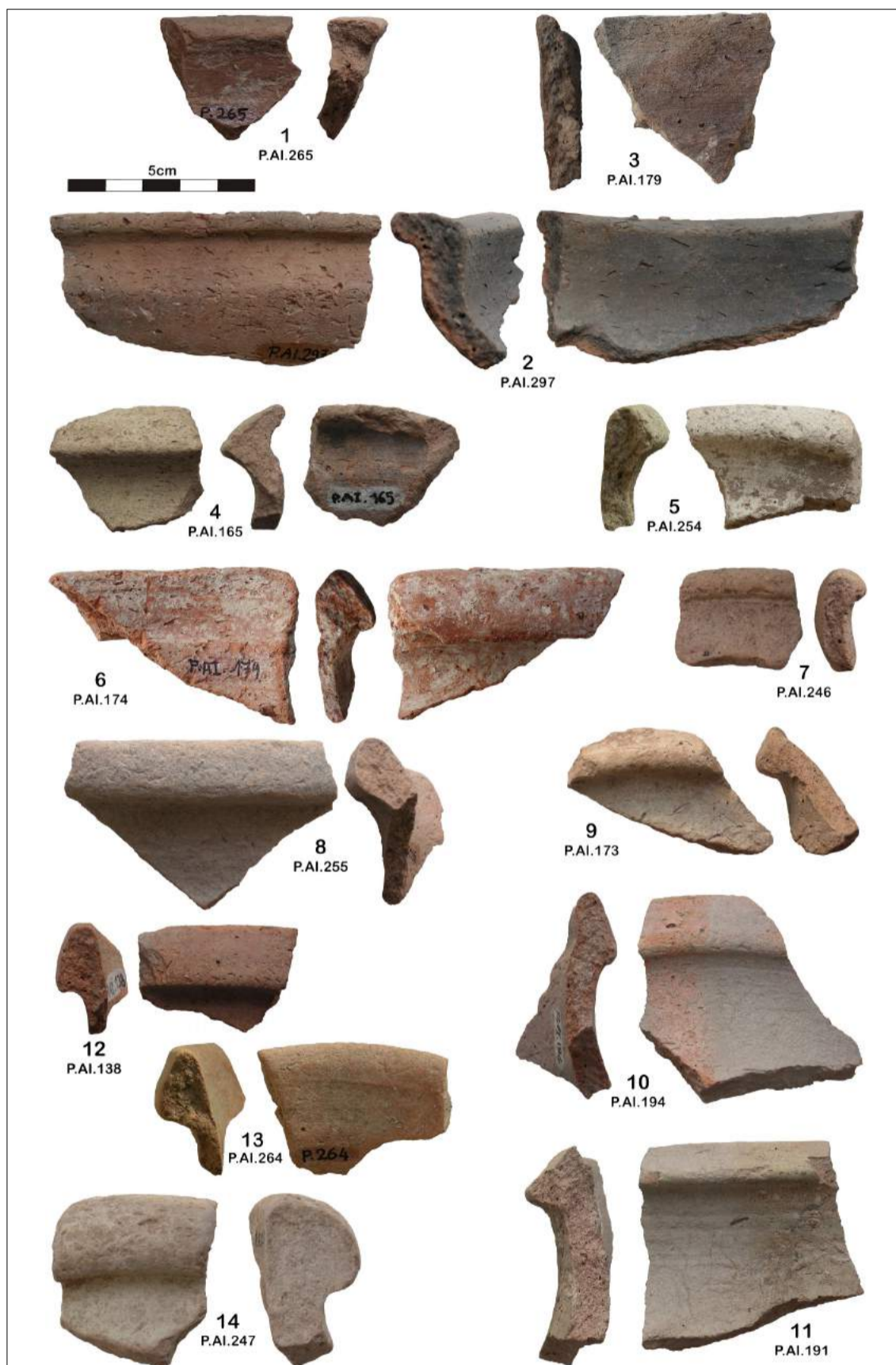
The earliest levels at mound AI  
represent the PIR A-phase from the  
mid-3<sup>rd</sup> to mid or late 2<sup>nd</sup> century  
BCE. Apart from local or East/  
Southeast-Arabian wares (Pl. 1-8),  
there are South- Mesopotamian (Pl.  
9-10:3), Southeast-Iranian (Pl. 11)  
and Greek wares (pl. 12). Although  
the provenance of some wares  
remains at present still enigmatic  
(Pl. 10:4-5) or under discussion (as  
in the case of eggshell ware), it does  
seem as if Northeast-Arabian wares  
were absent.

#### PIR A - The East/Southeast- Arabian wares (Pl. 1-8)

- Common, medium coarse and  
coarse wares (Pl. 1-8) are without  
doubt the largest group (see also  
Boucharlat & Mouton 1993: 227-  
228; Mouton 2008: 42-47) and it  
is likely that most vessels were  
locally produced. The distinction  
between the groups is not always  
easy to make. They are available  
in a variety of colours and include  
several subgroups such as medium  
fine vegetal orange ware, pinkish  
orange to a light red buff, buff and  
orange ware, an orange and brown  
coarse ware and a coarse light  
brown ware as well as a grey ware.  
All have a vegetal and/or medium  
to coarse mineral temper.

We can further distinguish between  
wares without a particular surface  
treatment, those having a red slip  
(occasionally burnished) and those  
with a grey slip (see also Mouton  
2008: fig. 12- 16, 18-19). Some do  
have a red slip outside and a grey  
slip inside.

To the group without a particular  
surface treatment which have  
mostly a buff paste (Pl. 1) belong  
some bowl fragments (Pl. 1 no. 1-4,  
compare to Mouton 2008: fig. 12  
no. 1-10), but mainly fragments of  
smaller to medium sized jars (Pl.  
1 no. 5-14 to Pl. 3 no. 1, compare  
to Mouton 2008: fig. 14). Although  
sector AI is a settlement area there  
were only few coarse large storage  
jars with a heavy rim (Pl. 2 no. 1-5,  
compare to Mouton 2008: fig. 19).  
Only one coarse vessel fragment  
shows an incised herringbone  
decoration (Pl. 3 no. 1). Handles  
were found as well (Pl. 3 no. 3; Pl.



Pl. 1. PIR A - East/Southeast-Arabian common and medium coarse ware.



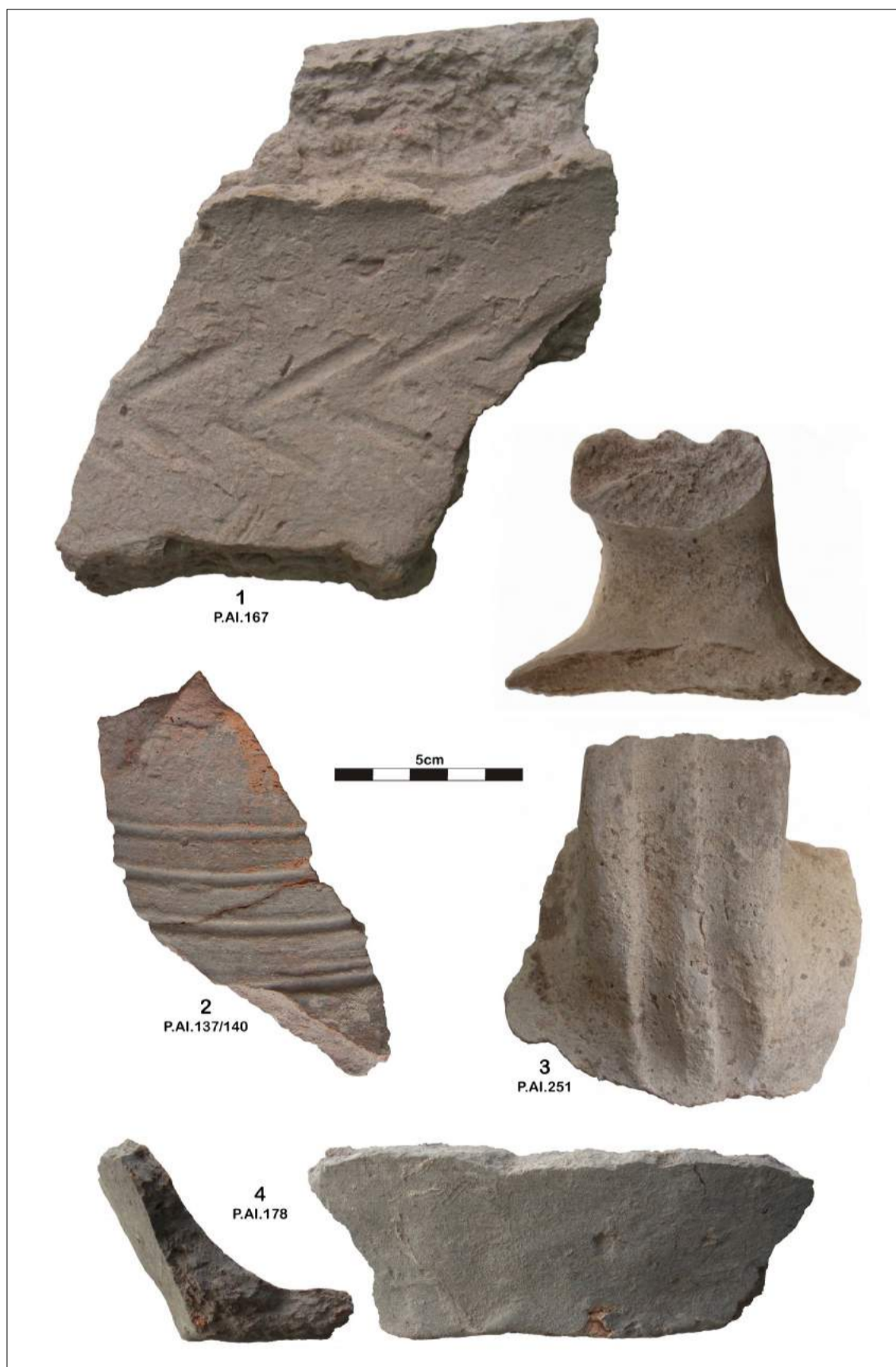
Pl. 2. PIR A - East/Southeast-Arabian common and medium coarse ware.





Pl. 2. PIR A - East/Southeast-Arabian coarse ware.



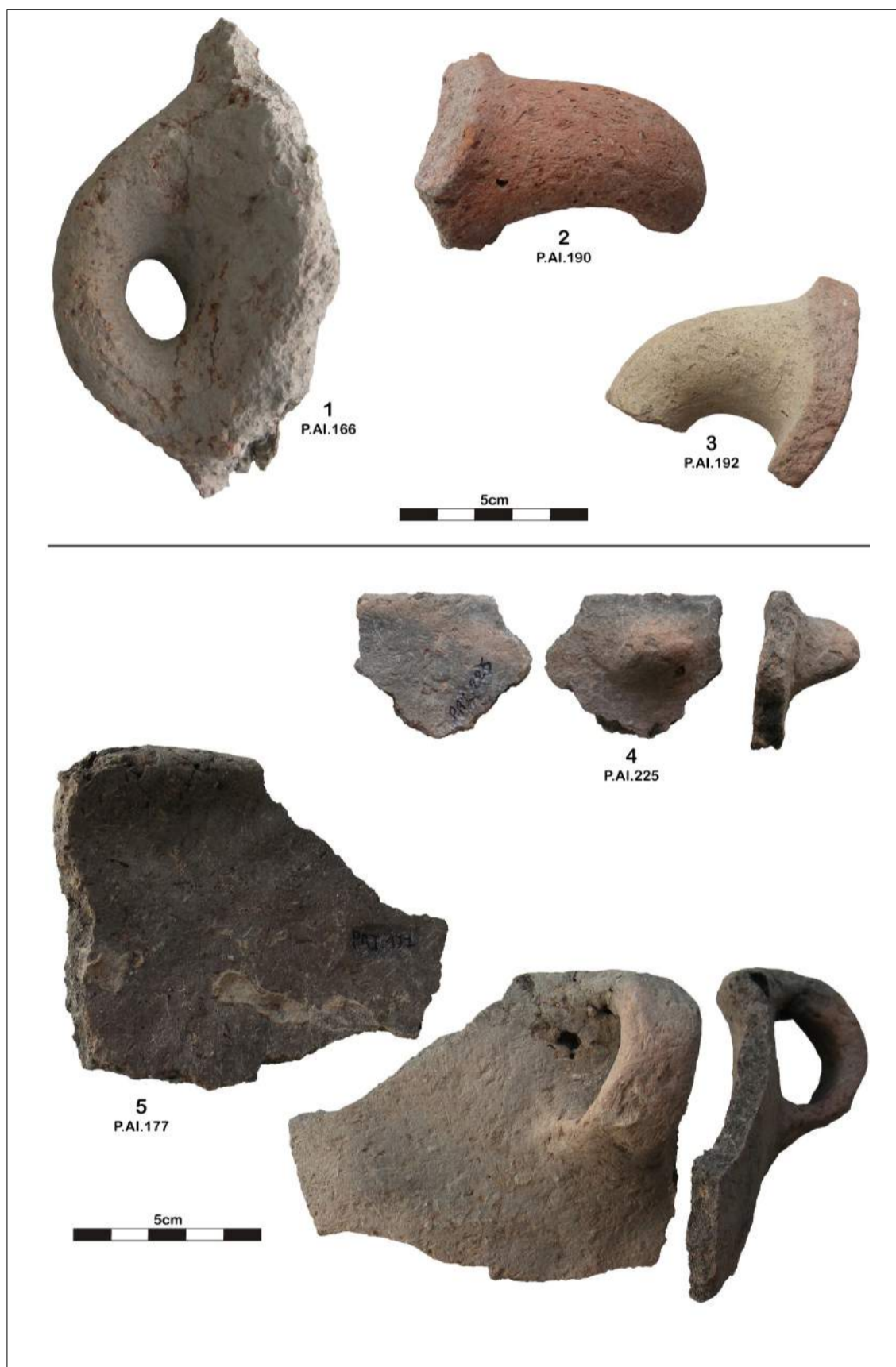


Pl. 3. PIR A - East/Southeast-Arabian coarse ware.



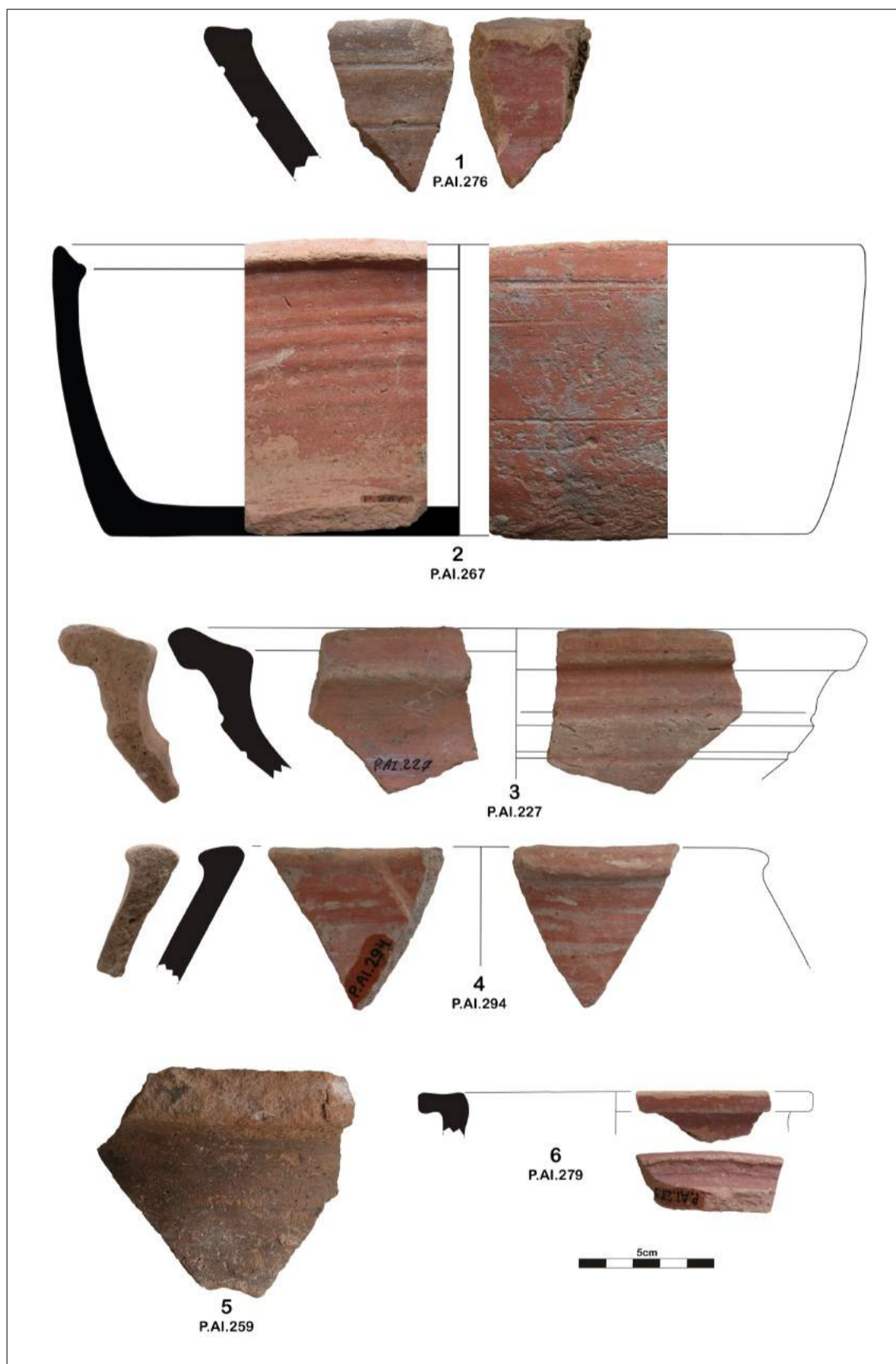
Pl. 4. PIR A -



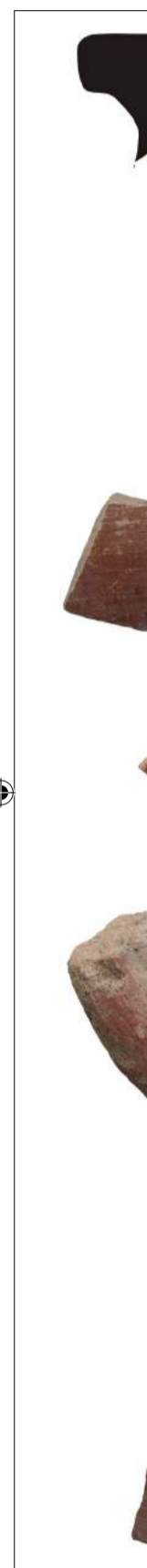


Pl. 4. PIR A - East/Southeast-Arabian coarse (no. 1-3) and cooking ware (no. 4-5).





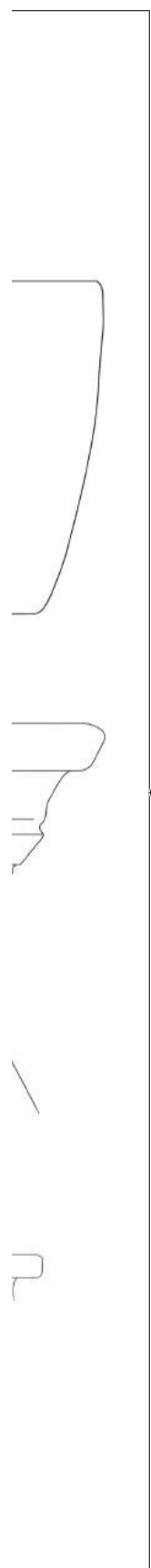
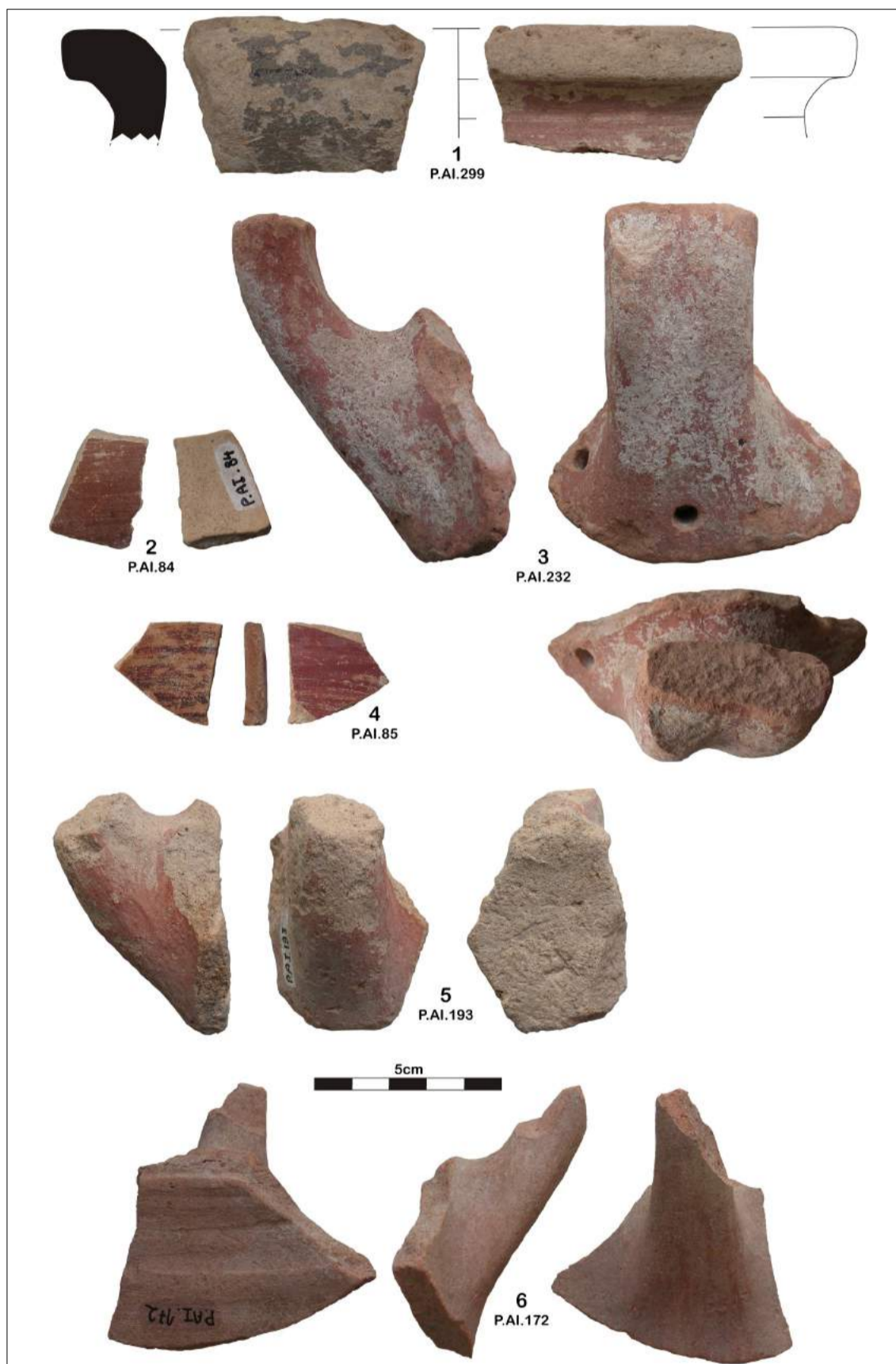
Pl. 5. PIR A - East/Southeast-Arabian medium coarse to coarse ware with orange/red to plum slip.



Pl. 6. PIR A - slip.



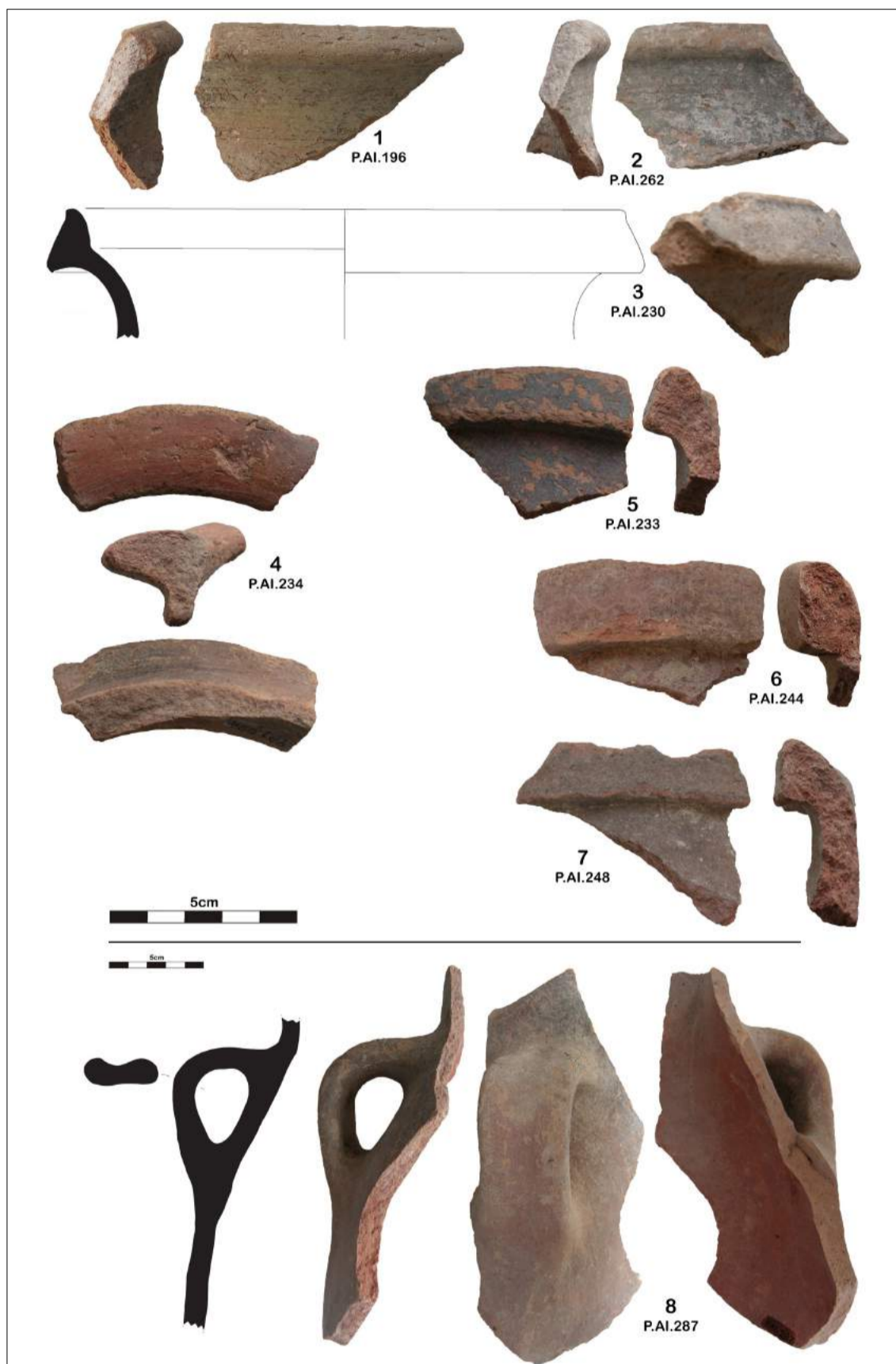




n slip.

Pl. 6. PIR A - East/Southeast-Arabian common, medium coarse and coarse ware with orange/red to plum slip.





Pl. 7. PIR A - East/Southeast-Arabian medium coarse to coarse ware with a grey to dark grey/black slip.

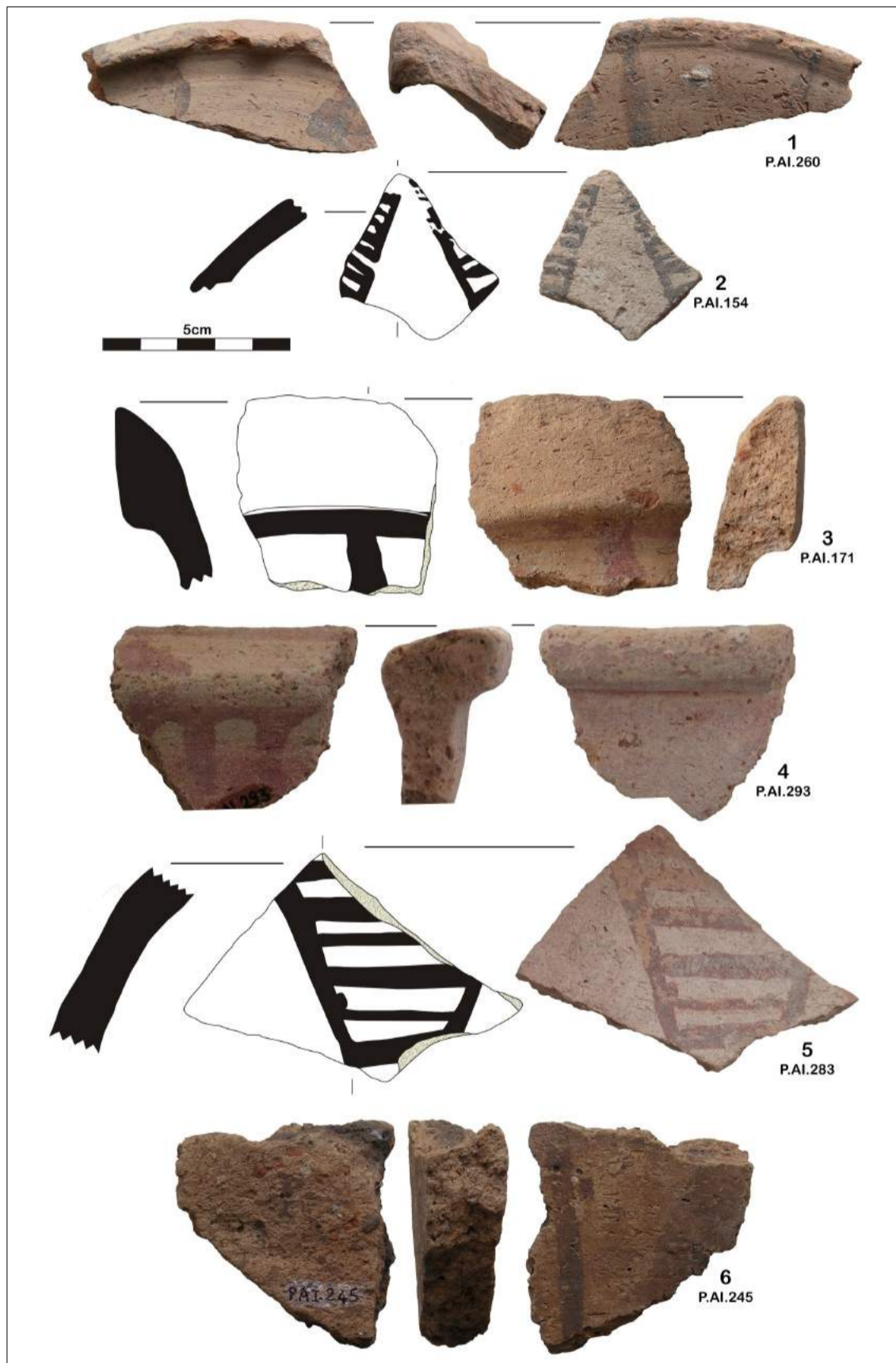


Pl. 8. PIR A -





44



y/black slip.

Pl. 8. PIR A - East/Southeast-Arabian painted common and painted coarse ware.





the most common, green does occur as jars or amphorae. Some are pitted or powdery, others to well adhering. Most common (Pl. 9:1-11) jugs and amphorae vessels (Pl. 9:7-9, 10:1). Rhodian jars are seemingly absent in the PIR A period but are represented in the PIR C (Area AI).

#### Southeast-Iranian wares (Pl. 11)

Iranian pottery (see also Mouton 1993: 228; 41-42, fig. 11 no. 10-13) seems to be present in the PIR A phase. Sherds of a fine light red or light brown (Pl. 11) finished ware were found in Southeast-Iran. Some are open vessels. Some are grey (Pl. 11 no. 4-5) pottery sherds (Pl. 11) found as well. The color of a fine orange/pinkish paste. Some do have dark brown to black partial reddish slip as well as sides painted motifs and a dark surface. It is very clear that these vessels are from Southeast-Iran.

#### Greek wares (Pl. 12)

A sherd of a **black** ware (Pl. 12 no. 1) with a slipped surface was found (Mouton 2008: 49). The black ware group, particularly

in tomb areas, are the fragments of **Rhodian wine amphorae with stamped handles** (Pl. 12 no. 2-5) (Boucharlat & Mouton 1993: 228; Mouton 2008: 48-49, fig. 20-21; Monsieur et al. 2013). Rhodian jar fragments are mainly found in funerary contexts at Mleiha; in the settlement sector AI only 4 sherds were found. A surface find on mound AI, is a toe with part of the lower wall (Pl. 12 no. 1). It belongs to an early type and is so far the oldest example discovered at Mleiha. It is to be dated between c. 270-250 BCE (Monsieur et al. 2013: 221, fig. 21). Some 25 stamped amphora handles have up to now been found. Three can be dated to the late 3<sup>rd</sup> c. BCE (233 – 220 BCE), the remainder of them are mostly to be dated between c. 200 and 150 BCE.

#### PIR A - The Wares of uncertain provenance (Pl. 10:4-5)

Only one **greyish** sherd (Pl. 10 no. 4) with smoothed surface was attested, but its origin is unknown. It is not clear whether the grey ware found at Qala'at al Bahrain, present in all levels attributed from the Achaemenid to the late Parthian period, (Højlund & Andersen 1994: 212, 226, 245, 263 & 272) is of the same manufacture as the sherd from Mleiha.

A couple of **coarse, thick sherds with chrysotile as temper** (Pl. 10 no. 5) (Boucharlat & Mouton 1993: 228; Mouton 2008: 46, 146, 214) could be of South-Arabian origin, though a Southeastern production cannot be excluded

either. The chrysotile or white asbestos fiber bundles embedded in the sherds are up to 3.5 cm long. It is unclear to what shape of pottery these small sherds once belonged; there is, however, no doubt that the paste had to be hand formed in view of the large fiber bundles in the paste. As a result of the heating during the baking process, the relatively soft chrysotile (Mohs scale 2.5-3) has been transformed in a hard magnesium silicate (Mohs scale 7).

Northeast-Arabian wares (medium fine buff & medium fine red and black wares) are seemingly absent in our assemblage. Also the French team (Mouton 2008: 47-48, Northeast-Arabian red ware) observed that this group was rare at Mleiha during the PIR A phase, and none was identified for the PIR C (unless the few vessels dated by Mouton to the PIR B period actually belong to PIR C, see Mouton 2008: 70, 105). However, at ed-Dur in PIR C, particularly the characteristic vessels made of a medium fine red and black pottery with medium fine mineral temper, mainly sand and often with popped lime particles visible or pitted areas where it has disappeared (so called Thaj ware) are rather well represented (2.46% of the total assemblage) (Haerinck et al. 1993: 187, fig. 4 no. 7-12; De Paepe et al. 2003: 212-214; Rutten 2009a: 245-253). The medium fine buff Northeast-Arabian ware even represents 20.93% of the registered pottery (Rutten 2009a:228-245).

It is quite interesting to observe that Northeast-Arabian ceramics are rarely attested during the PIR A phase at Mleiha. It looks as if in this early phase, the caravan trade to Southeast-Arabia that

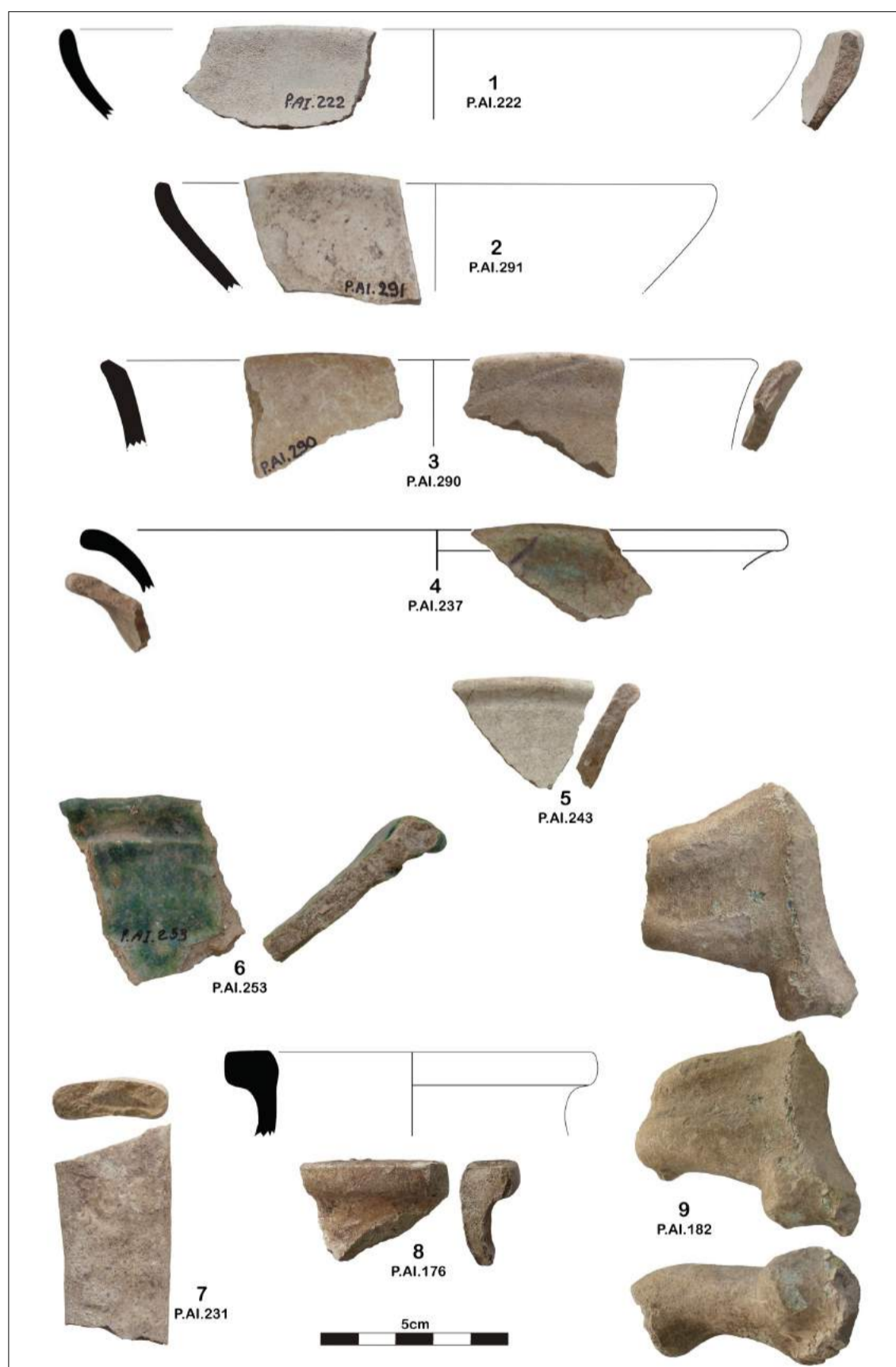
passed through Northeast-Arabia carried mainly non Northeast-Arabian goods. Goods produced in Northeast-Arabia were rarely transported to Southeast-Arabia. This will change with the shift from caravan to maritime transport in PIR C, which allowed much larger amounts of goods to be transported (Haerinck 1998 & 2008). Northeast-Arabian ceramics make up no less than 23.39% of the total pottery assemblage at the PIR C settlement of ed-Dur. In that period ed-Dur was the only coastal site between Qatar and the Musandam and from there goods were transported further inland. It is surprising that even then these Northeast-Arabian ceramics remained rare, almost not existent at Mleiha.

#### PIR C – THE UPPER LEVELS OR ED-DUR PHASE

Most ceramics recovered at Mleiha Area AI belong to the PIR C or ed-Dur phase and the pottery matches perfectly with the ed-Dur assemblage as was established during the 9 seasons between 1987 to 1995 of excavations at the latter site by the Belgian team. Although the amount of sherds and the represented shapes from mound AI are much more limited in comparison to the vast amount of sherds studied at ed-Dur (a total of 12780 diagnostic sherds & complete vessels), it is undeniable that both assemblages belong to the same period.

A full and detailed study of the ed-Dur ceramics was undertaken by Mrs Katrien Rutten and was presented in June 2006 as a PhD



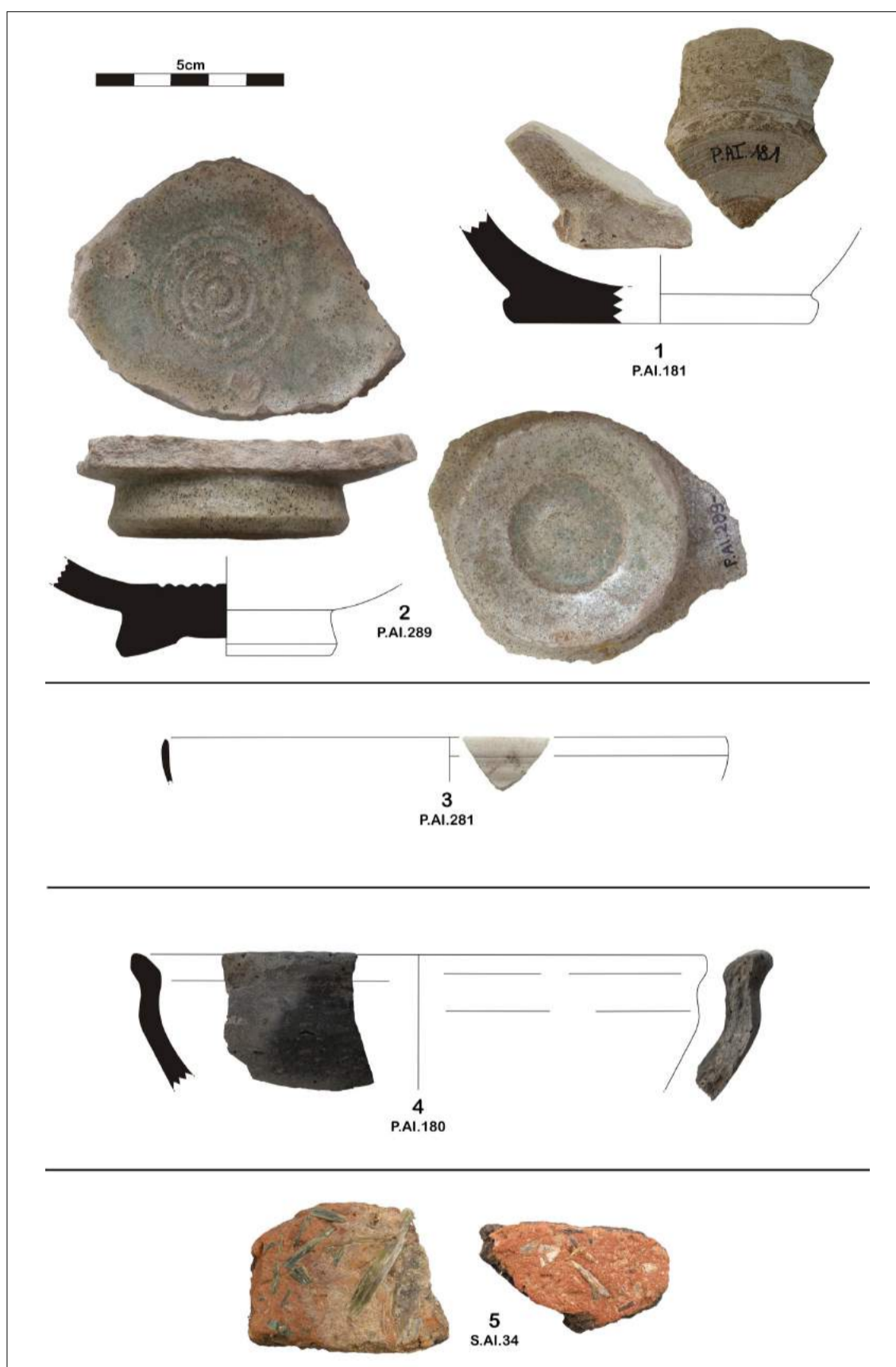


Pl. 9. PIR A - South-Mesopotamian glazed ware.



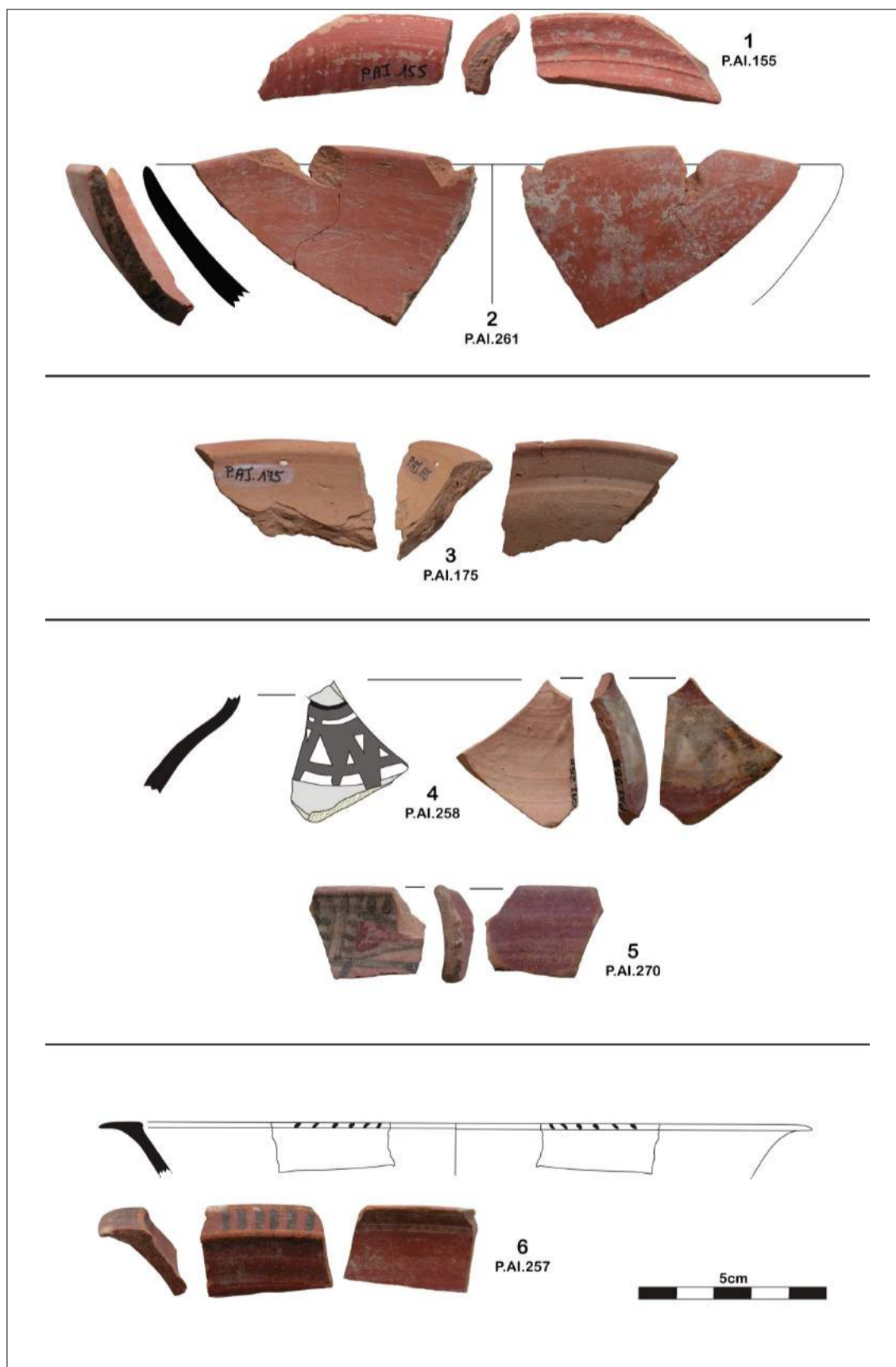
Pl. 10. PIR A - uncertain prov





Pl. 10. PIR A - South-Mesopotamian glazed ware (no. 1-2) and eggshell ware (no. 3); and PIR A wares of uncertain provenance (no. 4: grey ware and no. 5 coarse sherd with chrysotile astemper).





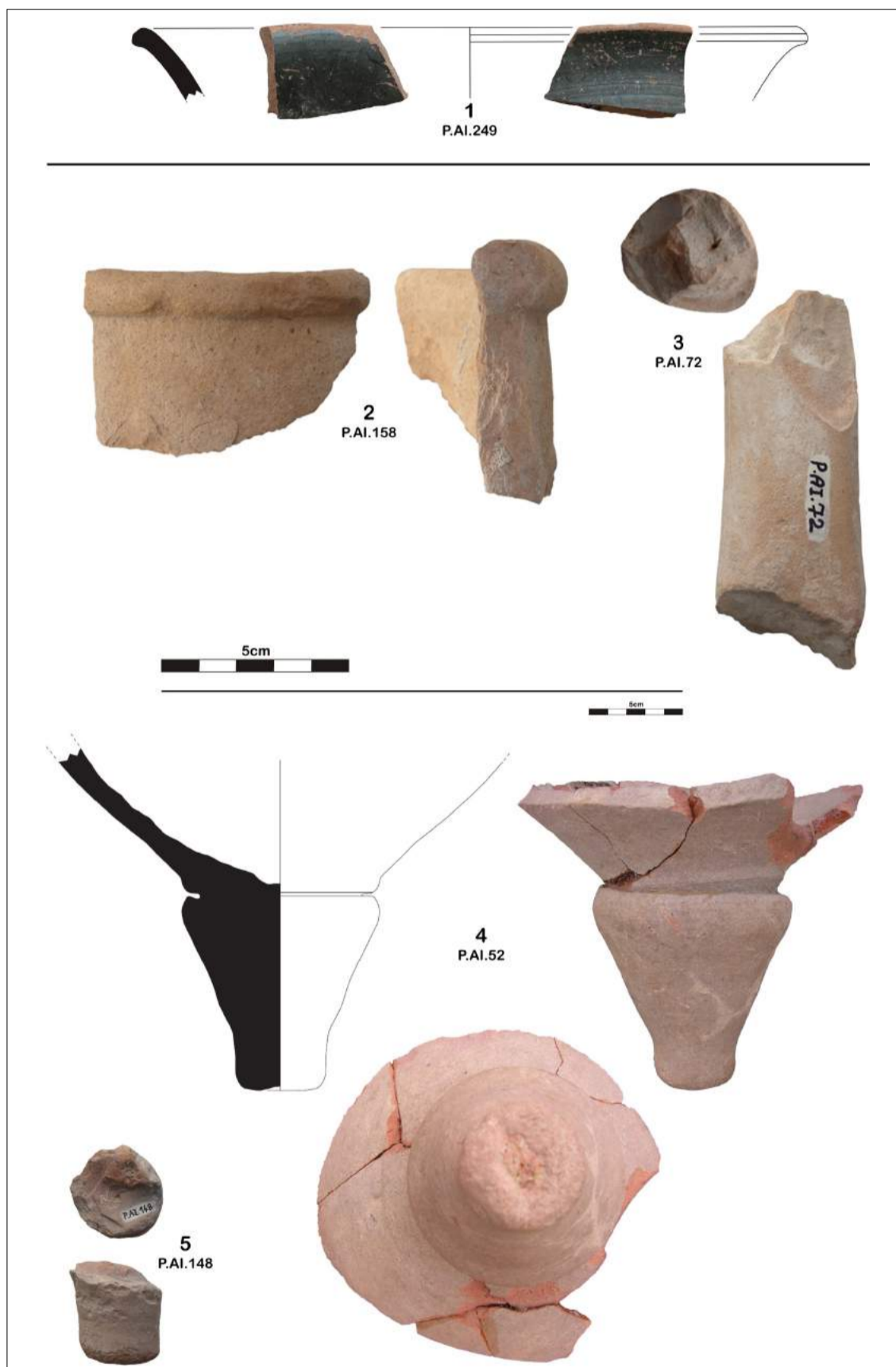
Pl. 11. PIR A - Southeast-Iranian wares: fine light red (no. 1-2) or light brown burnished wares (no. 3-4) and fine orange (no. 5) to red painted (no.6)pottery.



Pl. 12. PIR A -







ires (no. 3-4)

Pl. 12. PIR A - Greek wares: black glazed sherd (no. 1) and fragments of Rhodian amphorae (no. 2-5).





thesis at Ghent University (Rutten 2009a). This exemplary study of a large collection, securely dated between ca. 25 BCE and 125 AD, was supplemented by quite a number of petrographic, chemical and phytolith analyses and the ed-Dur ceramics can be used as a reference collection for the PIR C phase in the Oman peninsula. Rutten (2009a; 2009b: 360, fig. 1) distinguished 37 different wares and was able to attribute the production of the majority of them (32 of the 37 wares) to 6 specific regions. These are Southeast-Arabia (local wares, 27.13%), South-Mesopotamia (42.91%), Northeast-Arabia (23.39%), the Indian Subcontinent (3.86%), Southeast-Iran (2.01%), the Mediterranean (0.33%) and South-Arabia (0.03%). The remaining wares from unidentified regions represented merely 0.48% of the ed-Dur ceramics.

The pottery from the top layers of area AI at Mleiha is very similar to the ed-Dur material, but with the difference that Northeast-Arabian pottery, Indian wares, Roman and South-Arabian pottery are almost completely absent. Apart from local or Southeast-Arabian wares (Pl. 13-23), only South-Mesopotamian (Pl. 24 – 30) and Southeast-Iranian wares (Pl. 31) could be identified with certainty. The so-called “Thaj ware” from Northeast-Arabia (Haerinck et al. 1993: 187, fig. 4; De Paepe et al. 2003: 212-214; Rutten 2009a: 245-253) with its typical paste and shapes is absent. Michel Mouton made the same observation (Mouton 2008: 105-106, his “Northeast-Arabian red ware”). Only a couple of sherds could possibly have a Northeast-Arabian

origin. This may indicate that the overland caravan route through or from Northeast-Arabia had lost much of its importance when the maritime trade through ed-Dur was flourishing (Haerinck 1998, 2008). Still, there never seems to have been a substantial amount of Northeast-Arabian wares present at Mleiha in any of its occupation phases (see above). Indian wares are absent in our collection from area AI, and also the French team did not mention any such sherd from the PIR C period, nor did they mention Roman or South-Arabian sherds. However, Indian pottery does occur at Mleiha, but mainly in the PIR A and PIR D periods (Méry & Mouton 2011: 106-107; Reddy et al. 2012; Reddy 2013: 30-32). At ed-Dur Indian wares make up only a limited amount of the assemblage (less than 4%) (De Paepe et al. 2003: 222, fig. 4 no. 14-18; Rutten 2009a: 258-291). Its eventual presence at Mleiha involved a transport from coastal sites, whether on the Gulf or on the Arabian Sea to the inland and depended of course on specific demands by the clients (the distance from ed-Dur to Mleiha is approx. 50 km as the crow flies). The same observation is valid for the Roman pottery (for ed-Dur: De Paepe et al. 2003: 214-215, fig. 4 no. 19-20; Rutten 2007; Rutten 2009a: 325-347) or South-Arabian wares (for ed-Dur: De Paepe et al. 2003: 212, fig. 4 no. 1-2; Rutten 2009a: 365-368).

The pottery at Mleiha seems to have had a far more limited origin than at ed-Dur that seems thus more cosmopolitan than its inland counterpart. The vast

majority of our assemblage from AI can be attributed to locally produced Southeast-Arabian wares. Furthermore there were South-Mesopotamian wares excavated and some painted wares that were likely produced in Southeast-Iran.

#### PIR C - The Southeast-Arabian wares (Pl. 13-23)

The local wares are usually of a common to coarse type including a rather wide variety of paste and colour and a distinction is not always easy to make with a simple visual examination of the sherds. This vast group includes a common/medium coarse orange/salmon ware, common/coarse wares with a buff slip, coarse buff, light brown, orange and greyish wares, coarse wares with a red or purplish/black slip, a thick coarse ware as well as a coarse black ware. In the ed-Dur assemblage these wares represent 27.13% of the total (Rutten 2009a: 76, 88-152; Rutten 2009b). However, it is our impression that at Mleiha these wares do have a higher percentage in the total assemblage. Further research needs to confirm this impression.

These wares, as indicated by petrographic analysis of the ed-Dur sherds, are of Southeast-Arabian or local origin and originated particularly from the northern and central regions of Southeast-Arabia (Rutten 2009a: 88-152; Rutten 2009b). The sherds may contain vegetal or mineral temper, or both and this temper occurs in different sizes and percentages. The mineral temper has been



Pl. 13. PIR C - fine buff wares



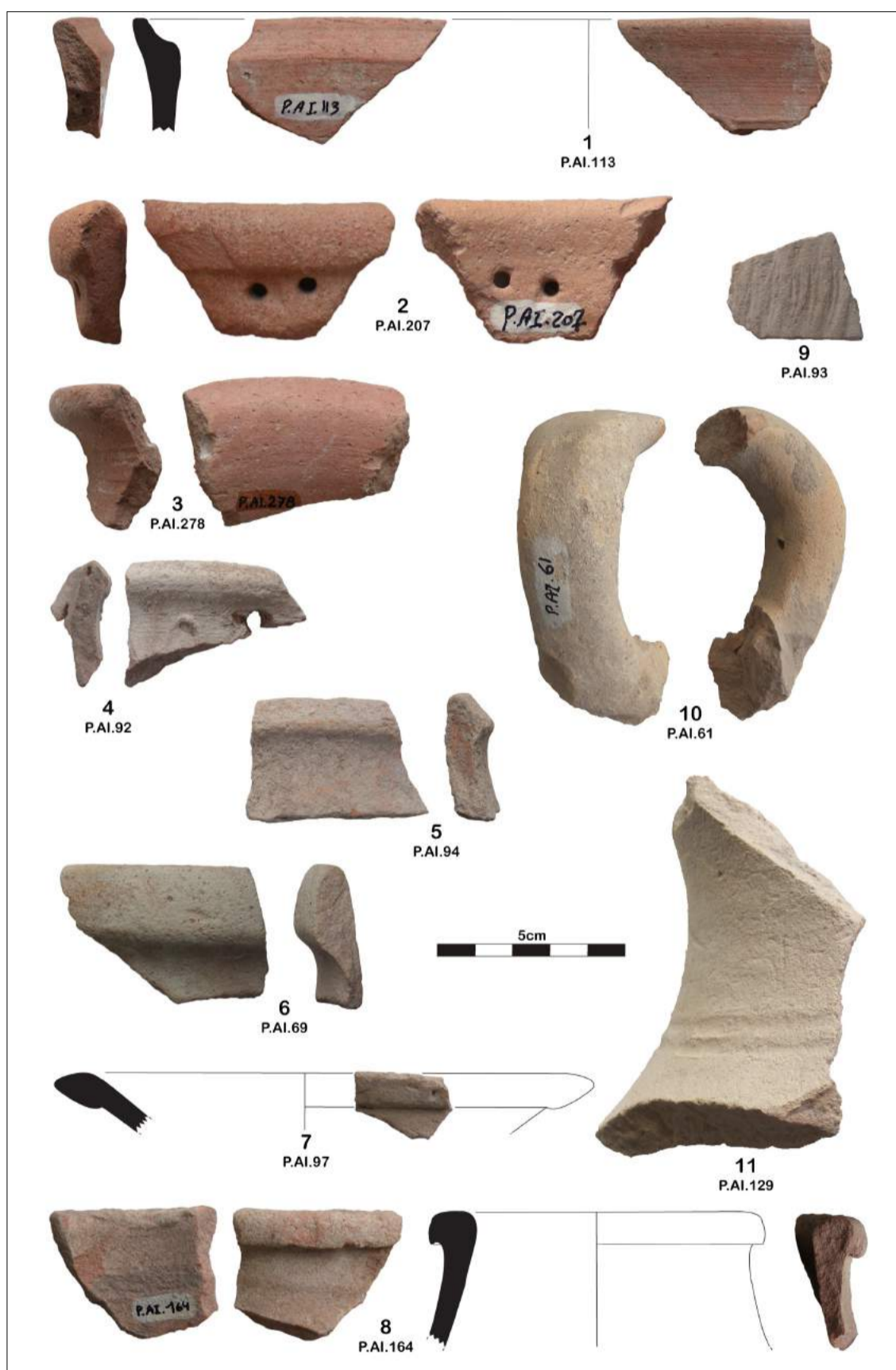


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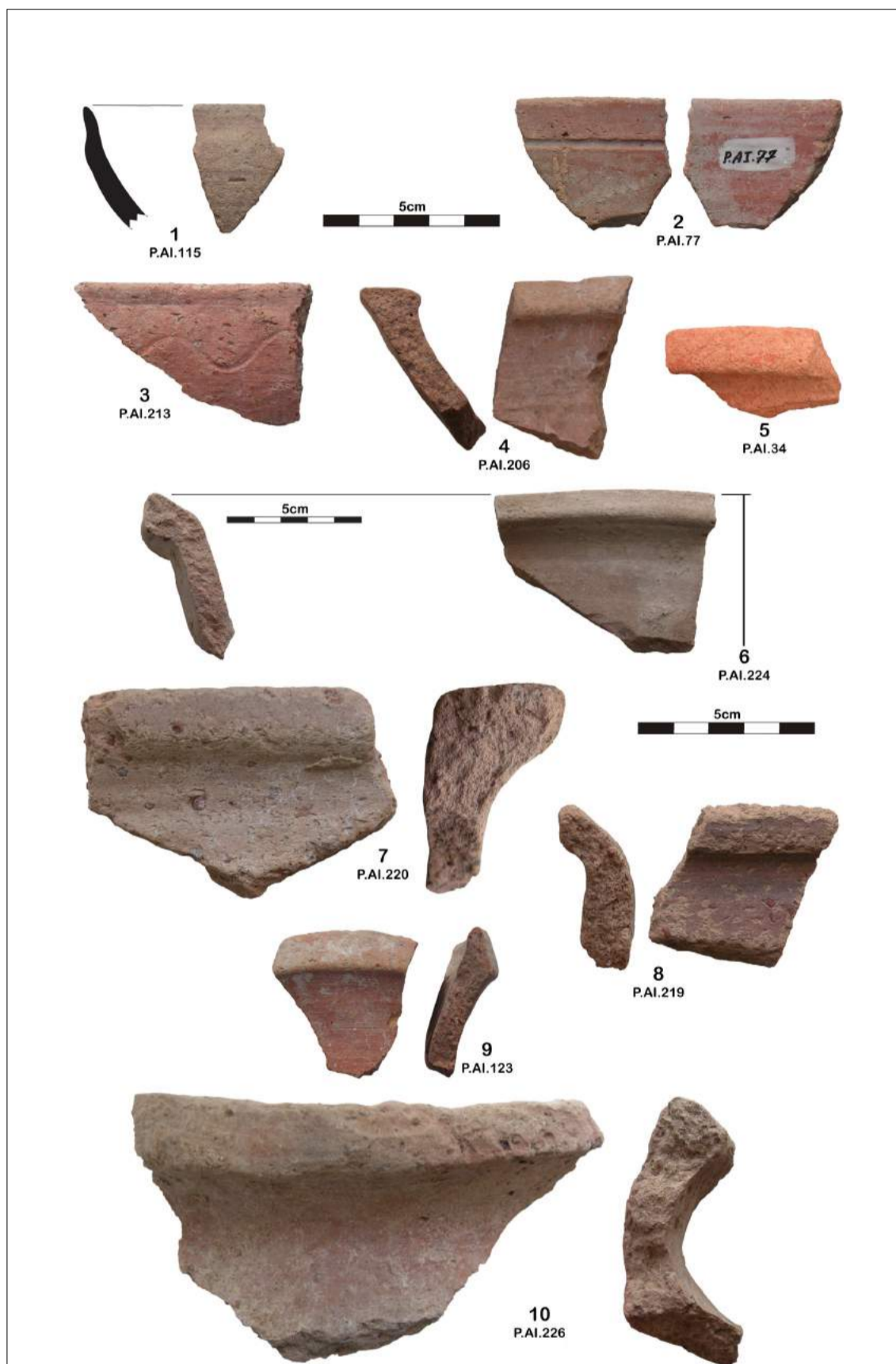
**Southeast-Arabian  
(Pl. 13-23)**

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ation of the sherds.  
includes a common/  
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e buff, light brown,  
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ed or purplish/black  
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:se wares represent  
the total (Rutten  
152; Rutten 2009b).  
our impression that  
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Southeast-Arabian  
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Pl. 13. PIR C - Southeast-Arabian common wares: common/medium fine vegetal orange ware and medium fine buff wares.

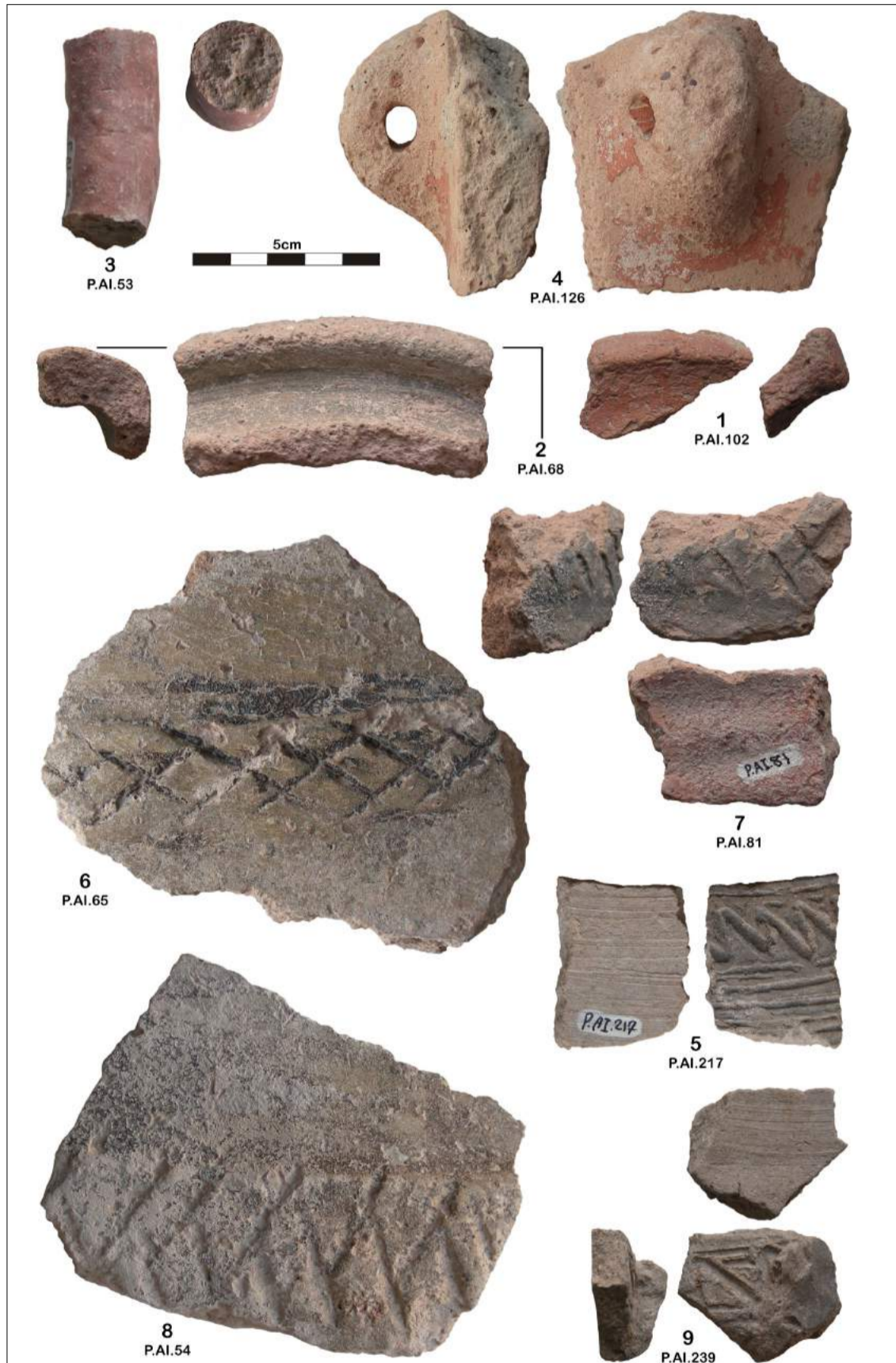


Pl. 14. PIR C - Southeast-Arabian medium coarse to coarse buff/orange ware with an orange/red slip.



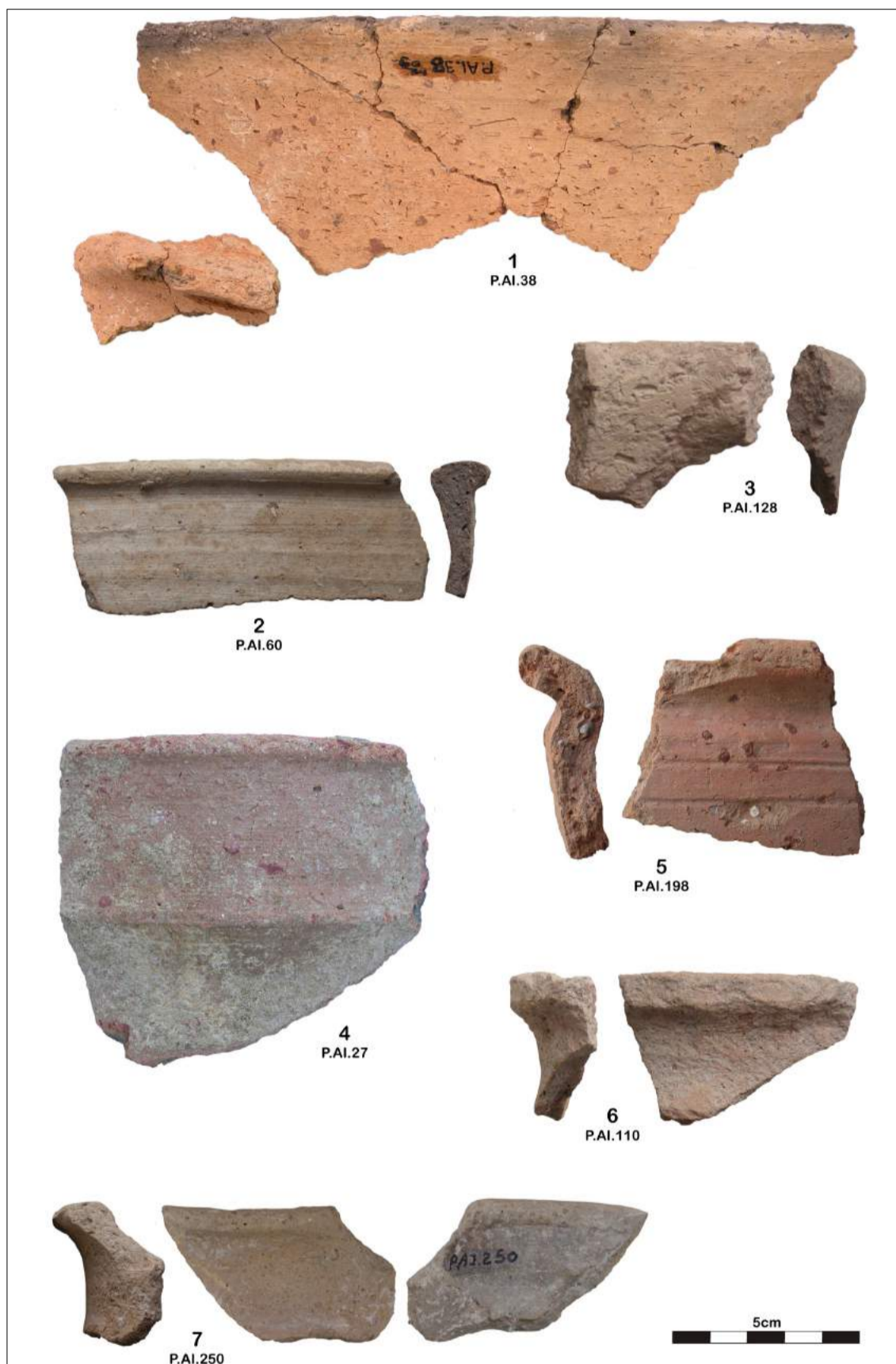
Pl. 15. PIR C orange/red slip



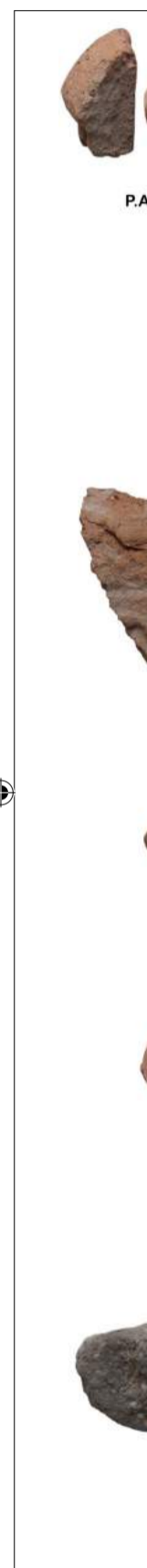


Pl. 15. PIR C - Southeast-Arabian wares: no. 1-4, medium coarse to coarse buff/orange ware with an orange/red slip; no. 5-9, with purplish/black slip.

/red slip.

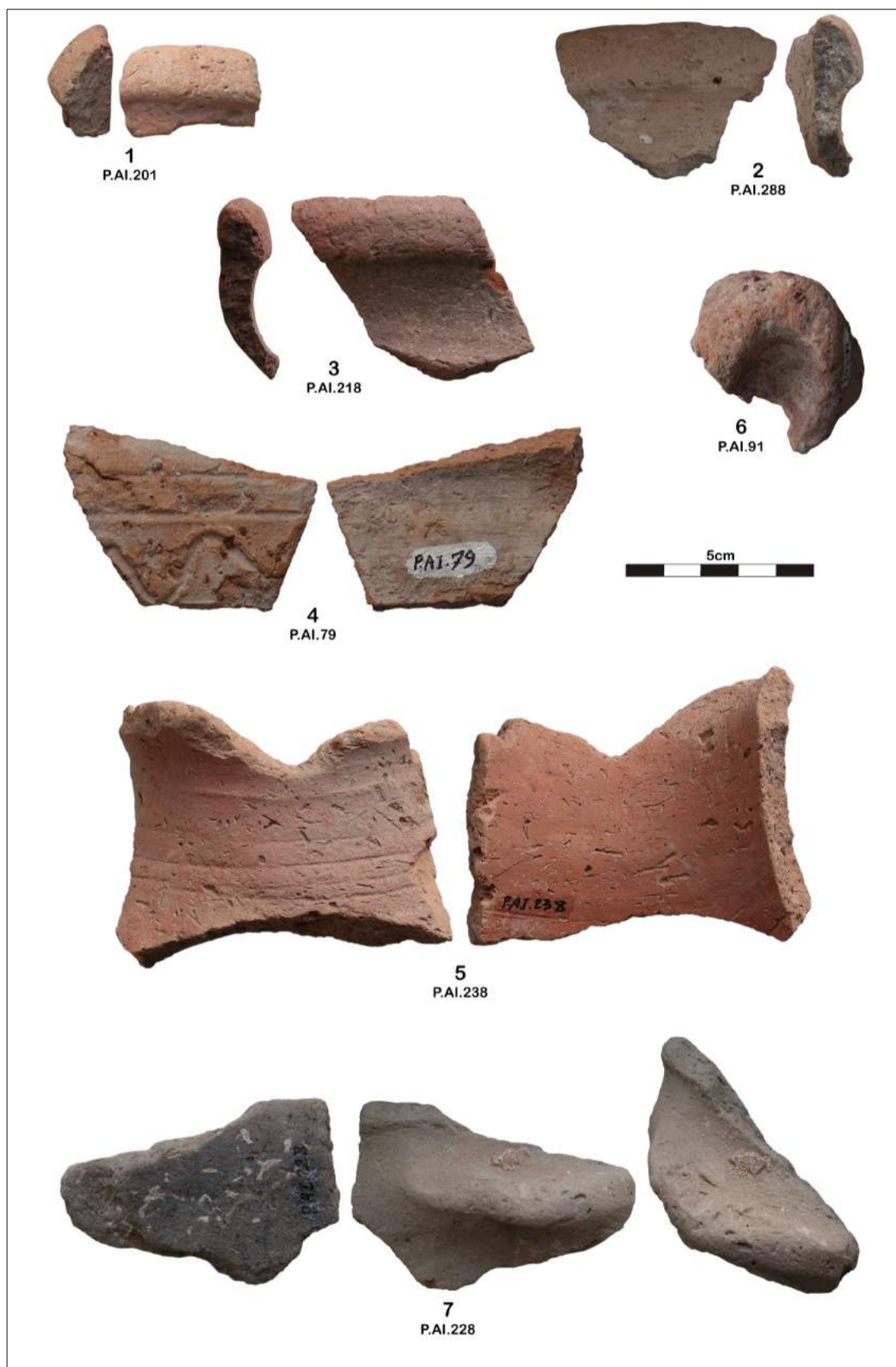


Pl. 16. PIR C - Southeast-Arabian coarse to very coarse wares.



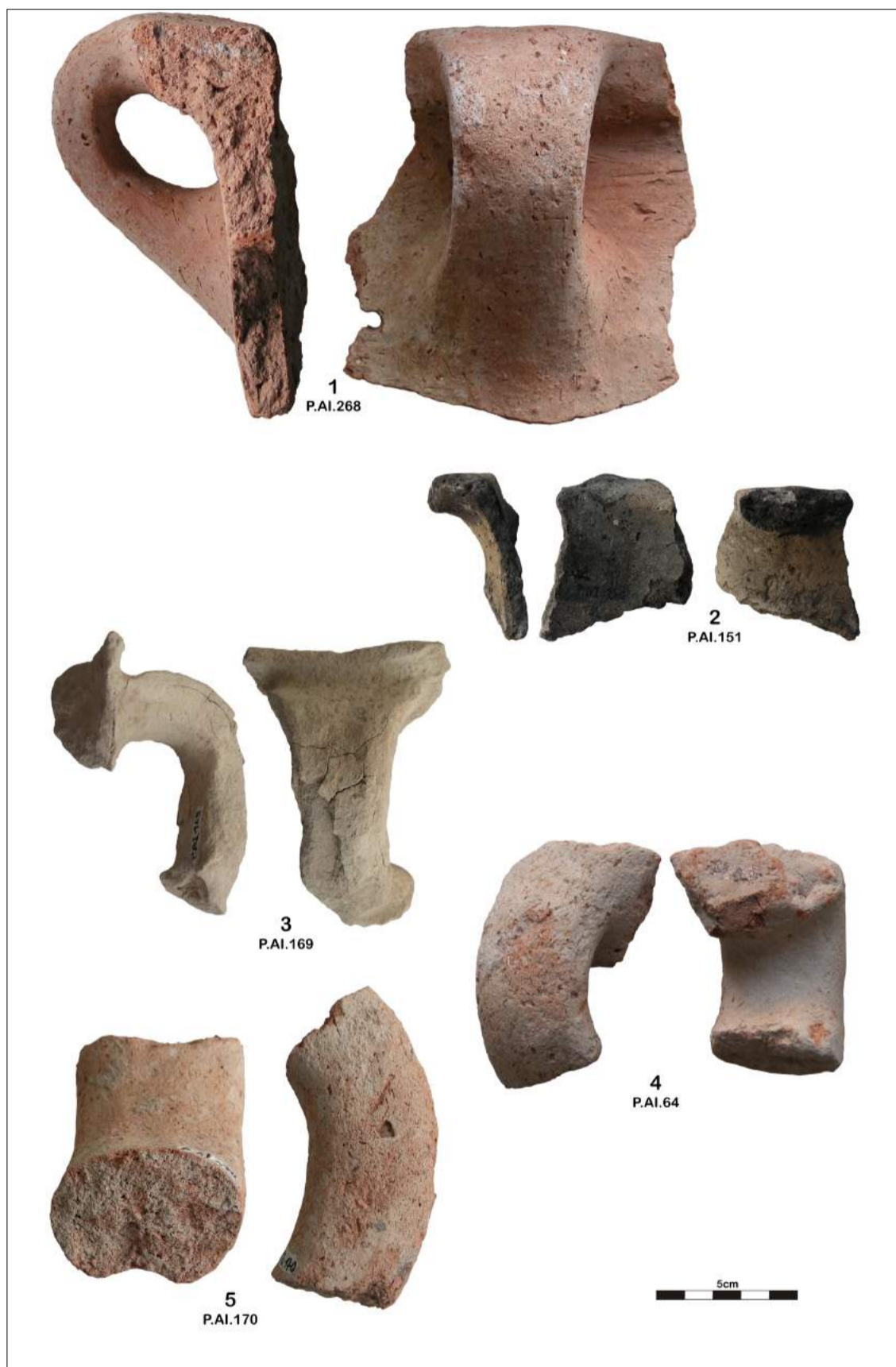
Pl. 17. PIR C -





Pl. 17. PIR C - Southeast-Arabian coarse to very coarse wares.





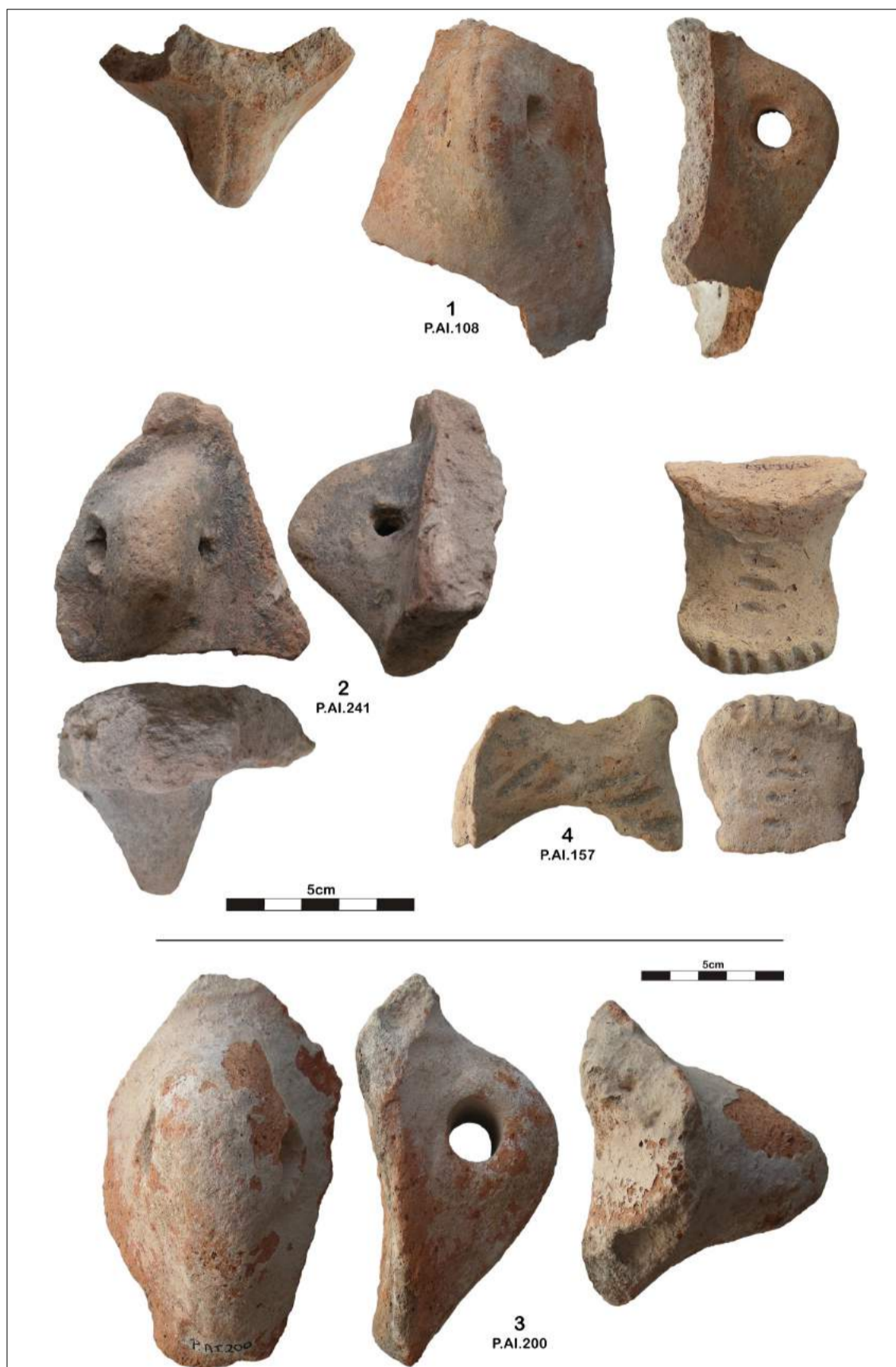
Pl. 18. PIR C - Southeast-Arabian coarse to very coarse wares.



Pl. 19. PIR C

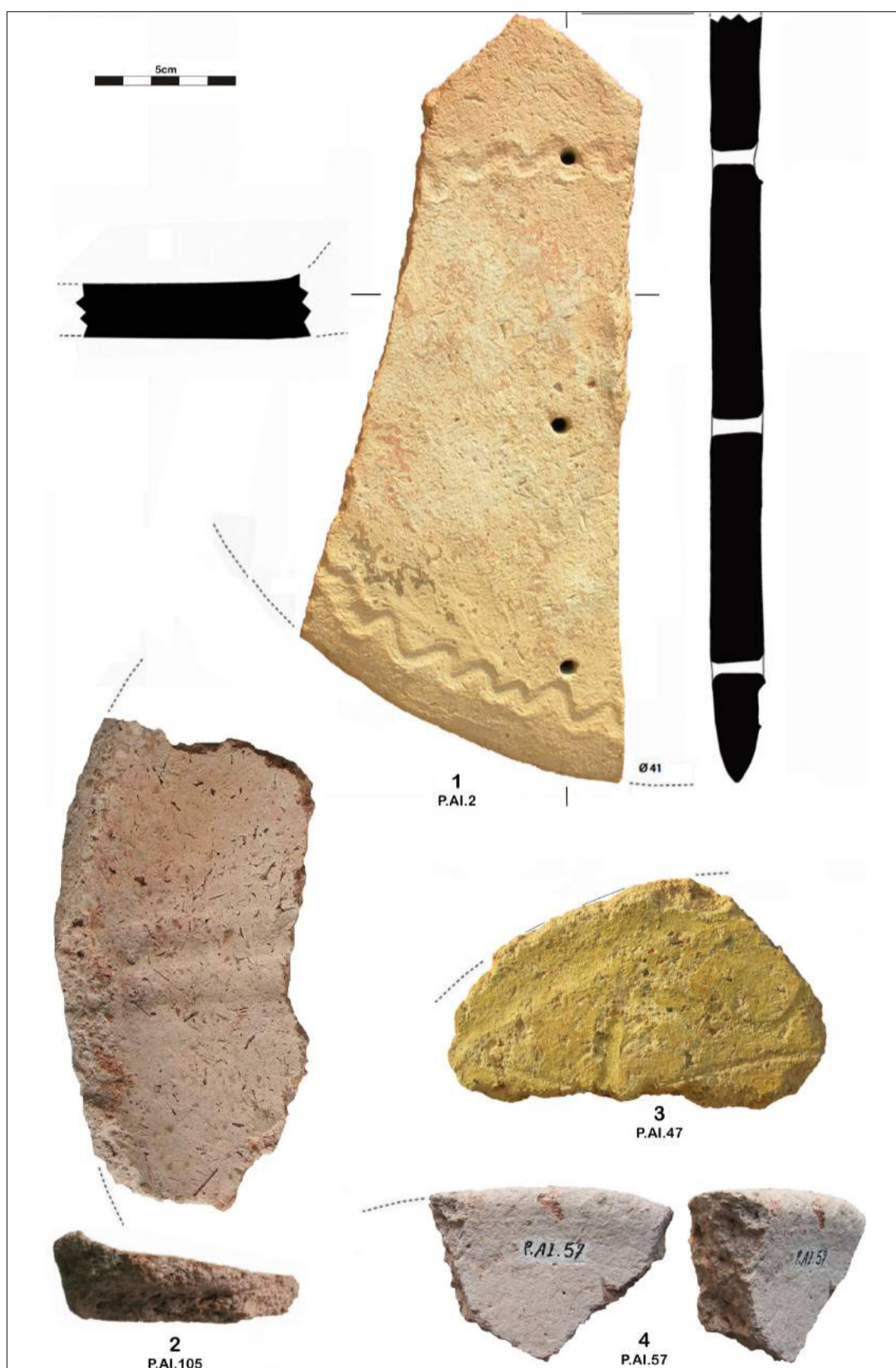






Pl. 19. PIR C - Southeast-Arabian coarse to very coarse wares.



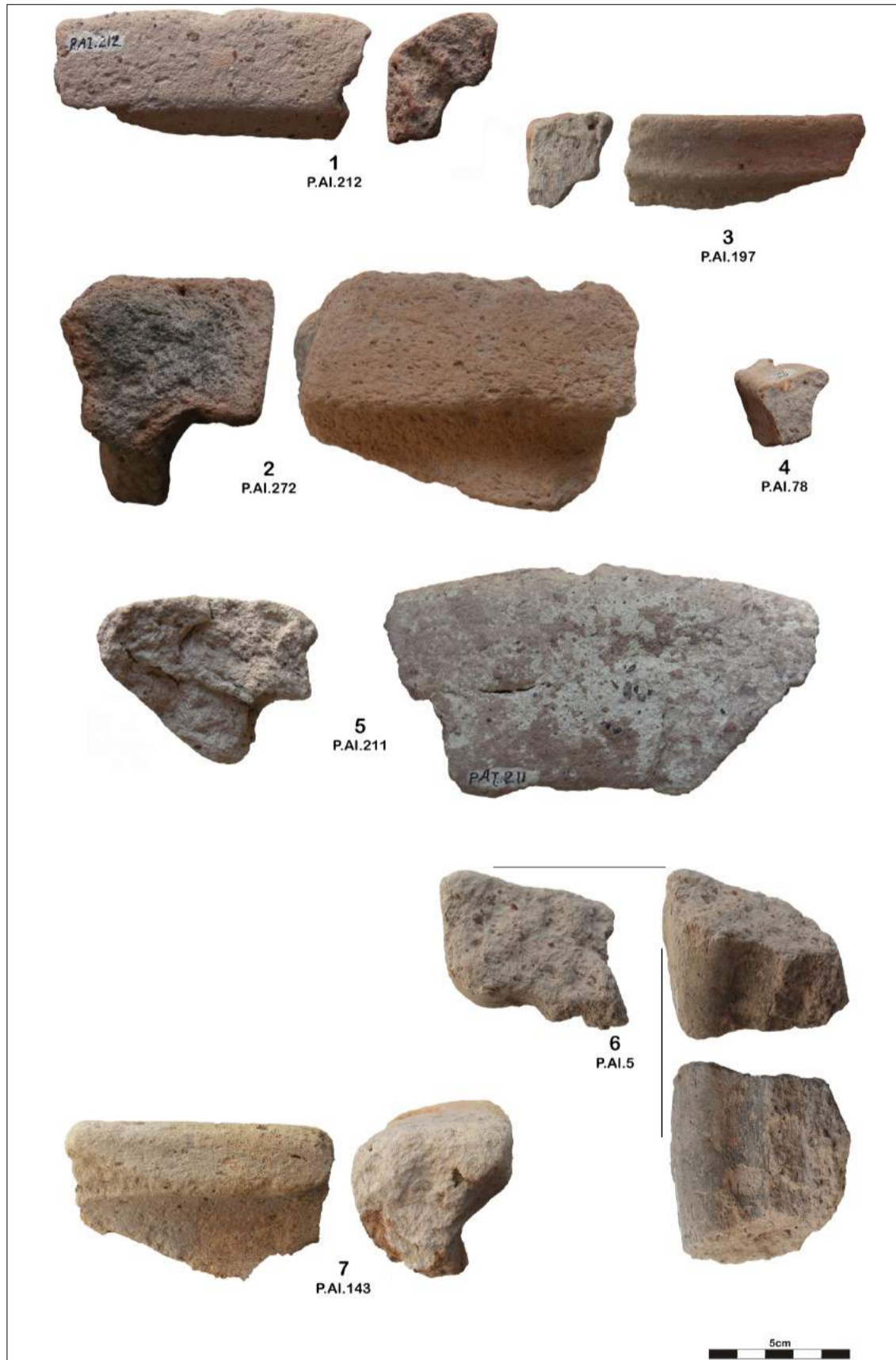


Pl. 20. PIR C - Southeast-Arabian coarse to very coarse wares.

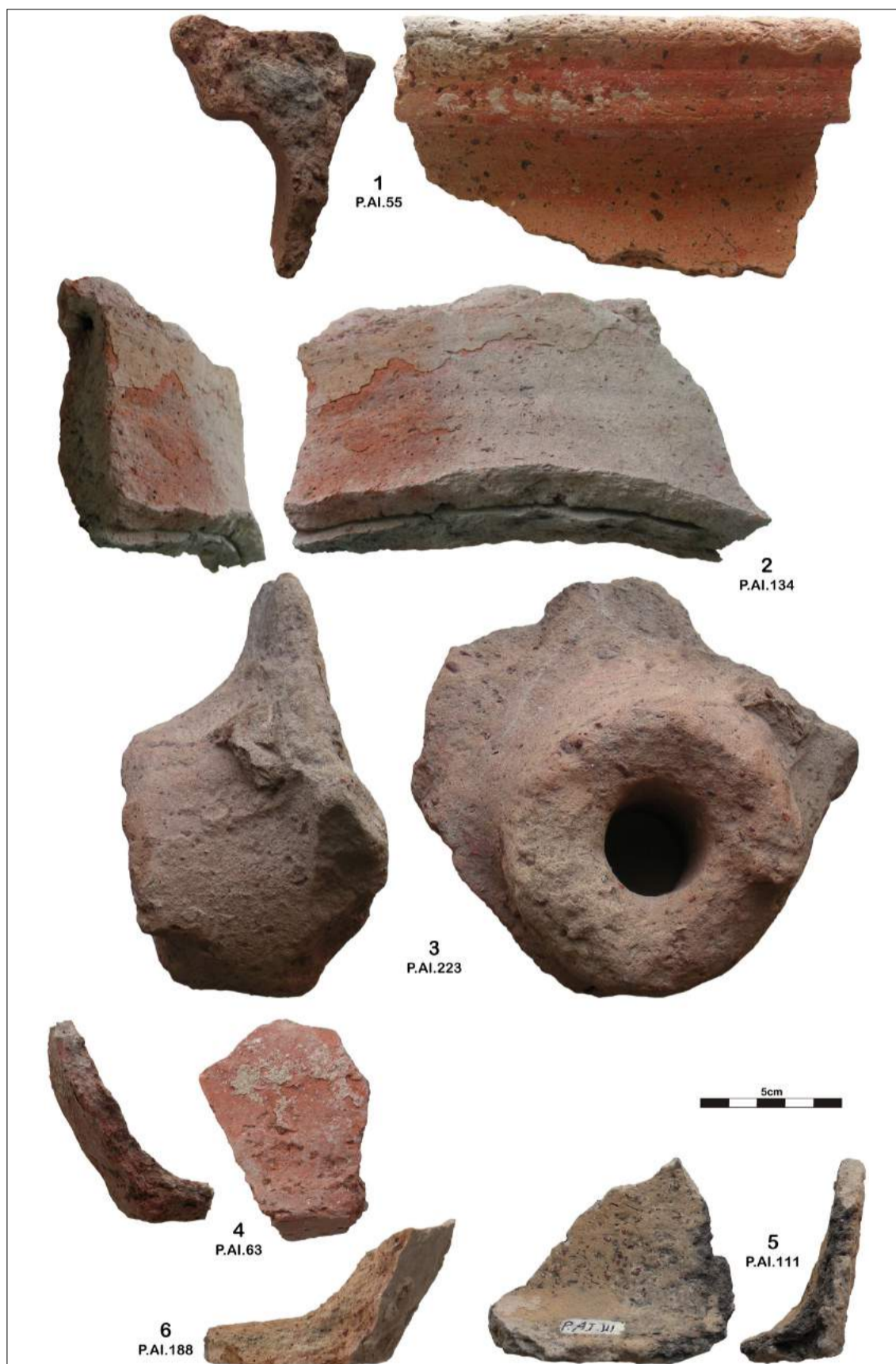


Pl. 21. PIR C





Pl. 21. PIR C - Southeast-Arabian coarse to very coarse wares.

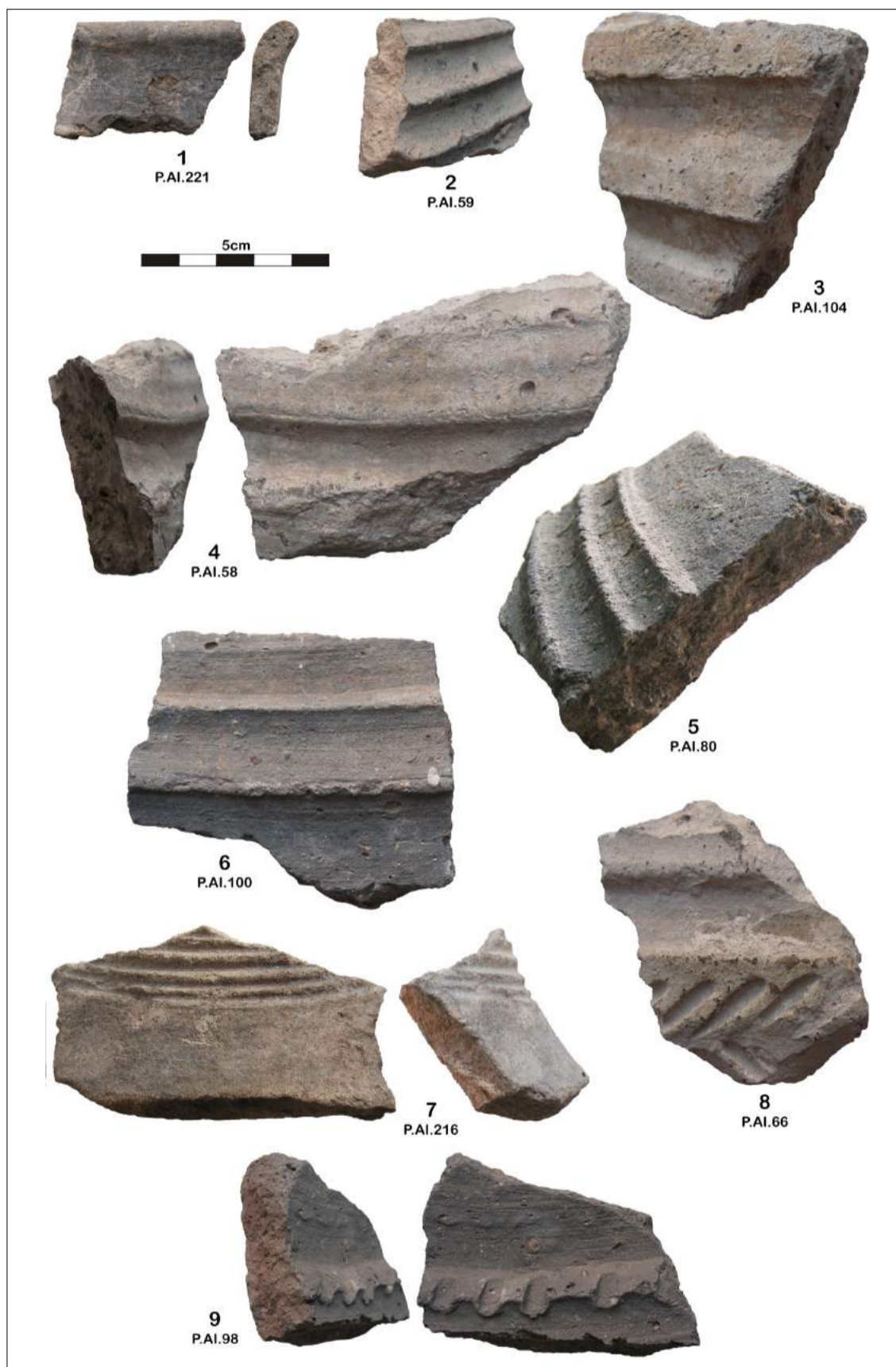


Pl. 22. PIR C - Southeast-Arabian coarse to very coarse wares.



Pl. 23. PIR C





Pl. 23. PIR C - Southeast-Arabian thick coarse black ware.





identified as coming from a region with abundant gravels and medium to coarse-grained wadi sediments (De Paepe et al. 2003: 218-219, 223-224; Rutten 2009b: 360-361; Vrydaghs et al. 2014). These elements are present in the alluvial fans and wadis of the northern parts of the Oman mountain.

- A first group (Pl. 13) of common ware includes a **common/medium fine vegetal orange ware** which is certainly local (Rutten 2009a: 92-97, group 2) and maybe also a **medium fine buff ware** (Rutten 2009a: 228-245, group 15) (particularly Pl. 13 no. 9) which is, however, possibly of Northeast-Arabian origin. Though, Northeast-Arabian wares, as already said, are rather rarely encountered at Mleiha, a contrast with the situation at ed-Dur.

- A very large group consists of **medium coarse to coarse wares** (coarse salmon, orange and brown, greyish-brown or greyish-black or black paste) (Pl. 14-23) (compare to Rutten 2009a: 92-130, groups 3 to 6 and 8).

- Amongst this vast group there is a **medium coarse to coarse buff or orange ware with an orange, red or a purplish/black slip** (Pl. 14-15). These are, as far as we are concerned, more characteristic for Mleiha than for ed-Dur (Rutten 2009a: 97-107, group 3). This preliminary observation can, of course, point to a very localised production and eventually also to regional contacts within Southeast-Arabia. Shapes are quite simple and include deep bowls, small, middle sized and large storage vessels. Some shapes

have simple decorations such as incised wavy lines, cross-hatchings and herringbone patterns, which have some antecedents in the local Iron Age production.

- The **coarse to very coarse wares** (Pl. 16-23) comprise large bowls, but mainly larger storage vessels and other containers. Noteworthy shapes are large round lids (Pl. 20, compare lids from PIR A and B, Mouton 2008: 47, 69, fig. 18 no. 8, fig. 38 no. 5-6) and a massive spout from the base of a vessel (Pl. 22 no. 3). Two similar spouts were found at ed-Dur (Rutten 2009a: no. 567-568 in group 9, coarse vegetal orange and brown ware) and many more were discovered at several locations at Mleiha. Because of an association of one of these with slags and traces of burning the French team suggested a possible use as either a furnace or a forge (Ploquin et al. 1999: 175, 179, 185, fig. 3, Pl. 3). However, the shape of a complete vessel on display in the Sharjah Museum and that of a similar vessel discovered in a grave at Samad (Yule 2001: 264, Pl. 149 no. 3, Pl. 423 no. 3) excludes this function. The fragment is part of a standard storage vessel of closed shape but with a drain.

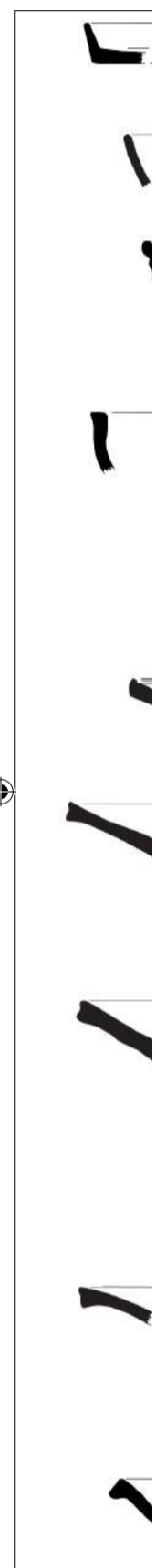
- A characteristic group within the coarse ware is the thick coarse black ware (Pl. 23) which contains coarse rock fragments as well as some powdery lime particles that sometimes provoked a lime popping due to the calcination process (Salles 1984: 262-264; Haerinck et al. 1993: 187, fig. 3; De Paepe et al. 2003: 218-219, 223-224; Rutten 2009a: 381-382; Rutten 2009b: 360-362). At ed-Dur,

the coarse black ware is the largest group with 16% of the total pottery (De Paepe et al. 2003: 208-211, 219; Rutten 2009a: 76, 111-128; Rutten 2009b). The sherds are very hard and the vast majority belongs to closed vessels and particularly to large storage jars. Quite often they show horizontal grooves or ribs and sometimes some incised decorations as well. As already said, the production centre is to be situated in the northern parts of the Oman Mountains. Similar storage vessels were produced in Wadi Haqil (Emirate of Ras al-Khaimah) until the '60's of the 20th century. Known in literature as Bani Shumayli or Julfar Ware these large jars or khayr's were mainly used for water storage, but could contain wheat or rice as well (Costa 1991: 106-107, 114, 139, 142, 151-152).

#### PIR C - The South-Mesopotamian wares (Pl. 24 – 30)

Next to the local wares produced in Southeast-Arabia, the largest group in the whole assemblage is without doubt the South-Mesopotamian wares. At ed-Dur this ware represented 42.91% of the total assemblage.

- **Glazed ware** at ed-Dur represents 31.72% and is thus outnumbering the other groups identified as coming from South-Mesopotamia (Salles 1984: 266-269; Haerinck et al. 1993: 187, fig. 1 & 2; De Paepe et al. 2003: 219-221; Rutten 2009a: 76, 158-188, no. 579-1070, her group 11). There is also quite a considerable amount of glazed ware at Mleiha (Pl. 24-29), but seemingly the



Pl. 24. PIR C



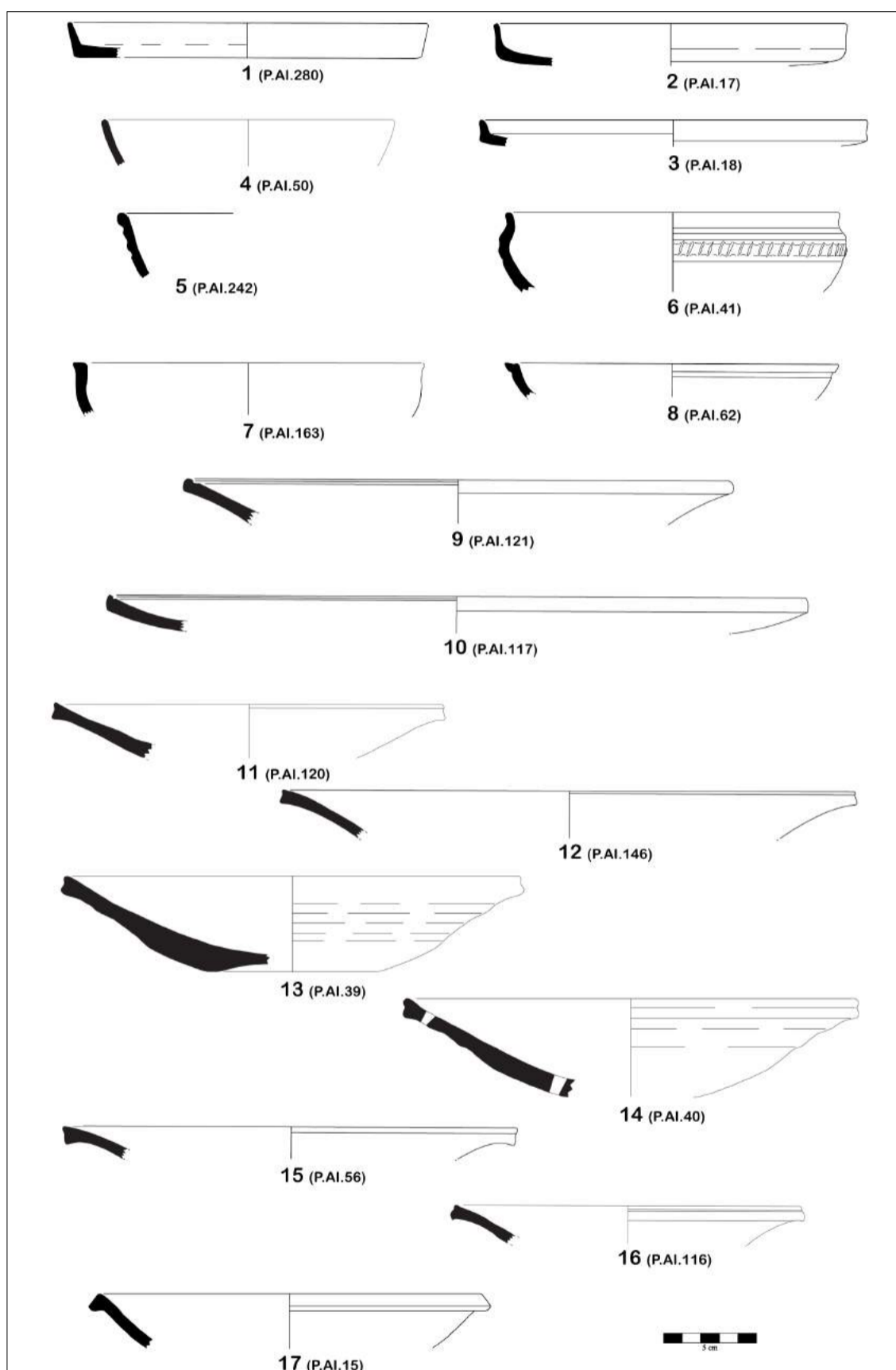


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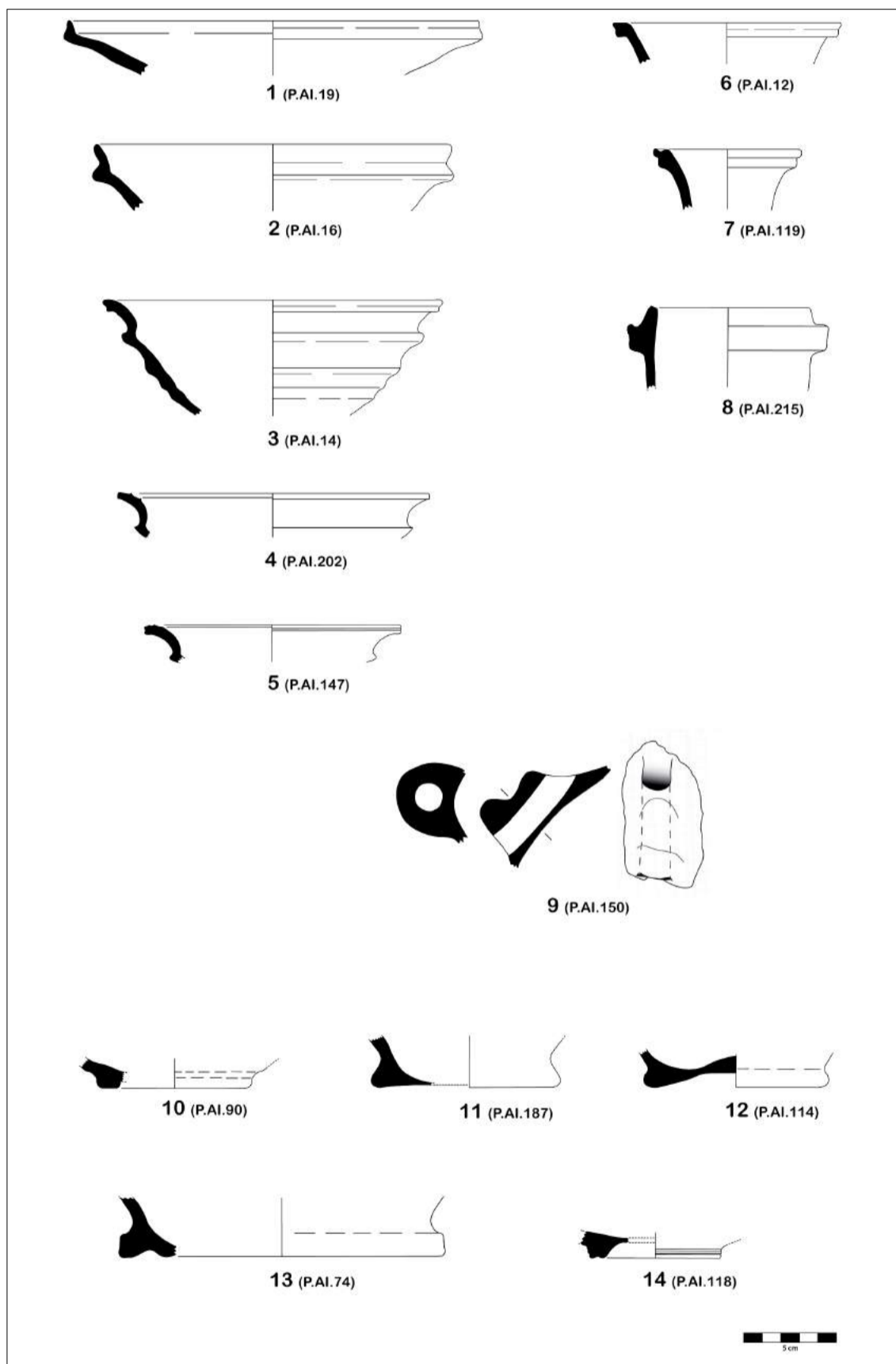
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Pl. 24. PIR C - South-Mesopotamian glazedware.



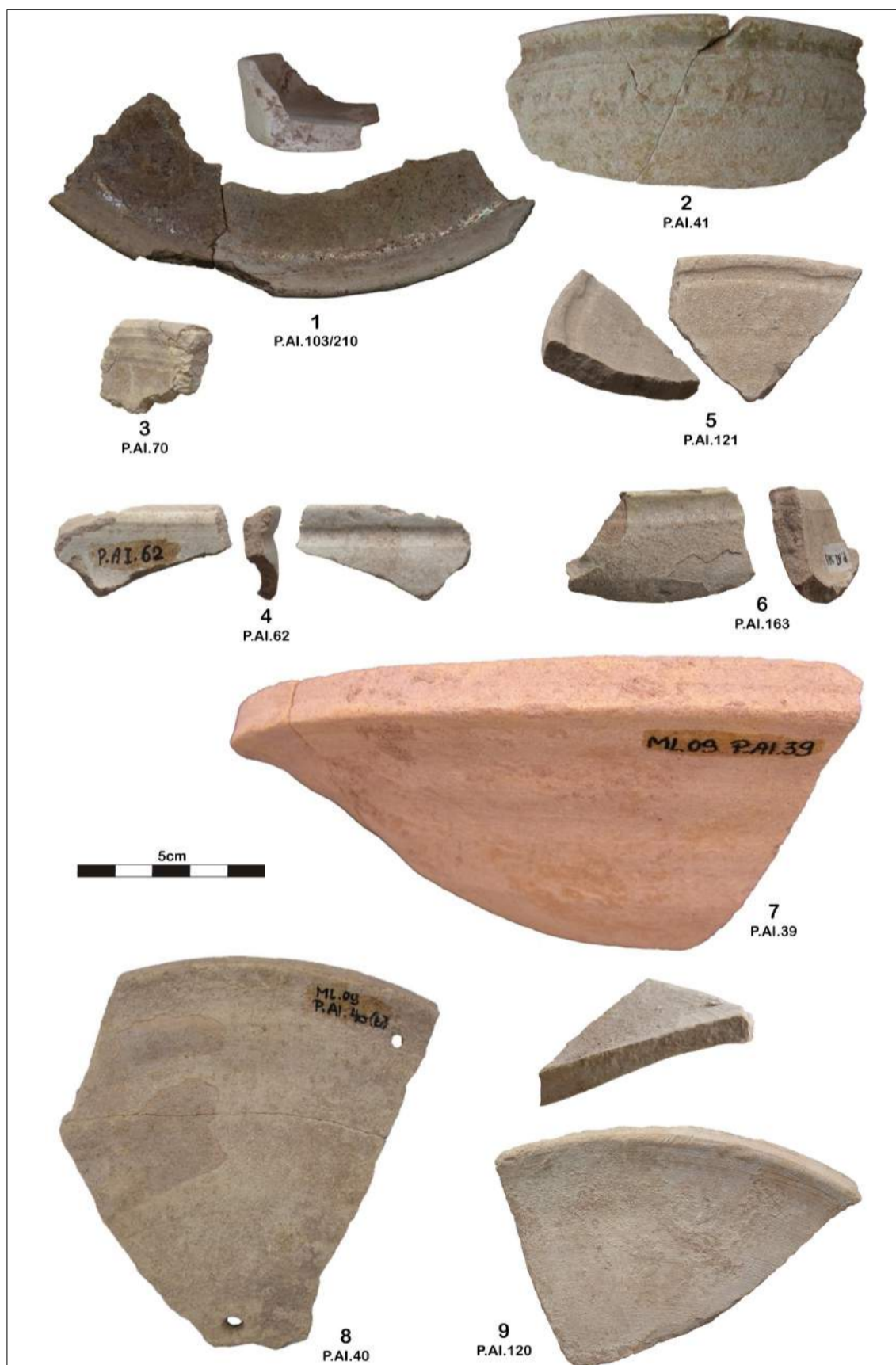
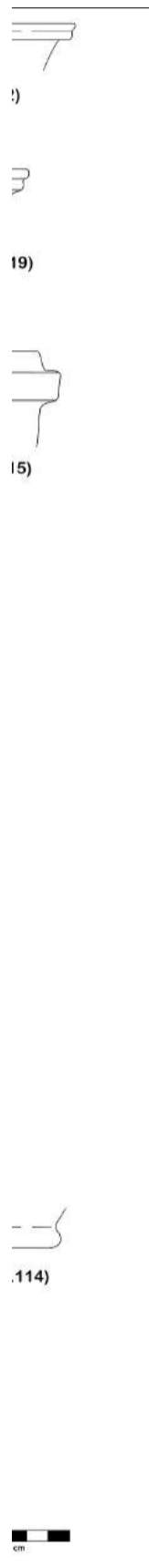
Pl. 25. PIR C - South-Mesopotamian glazedware.



Pl. 26. PIR C.







Pl. 26. PIR C - South-Mesopotamian glazedware.



Pl. 27. PIR C - South-Mesopotamian glazedware.



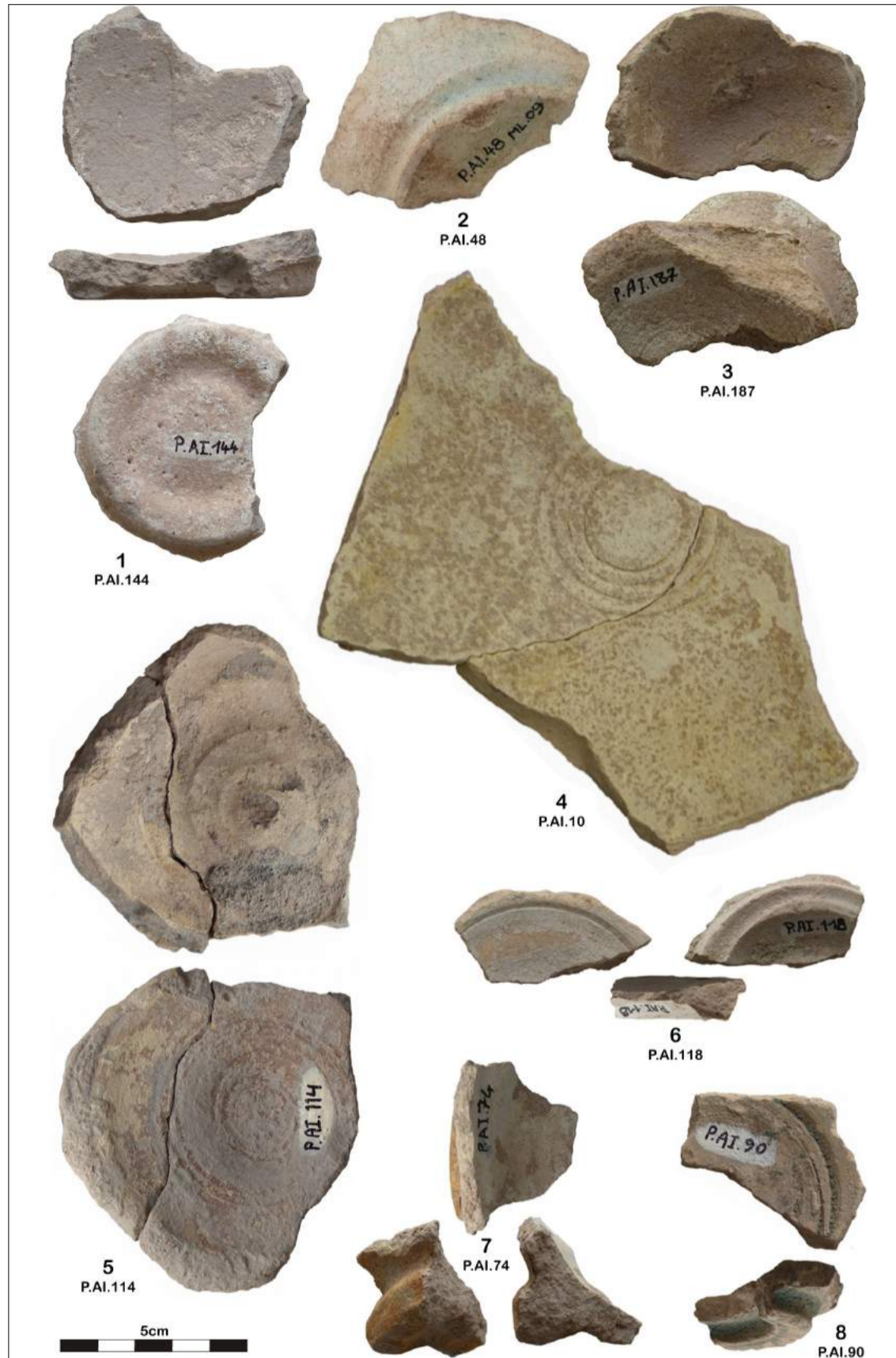
Pl. 28. PIR C.





Pl. 28. PIR C - South-Mesopotamian glazedware.





Pl. 29. PIR C - South-Mesopotamian glazedware.



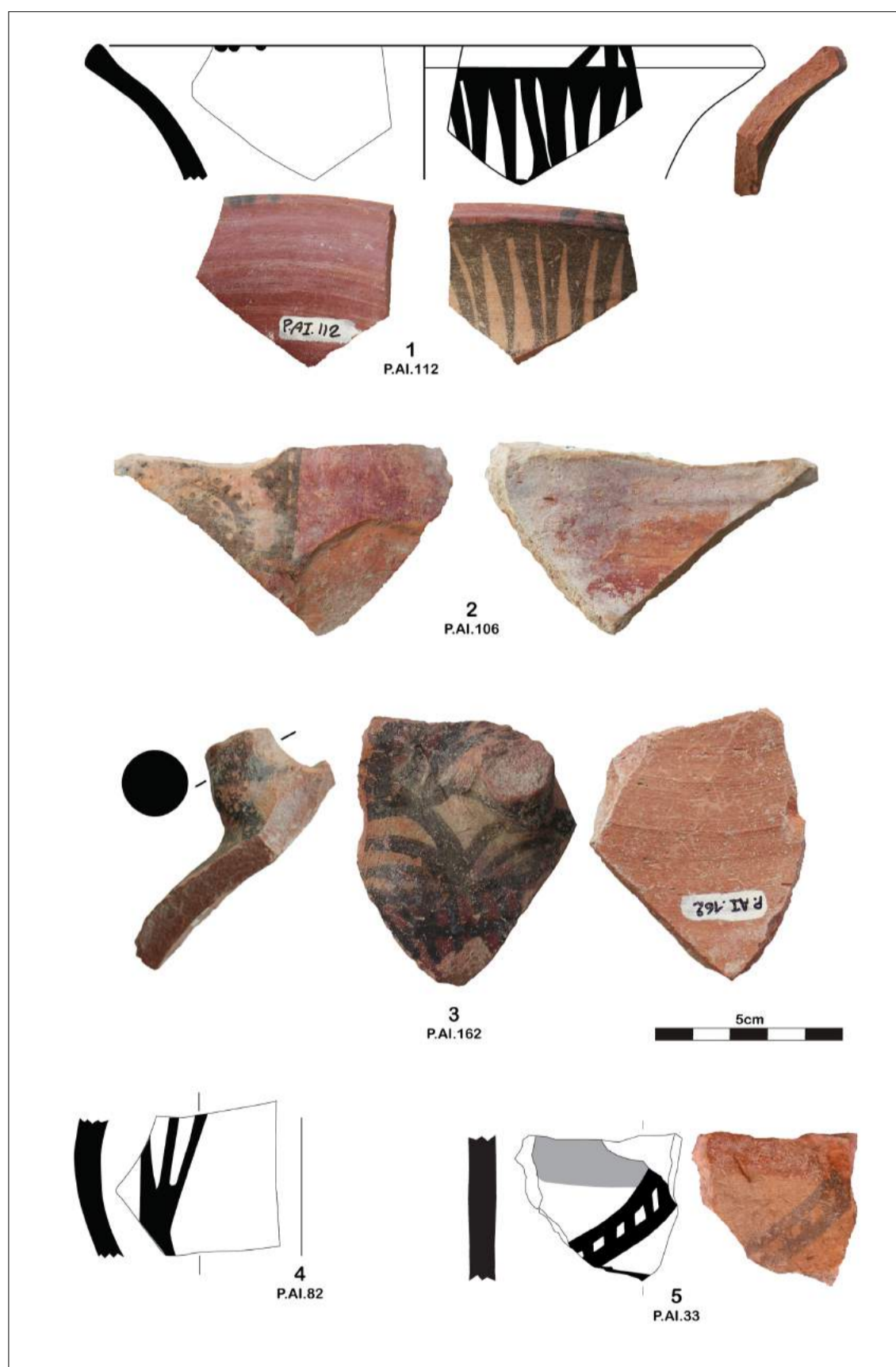
Pl. 30. PIR C.





Pl. 30. PIR C - South-Mesopotamian coarse vegetal buff pottery.





Pl. 31. PIR C - Southeast-Iranian painted wares (early Namord ware).

amount is less important at ed-Dur (Boucharlat & 231; Mouton 2008). French excavations at Mleiha estimated the 17% of the totality (95), but of course this can be different from another. The available seems to indicate the less variation in pottery at Mleiha than at ed-

Most of the sherds are brown or whitish. The alkaline glaze that well preserved sometimes even being a fine powdery layer of remains. Joining the vessel can display different or different hues of colour, due to the surface. The colours are mostly light to dark green. Without doubt the best both at ed-Dur and

Within that group, the and bowls are the most particularly fishplates well evidenced (Pl. 26 no. 7-9, Pl. 2 also Mouton 2008: 1). At ed-Dur fishplates some 50% of all (Rutten 2009a: 169). The same observation also valid for Mleiha.

The shape of the dishes (1-3) (see Rutten 2009: 683-684) and of the bowls (Pl. 25 no. 3-5, Pl. 2 Rutten 2009a: no. 1) are equally encountered





amount is less important than at ed-Dur (Boucharlat & Mouton 1993: 231; Mouton 2008: 94-97). The French excavations in sector AH at Mleiha estimated the glazed ware at 17% of the totality (Mouton 2008: 95), but of course this percentage can be different from one area to another. The available evidence seems to indicate that there is also less variation in pottery shapes at Mleiha than at ed-Dur.

Most of the sherds are buff to light brown or whitish-pale yellow. The alkaline glaze is often not that well preserved and decayed, sometimes even being reduced to a fine powdery layer or to some flaky remains. Joining sherds of the same vessel can display different colours or different hues of the same colour, due to the soil conditions. The colours are mostly whitish or light to dark green. Open forms are without doubt the best represented, both at ed-Dur and at Mleiha.

Within that group, the dishes, plates and bowls are the most common, particularly fishplates are quite well evidenced (Pl. 24 no. 11-17, Pl. 26 no. 7-9, Pl. 27 no. 1-4; see also Mouton 2008: fig. 62 no. 1-3). At ed-Dur fishplates represent even some 50% of all glazed sherds (Rutten 2009a: 169, no. 596-642). The same observation is probably also valid for Mleiha.

The shape of the dishes (Pl. 24 no. 1-3) (see Rutten 2009a: no. 677, 683-684) and of the carinated bowls (Pl. 25 no. 3-5, Pl. 27 no. 5-7) (see Rutten 2009a: no. 679-689) are equally encountered at ed-Dur. The

bowl on Pl. 24 no. 6 / Pl. 26 no. 2 is identical to a vessel excavated at ed-Dur (Rutten 2009a: no. 682), as are the dishes on Pl. 24 no. 9-10 / Pl. 26 no. 5 (Rutten 2009a: 635-636).

Only a few sherds from jars were found (Pl. 25 no. 6-8; compare Pl. 25 no. 8 / Pl. 27 no. 11 to a vessel from ed-Dur: Rutten 2009a, no. 870-876). Bases are common but most belong to open vessels, as is obvious from the glaze on the inside (Pl. 25 no. 10-14, Pl. 28 no. 3, Pl. 29; compare Rutten 2009a: no. 923-962). The decorated sherd Pl. 27 no. 10 has an exact parallel at ed-Dur (Rutten 2009a: no. 1067).

- The *coarse vegetal buff pottery* (Pl. 30) is 8.45% of the assemblage at ed-Dur (Rutten 2009a: 199-208) and almost half of them were coated with bitumen on the inside. The paste of this group is light greenish white to pale yellow, buff to light brown and even light pink to pinkish brown. Rice chaff (*Oryza Sativa*) has been used as temper. Rice was not only cultivated in the well-watered and marshy Southern part of Mesopotamia, but in Susiana as well (Potts 1997: 272-273). This pottery group is mainly represented by storage jars. A couple of sherds from ed-Dur had incised Aramaic or Old South-Arabian letter(s) before firing. These jars with bitumen coating were of course mainly for transport of liquids such as beer, date wine or sesame oil, although preserves of vegetables, fruits or cheese and clarified butter (ghee) are also a possibility. They indicate the export of foodstuffs from

South-Mesopotamia to Southeast-Arabia. On Pl. 30 nrs 1, 3 and 4, the bitumen lining on the inside of the vessels is well preserved.

### PIR C - The Southeast-Iranian wares (Pl. 31)

This group is largely made up of painted wares (Pl. 31). It are mainly orange (a warm orange to pinkish-orange) or sometimes red and light pink vessels, usually slipped and/or painted. There is also a variety in the colour of the slip, from red to dark red and "Bordeaux/claret" red, reddish brown to dark reddish brown. The painted decoration is dark grey to black. The chronology of these Southeast-Iranian wares is for the moment still unclear. Southeast-Iran seems to have been a major production area for painted wares, but due to lack of excavations on well dated and stratified sites the evolution of this painted pottery in the 2nd half of the 1st mill. BCE and the first centuries of the 1st millennium AD is unclear (see e.g. some comparable material in Southeast-Iran, where still adequate and extensive research is needed to build up a reliable chronology: Haerinck 1983: 224-211; Magee 2004: 47-57, fig. 28-32; Choubak 1999: 94-95). Recently, an interesting assemblage of painted sherds was excavated at Dibba, on the Oman sea (Jasim & Yousif 2014: 60-67, fig. 28-32).

Several sherds from Mleiha and ed-Dur (0.95% of the total assemblage) belong to what can be qualified as





Early Namord Ware (Salles 1984: 247-248; Haerinck et al. 1993: 97-98; Potts 1998: 209-210, fig. 4-5, the captions wrongly identify these sherds as Late Namord). Early Namord Ware is also attested at Dibba (Jasim & Yousif 2014: 60-62) and is to be dated mainly in the 1st/2nd c. AD. The PIR D Namord ware or Late Namord ware is very different and can better be qualified as “fine orange painted ware” (Rutten 2009a: 306-318; Mouton 2008: 97-98, fig. 75). The question as to when the Early Namord ware started to be produced remains to be resolved.

#### FINAL REMARKS

Area AI has clearly two different periods of occupation: one corresponding to the PIR A phase in Mouton's periodization (mainly 3rd/2nd c. BCE, eventually lasting until somewhere in the 1st c. BCE) and the other one being the PIR C, or the late first c. BCE until the 2nd c. AD.

As far as we can see the so-called PIR B phase was absent in our exposure and we even expressed our doubts concerning its existence as an archaeologically distinct assemblage at Mleiha.

A reliable dating of the site is largely possible through the imported material, ceramics as well as objects.

The question remains how these foreign objects and pottery reached the inland site of Mleiha. Trade was of course the main manner in which artefacts were distributed but also how cultural, religious or

political ideas could be spread as well (Haerinck 1998 & 2008).

In the course of time trade routes can change and this is evidenced in the last centuries BCE and the first centuries AD. During the last centuries of the first mill. BCE trade was only possible by caravan trains of camels. Even after many years of research there is no evidence at all of the existence, between Qatar and the Musandam, of a coastal site where ships could dock or anchor and unload their cargo off-shore using smaller boats. Therefore it is very likely that during the PIR A period all goods reached Mleiha by caravan passing through Northeast-Arabia. However, that traffic carried mainly foreign objects and only a very limited amount of material produced in Northeast-Arabia itself. Other objects, such as alabaster vessels, travelled probably straight from South-Arabia as is maybe also evidenced by the few sherds of vessels with chrysotile as temper. How it may be, even these could also have ended up at Mleiha through Northeast-Arabian middlemen.

During PIR A some Indian pottery, although not represented in our corpus from mound AI, as well as maybe Southeast-Iranian vessels, could equally have reached Mleiha from coastal sites on the Gulf of Oman, though more research is needed to document that route.

With the establishment of the coastal site of ed-Dur somewhere in the second half of the 1st c. BCE the mode of trade changed. Goods arriving at the port of ed-Dur could easily be transported to inland sites such as Mleiha. The distance

between Mleiha and ed-Dur is about 50 km crossing the desert in a straight line and about 70 to 80 km when following the wadi. These are distances a camel caravan could easily cover in two days. At the same time, sites on the Gulf of Oman coast could equally have contributed to the transshipping of goods. In that case, one might expect more Indian wares, however, and these are absent in the PIR C phase material from Mleiha (it is, however, present at ed-Dur).

On the whole, it is clear that locally produced ceramics, i.e. those belonging to the Southeast-Arabian group, formed the major part of the household furniture excavated at Mleiha among the PIR A as well as the PIR C assemblage.

In the 3rd – 2nd century BCE Mleiha was the only major site in Southeast-Arabia with significant trade connections, particularly with Northeast-Arabia, to obtain foreign goods. With the PIR C phase, this situation drastically changed, however, and possibly Mleiha became less central to the trade and had to receive goods through ed-Dur or possibly a site on the East coast such as Dibba. M. Mouton already observed that the PIR C assemblage from Mleiha is not completely identical to that from ed-Dur but that they still do share a lot of common characteristics (Mouton 2008: 94). Although South-Mesopotamian and Southeast-Iranian wares, as well as a very limited amount of Northeast-Arabian pottery is present at Mleiha, the imported pottery is less diversified and there is less variety in shapes when compared to ed-Dur.

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**CAPTIONS**

- Fig. 1. Google Earth view of the fortified building H :  
 Fig. 2. Mound AI after excavation  
 Fig. 3. General Chronology





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aux de la	Rutten, K., 2009b. South-east Arabian pottery at ed-Dur (al-Dur), Umm al-Qaiwayn, U.A.E.: its origin, distribution, and role in the local economy, <i>Proceedings of the Seminar for Arabian Studies</i> 39: 359- 372.
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### CAPTIONS

Fig. 1. Google Earth view of the eastern part of Mleiha with the location of the Belgian excavations (red), fort CW, fortified building H and graveyards.

Fig. 2. Mound AI after the completion of the 2012 excavations. The smaller mound AJ is visible in the background.

Fig. 3. General Chronology of Mleiha and ed-Dur.

## Cost Effective Drones in Archaeological Surveying: Possible Musallah on the Jebel Fayah near Mleiha, Sharjah, U.A.E.

Report by

• Bruno OVERLAET<sup>1</sup> (Royal Museums of Art and History, Brussels)

### Abstract

The Belgian team used an adapted low budget drone for aerial photography on the Mleiha excavations. The drone was tested in various circumstances, including on a short aerial survey of the Jebel Fayah mountain. Two possible musallah were documented.

Over the last few years there has been a growing availability of drones, not only for commercial use but also for recreational purposes. Whereas commercial drones remain expensive (from about 12.000 Euro upwards) and demand a skilled and well trained pilot, often seconded by a wingman to operate the camera, the low budget recreational drones are fitted with lightweight “action cameras” and are generally easy

to handle. This brings them in the scope of field archaeologists who can use them for oblique overviews of excavations, vertical photography in view of mapping and measuring and for surveying. The advantages of a high viewpoint to better appreciate a site’s setting within the landscape are beyond discussion. Aerial photography is a *well-established* niche in the surveying techniques but often remained too expensive or cumbersome (scaffolds and cameras attached to kites or hot air/helium balloons) to be used systematically. Photography from aeroplanes or helicopters can be useful whenever available but are generally too costly. Satellite photography has more and more been exploited in the last decennium and has lead to important discoveries but is rarely suited to recognise smaller or discrete archaeological structures or landscape

elements. In the last few years, many archaeological expeditions have resorted with more or less success to the use of low budget drones fitted with a lightweight camera. Commonly reported problems are, however, the limited flight time due to battery capacity, the low quality photography and particularly the inability to use the drone in anything but very light winds.

After scrutinizing the specifications of the low end drones on the market, the Belgian archaeological expedition at Mleiha of the Royal Museums of Art and History, Brussels, decided to start from a standard version of a “DJI – Phantom 2” quadcopter mounted with a GoPro action camera Hero 3+ on a damped 2D gimbal for maximum photo stability. The camera can be tilted using the remote controller (2.4 GHz) between a horizontal and vertical position. Several build in

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<sup>2</sup> Verdonck, L., Haerinck, E. & Overlaet, B. 2014. GPR survey to explore social stratification in a pre-Islamic burial area at Mleiha, Sharjah (United Arab Emirates). --In: Lambot, S., Giannopoulos, A., Pajewski, L., André, F., Slob E. & Craeye Chr., Proceedings of the 15th International Conference on Ground Penetrating Radar GPR 2014, p. 27.



Fig. 1. The drone mounted on a backpack during the ascent of the Jebel Fayah (left) and use of the drone at the excavations at Mleiha (right).

failsafes are standard on drones, such as automatic take off in case of low battery and automatic landing when approaching a no-fly zone.

This commercial configuration was extended with an “On Screen Display” (iOSD) on a small monitor (the DJI Phantom 2 mini) that streams the video to a monitor on the ground. The monitor also displays real-time data: altitude, time, battery voltage, vertical velocity, orientation (roll, pitch, yaw) and mode (standard GPS) and height from the ground. The iOSD works on a small screen (the DJI Phantom 2 mini) that has a range of about 100m. This configuration makes this configuration suitable for low altitude aerial surveying in accordance with regulations. The relative motion video (First Person View) is used when surveying large



Fig. 2. Subtle shadow cast by a structure in the foreground onto the dry bed of a wadi.



last few years, many expeditions have more or less success low budget drones lightweight camera. orted problems are, nited flight time due city, the low quality nd particularly the the drone in anything winds.

ng the specifications Irones on the market, aeological expedition e Royal Museums of , Brussels, decided to dard version of a “DJI quadcopter mounted :tion camera Hero 3+ gimbal for maximum The camera can be e remote controller een a horizontal and n. Several build in



Fayah (left) and use of the

failsafes are standard on the DJI drones, such as automatic return to take off in case of low battery and automatic landing when controlled airspace is approached.

This commercially available configuration was extended with an “On Screen Display” module (*iOSD-mini*) that streams the camera view to a monitor on the remote controller. The monitor also displays technical and navigational data such as real time battery voltage, horizontal and vertical velocity, orientation, control mode (standard GPS) and the distance and height from the *take-off* point. The *iOSD* works on 5.8 GHz and has a range of about 350 meter. This makes this configuration suitable for low altitude aerial surveys (below 50 meter) in accordance with aeronautical regulations. The relatively small drone necessitates video piloting (FPV, *First-Person View*) via the monitor when surveying larger areas since it

is impossible to keep track of it with the naked eye.

During the 2014 expedition at Mleiha trials were made with this portable, low cost type drone to document the excavations and for use on surveys. The goal was to gain experience in different environments and weather conditions. Flights were made above the excavation field in the plain and on the nearby Jebel Fayah mountain ridge.

The drone is kept in a custom made protective case at the excavation site and can be made ready for flight within minutes. It can thus be used on the spot without delaying any of the *on-going* activities. For surveys in areas that cannot be reached by car, it is mounted on a backpack. Flying time in normal wind conditions is about 25 minutes per battery pack but can be significantly reduced when flying in strong winds. With a single *back-up* battery pack, 30 to 40

minutes of flying time is possible on average. The camera was operated in photo burst mode, taking wide screen 12Mp photos every 5 seconds.

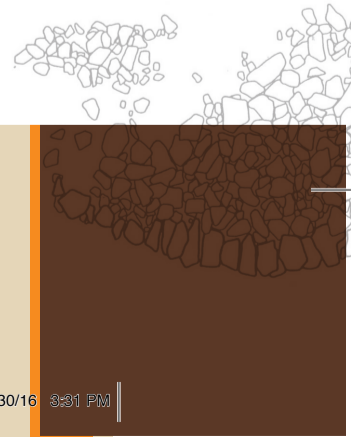
The general experience was very positive. The drone was flown in moderate to strong winds and performed well in all conditions. With a maximum flight speed of 15m/s. (54 km/h.) it can counteract moderate to strong gusty winds although this does demand an experienced operator and is advised against in the DJI manual.

On the excavations, the drone was used to make both oblique and vertical photographs and to survey the surrounding areas. In the specific context of the wadi plain the ideal moment was shortly after sunrise when the lowest relief produces strong shadow marks.

Fig. 2 shows area AV at Mleiha with the low mounds in the area corresponding with the remains of monumental tombs, some of which



Fig. 2. Subtle shadow marks of very low mounds with monumental tombs in area AV. On the right the archaeologically virgin wadi area, in the foreground the dry bed of a shallow brook. The oblique view emphasises the effect of the shadows.



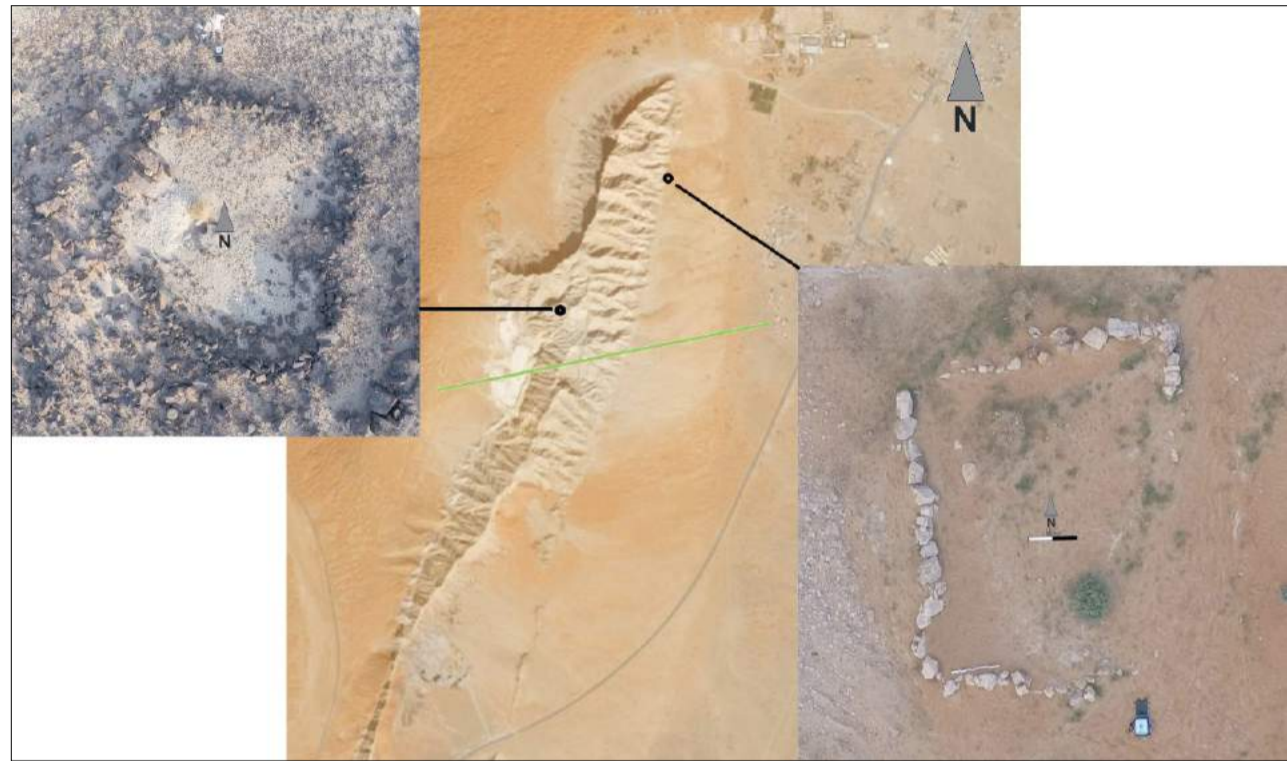


Fig. 3. Two stone enclosures, probably musallah, on the Jebel Fayah. The line across the mountain ridge indicates the direction of Mecca.

were documented in a previous Ground Penetrating Radar survey<sup>2</sup>. From experience we know that during the wet season, the flora in the wadi can develop intensively within a few days. Vegetation marks can also here be expected but would be detectable on select moments only. The advantage of a low budget drone on standby is evident.

The second part of the trial was the use of the drone during a survey of the Jebel Fayah Mountain. Target of

the survey was an area on the west flank where a square shape was noted in Google Earth at an altitude of 313 meter (25°06'09.36" N – 55°50'04.80" E), i.e. about 150 meter above the Mleiha plain and about 80 meter below the highest point of the Jebel Fayah. Since the location was horizontally about 700 meter from the base of the mountain, the drone was mounted on a backpack and we were guided by Eisa Yousif of Sharjah's Department of Antiquities to the

location. The drone was launched at the site to obtain a vertical photo of the structure and oblique photographs of its setting. The flight started around 08:30 A.M., early enough in the morning to avoid the high wind conditions and turbulences that characteristically develop around mountain ridges during the day. Occasional thermals that passed along the slope necessitated adapting the flight path but were still of a too moderate strength (max of 1.2m/second ascend) and size to pose problems.

The structure on the Jebel Fayah consists of blackish stones from a natural outcrop that are arranged in a rough square. It has a maximum internal space of approximately 7.90 by 8.40 meter. Two large boulders are incorporated into the West side, opposite of what may have been an entrance. The north-eastern corner is opened up and could also have been used as an entrance. The inside of the enclosure has been cleared from



Fig. 4. An old photograph of an Arab praying in a musallah.

stones and presents composition from the area. From the enclosure a staggering view of the desert to the south. The view in the other direction is blocked by the mountain.

The function of the enclosure can be ascertained but it is probably a musallah, an open-air prayer place. Similar musallahs are widely known in the Arab world. It can have various shapes but in this case, however, it is a simple square with a niche to indicate the direction of prayers. Sometimes, such structures are used as a focus for the position of the enclosure. On the Jebel Fayah, the orientation does not precisely match the direction of Mecca, but this deviation is acceptable. The enclosure also serves as a qibla indication in many cases, sometimes even signs are laid out by instruments or skills to indicate exact orientation.

A second stone enclosure is located on the eastern side of the mountain, between the foot of the mountain and the sand dunes (25°06'09.36" N – 55°50'48.67" E). It has a rectangular shape with a rounded eastern corner. The eastern corner has been covered by the dune. The enclosure has a rectangular niche on the eastern side, a correct indication of the direction of Mecca. The rounded extension in the eastern corner. Possibly this is a grave; and around the car on the eastern side. The number of tombs is not clear. The circles and rectangles clearly indicate tomb enclosures. Some enclosures have a disturbed and are not clear. Enough remains to be seen. Close by are remain





ion of Mecca.

stone was launched to obtain a vertical structure and oblique its setting. The flight at 08:30 A.M., early morning to avoid the vibrations and turbulences usually develop around the aircraft during the day. The thermals that passed over the area necessitated adapting the flight but were still of a too low speed (max of 1.2m/second) to pose problems.

On the Jebel Fayah, the blackish stones from a quarry that are arranged in a circle. It has a maximum diameter of approximately 7.90 meters. Two large boulders were rolled into the West side, and it may have been an orth-eastern corner is also possible. The inside of the enclosure has been cleared from

stones and presents a very different composition from the surrounding area. From the enclosure one has a staggering view of the red dunes of the desert to the southwest and west. The view in the other directions is blocked by the mountain.

The function of the enclosure cannot be ascertained but it is likely to be a musallah, an *open-air* prayer area. Similar musallah are encountered widely in the Arab world and they can have various shapes<sup>3</sup>. Usually, however, it is a simple rectangle with a niche to indicate the direction of prayers. Sometimes, also large stones are used as a focus point. Although the position of the large boulders on the Jebel Fayah enclosure does not precisely match with the Mecca direction, the deviation may still be acceptable. The accuracy of the qibla indication in musallah can vary, sometimes even significantly, as they are often laid out by people lacking instruments or skills to define the exact orientation.

A second stone enclosure is present on the eastern side of the Jebel Fayah, between the foot of the mountain and the sand dunes (25°06'56.84" N – 55°50'48.67" E). It must have had a rectangular shape but the *south-eastern* corner has been lost or is covered by the dune. The south side has a rectangular mihrab but a more correct indication of the qibla is the rounded extension in the southeast corner. Possibly this is a correction of the structure. This musallah seems to be related to a graveyard. On the dune and around the car on fig. 7 are a large number of tombs presents. Stone circles and rectangular enclosures clearly indicate tombs. Many of these enclosures have apparently been disturbed and are incomplete but enough remains to see the pattern. Close by are remains of buildings



Fig. 5. The stone enclosure on the western flank of the Jebel Fayah.

with scattered ceramics around them. Dating monuments such as these musallah is rarely possible and at the moment there are no indications for a specific date. There are no signs of habitation or other structures around the musallah on the western flank of the Jebel Fayah. The musallah at the base of the mountain may be datable once excavations are made of the nearby structures, although their

relation to the graveyard remains to be established.

In conclusion we can state that these first trials on the Jebel Fayah were all together positive. The technical equipment was effective and allows covering large zones in limited timespans. A general aerial survey of the mountain area could supply important data to protect local archaeological and historical heritage.





Fig. 6. Musallah at the foot of the eastern flank of the Jebel Fayah.



Fig. 7. The musallah at the foot of the eastern flank of the Jebel Fayah amidst the graves on the dune.

3 P. Crombe , M. De Dapper & E. Haerinck: An archaeological survey of Hawar Island (Bahrain), Arab. arch. epig. 12, 2001: 152-153, fig. 17-18 / Nasser Said Ali Al-Jahwari, Settlement Patterns, Development and Cultural Change in the Northern Oman Peninsula – A multi-tiered approach to the analysis of long-term settlement trends, Bar International Series 2483, 2013: 220.



• Bruno O'

### Abstra

Area F is situated in the part of Mleiha. For tombs had been excavated by a French expedition. Excavations on this site started and explorations opened in 2015 by the team. The first results indicate decorated with step-lime bricks and had underground burial unique bilingual function in Ancient South Arabian Aramaic from the 1st millennium BCE identifies the functionary in the service of Oman.

### Introduc

In previous years, excavations focused on areas where several clusters of tombs surrounded by graves have been excavated (Crombe & Haerinck 2014; Crombe & Haerinck 2014). The tombs were similar to area C, excavated by

1 The expedition on behalf of the Department of Antiquities and Museums of the Sultanate of Oman and Martine Steenbeke-Coppey worked at Mleiha for their





Report by

- Bruno OVERLAET
- Ernie HAERINCK
- Bart DE PREZ
- Possum PINCÉ
- Laurence VAN GOETHEM
- Peter STEIN

**Abstract**

Area F is situated in the South-Western part of Mleiha. Four monumental tombs had been excavated and a fifth had been located but not excavated by a French expedition in 1986-89. Excavations on this 5th tomb were started and exploratory trenches were opened in 2015 by the Belgian team. The first results indicate the tomb was decorated with stepped crenellated lime bricks and had two connected underground burial chambers. A unique bilingual funerary inscription in Ancient South Arabic script and Aramaic from the late 3rd century BCE identifies the owner as a functionary in the service of the king of Oman.

**Introduction**

In previous years, the Belgian excavations focused on Area AV where several clusters of monumental tombs surrounded by more modest pit graves have been explored (Overlaet & Haerinck 2014; Overlaet 2015). The tombs were similar to those of area C, excavated by the Iraqi and

French expeditions in the 1980's. This sketched a fairly consistent concept of monumental tombs that could generally be dated to PIR A, i.e. the 3rd and early to mid-2nd century BCE. All these tombs consist of a rectangular underground chamber, on top of which a square mudbrick "tower" with slanting sides had been constructed. Lime bricks instead of the more fragile mud bricks were occasionally used for the exterior or for the upper rim which was sometimes (if not always) decorated with stepped crenellations. The towers had been plastered and many of these monuments had a small brick platform against the northern side. It has been suggested that these "towers" were solid mudbrick blocks, an idea based on comparisons with funerary blocks from Nabataean Petra and from Qaryat al-Faw (Mouton 2008: 37-40, 140) but it was not possible to confirm this statement since nowhere more than 30 or 40 cm of the superstructure was preserved.

Another type of tombs had been explored in 1986-89 by a French team at Area F. Five tombs had been discovered, four of which had been fully excavated. All of them had larger and more complex subterranean tomb chambers that were accessed

through a corridor or stair-shaped entrance. It suggested the tombs were meant to be re-used and were of a later date than those of Areas C or AV. The monuments above these tombs were thought to be similar to those from areas C and AV but with a room inside rather than a solid core. Although these four tombs had also been plundered, the remaining finds suggested a PIR B date. In general terms, these more complex tombs were considered to be a later variant on the PIR A tombs from areas AV and C. They were considered to predate yet another type of tomb (tomb 369 in area AH) of PIR C date. This third type is a rectangular underground chamber with a stairway entrance and a rectangular superstructure. Although only one such tomb was discovered at Mleiha, the type is well known from contemporary ed-Dur (Haerinck 2001; Mouton 2008: 91-94). This general chronology of the Mleiha tombs has been discussed extensively at several occasions (Boucharlat & Mouton 1998; Mouton 1997 & 2008).

Recent discoveries of complex monumental tombs in Mleiha (areas 5 and 7) by Dr Sabah Jasim and Eisa Abbas Yousef of Sharjah's Department of Antiquities had

*1 The expedition on behalf of the Royal Museums of Art and History, Brussels, works in close collaboration with Dr. Sabah Jasim and Eisa Abbas Yousif of the Department of Antiquities at Sharjah. Our 7th. campaign started on 16 November and ended on 24 December 2015. Apart from the authors, Mr. and Mrs. Hubert and Martine Steenbeke-Coppejans joined the expedition at the end of the campaign to assist in the drawing and photography. We are also indebted to the staff and workmen at Mleiha for their kind and professional contribution to the succes of our campaign.*



Fig. 1. Google Earth image of Mleiha with indication of the graveyards and monuments discussed in the paper.



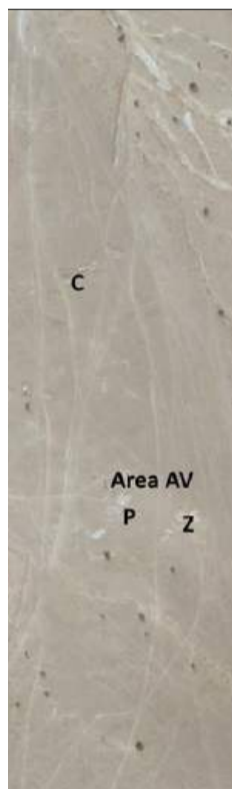
Fig. 2. The four area F tombs excavated in 1986-89 (view towards the SE, photo December 2014). More tombs are located in the now deserted area in front of the road, in the remaining palm gardens to the right and in the green fields in the distance.

started to cast doubt on the traditional view of rather linear progress in tomb constructions. I decided to excavate Area F to try and define a timeframe for this period of monuments. Explorations in the immediate surroundings were conducted to establish whether tombs were present in the case around the monument of Mleiha areas C, J, and K. A survey with Eisa Abdou was conducted West of the main road. The site showed that the tombs were constructed in the palm gardens adjacent to the road. These 5 tombs are part of a larger graveyard area with monumental tombs (see Fig. 1). The French expedition reported that Area F had been flattened by bulldozers. The adjacent palm gardens were used by bulldozers to level the area. Some of the gardens contained tombs. The bulldozers pushed the top layer of the fields and created embankments, at some places 2-3 meters high. Charcoal and other goods such as iron and pottery fragments were found in these embankments, and lime bricks from the tombs. Some of the burial construction materials, such as some rocks are still visible. These rocks indicate the location of the tombs and the gardens.

#### The 1986-89 Excavations of the four Area F Tombs

(Ref.: Boucharlat & Drioux 1998; Drioux 1997; Mouton & Boucharlat 2008: 63-65, 241, fig. 2; Mouton & Boucharlat 2008: 43-44, figs. 17-18, 2





started to cast doubt on this idea of a rather linear progressive evolution in tomb constructions. It was therefore decided to excavate tomb 5 in Area F to try and define a more precise timeframe for this particular group of monuments. Exploratory trenches in the immediate surroundings had to establish whether also minor tombs were present, like it is the case around the monumental tombs of Mleiha areas C, AV, 5 and 8. A survey with Eisa Abbas Yousif to the West of the main road that crosses the site showed that more similarly constructed tombs are still present in the palm gardens adjacent to area F. These 5 tombs are part of an extensive graveyard area with clusters of large monumental tombs (see Fig. 2). The French expedition reported that area F had been flattened with a bulldozer. The adjacent palm gardens have since used bulldozers to lower the level of the gardens considerably. They pushed the top layers to the edge of the fields and created protective embankments, at some places of up to 2-3 meters high. Characteristic burial goods such as iron arrowheads and pottery fragments can be found on these embankments, as well as rocks and lime bricks from the upper part of burial constructions. Nevertheless, some rocks are still visible in situ and indicate the location of tombs inside the gardens.

#### The 1986-89 Excavations of the four Area F tombs

(Ref.: Boucharlat & Mouton 1997: 42-46, figs. 26-30, 34, 37, Pl. X-XIII; 1998; Drieux 1997; Mouton 1997b: 54-59, figs. 18-19, 22-23, 26-27; 2008: 63-65, 241, figs. 32-33, Pl. 5; Mouton & Boucharlat 1997: 39-40, 43-44, figs. 17-18, 20, 32-33)

The excavated tomb (now labelled “tomb F5”) belongs to a group that was explored by the French expedition as a part of a project to define the general character of the site, its timeframe and its geographic extension. This project took place at a time when archaeology in the UAE was still in its infancy. The area was in use for agriculture and had been flattened with a bulldozer. This had disturbed the upper architectural remains of the tombs and had brought large rocks and bricks to the surface. Although this had indicated the presence of the structures, it had also severely damaged them and this complicated their early interpretation. First thought to have been water reservoirs and water channels, they were, however, soon recognised for what they were, constructions on top of burial chambers, separated by narrow passages. Fig. 3 and Plate 1 document the situation at the end of the French excavations.

The superstructures of the 5 tombs,

now labelled Tombs F1 to F5 (originally P.207, P.208, P.204, P.205 and P.218) are oriented with their walls to the cardinal points. The square to rectangular buildings measure between 4.5 and 5.5 m and were built with lime bricks and mud bricks on a foundation of irregular rocks. A large amount of lime bricks, including stepped crenelations were found around the structures. A mud brick floor (about 0.80 to 1.00 m thick) was present inside the building. The entrance into this superstructure could not be located since only its base was preserved. However, at least 4 of them had a rectangular platform of approximately 1.2 x 0.8 m (missing or destroyed at T.F3) on the North side. In two cases this was built on top of the entrance passage to the underground chambers. These plastered platforms were considered by the excavators to be “offering platforms” and to be an innovation of the PIR B period (Mouton 2008: 38-39, 241). However, we suggest



in the now deserted area in

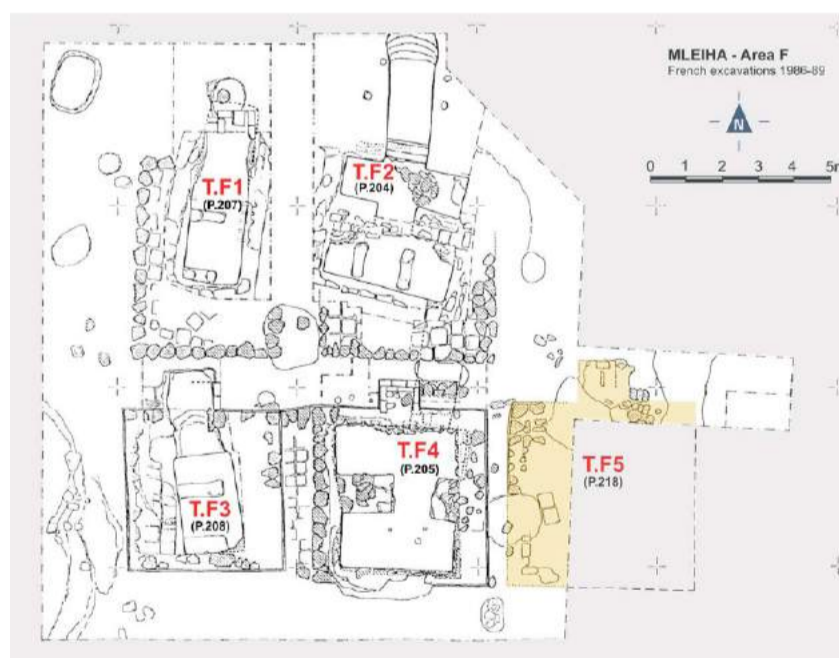


Fig. 3. The 1986-89 French excavations. Tomb F5 is indicated in yellow. The pit in the NW corner of the excavated area may have been a small grave.



they might also be simply a doorstep to enter the building. Such a feature can be compared to the plastered entrance platform, possibly originally flanked by eagle statues, in front of the main door to the temple at ed-Dur (Haerinck 2011: 6-7, fig. 5, Pl. 10-15, 24-29). A small vase with a row of perforations, apparently destined for libations, was dug in at the NE corner of the north wall of tombs F3 and 4 (Pl. 2).

The five tombs are positioned close to one another in two East-West oriented rows. The narrow space between tombs 3 to 4 was closed and probably bricked up the complete height of the buildings since the outside was plastered to hide the opening between them. It must have given the impression of a single long rectangular building with two platforms/steps and entrances in the northern facade. The two tombs to the north, T.F1 and 2, were apparently of a more recent date than F3 and 4 since the superstructure of Tomb F2 is built over the entrance to Tomb F4.

The underground burial chambers were accessed from the North through a corridor or stair-shaped entrance. These entrances were not roofed but filled up after use. The platforms of Tombs F.1 and F.3 are positioned on top of them which makes it improbable that the tombs were planned to be re-used for subsequent burials but were rather closed for eternity.

The underground burial chambers are of two distinct types. Tombs F1 and F3 both have a single rectangular N-E directed room with two trenches dug in the floor. These had small pits inside that were dug to fit the base of amphorae or similar storage vessels (amphora fragments were found, see

Tomb	Superstructure / Burial Chamber / Finds
<b>T.F1</b> (P.207)	square of 5.5 m stone wall foundation fragmentary, not plastered; no lime bricks; platform on N-side Burial chamber: rectangular, 6 x 1.6 m roof : 1 m mud brick on wooden beams Floor: 2 trenches with pits. gold bead
<b>T.F2</b> (P.204)	Square of 4.75 m stone wall foundation fragmentary, not plastered; no lime bricks (only in cover of burial chamber) 4 small pits next to the entrance to the burial chamber contained ashes. burial chambers: H-shaped (3.50 x 1.35 ? x 1.10); cut in white marl, central wall cut to 60 cm below top of the marl layer; lime bricks to heighten walls and create vault. N-chamber: re-used after deposit of 0.40 m fill; vessel and brick wall that closed the entrance on top of this deposit. Floor: 2 trenches with pits in Northern room. Roof: N-chamber, beams and mudbricks (38 x 38 cm); S-chamber, vaulted with lime bricks. storage vessel in N-room on 0.40 m deposit
<b>T.F3</b> (P.208)	square of 4.50 m / stone walls 1 to 2 rows preserved + lime bricks, plastered / platform at N-side Burial chamber: rectangular, cut in the white marl, height raised with mud bricks, covered with beams and mud brick. Floor: trench with 2 pits. Vessel with perforation dug at NE-corner of N-wall (libations?)
<b>T.F4</b> (P.205)	square of 4.75 m / stone walls 1 to 2 rows preserved + lime bricks, plastered / platform at N-side Burial chambers: H-shape cut in white marl (4 x 4 m), height raised with 7 layers of stones to 1.85 m Roof: beams and 85 cm mud brick (size 38 x 38 cm) stamped (erased) amphora handle / vessel with perforations dug at NE-corner of N-wall

Table 1. Tombs F1 to F4: superstructure, burial chamber and associated finds.

infra). The base of an amphora of which the spike was removed was found by our team in situ in a similar cavity in graveyard Z in November 2015. Tombs F2 and F4 have an H-shaped plan. Two parallel E-W oriented chambers are connected with a narrow passage. The southern room of Tomb F2 has two trenches in the floor for storage vessels.

The finds from area F have unfortunately not been systematically published. Some were included in the preliminary reports, others in Mouton's PhD of 1992 (Mouton 2008) (see Pl. 2). Only for a few items we know in which tomb they were found;

several objects were also found in the disturbed surface layer or fill of the monuments and cannot be associated with a specific tomb. Overall, they are characteristic for the PIR A to PIR C period. The majority of the finds seem to have been iron weapons, half of them arrowheads and the remainder mostly fragments of single edged blades. Among the ceramics there were local wares, storage jars and Rhodian amphora fragments. One amphora handle had a deliberately erased stamp; the other (a surface find) had a stamp with the eponym Ariston II which dates the amphora to 167-165 BCE (Monsieur et al. 2013: 213-214). Worth mentioning are also

a gold tubular bead, a vessel (compare Haerinck 2011: 9, Pl. 53) and decorated in a local style (Yule 2001). All the remains were found.

### The 2015 Excavation

Tomb F5's eastern area had been cleared by 1986-89. They have excavated the structure remainder of the superstructure of the tomb chamber until

Their excavation platform was severely damaged which was the reason why the excavation was stopped.

Our excavations of tomb F5 started on 29 November 2015 and ended on 17 December 2015. The tomb could be excavated and the results will be continued in the future. The importance of the dated inscription is a preliminary report.

### The superstructure

At the start of the square of 7 by 7 m cover the complete platform (Pl. 3). It was later one meter along its side to include the display from the southern wall (d). Although being excavated more than 25 years, most of





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a gold tubular bead, a beehive calcite vessel (compare Hassell 1997), a small bronze bust (compare to a bust on a pedestal from ed-Dur: Haerinck 2011: 9, Pl. 53) and a bronze bowl decorated in a local style (compare Yule 2001). All tombs had been thoroughly plundered and no skeletal remains were found.

### The 2015 Excavation of Tomb F5

Tomb F5's eastern and northern side had been cleared by the French team in 1986-89. They had, however, not excavated the structure and left the remainder of the superstructure and the tomb chamber untouched (Fig. 3).

Their excavation plan shows that the front part of tomb F5 with the platform was severely disturbed, which was the reason why excavation was stopped.

Our excavations of tomb F5 started on 29 November 2015 and were halted on 17 December 2015. Only part of the tomb could be excavated, the work will be continued in 2016. However, the importance of a bilingual and dated inscription necessitates this preliminary report.

### The superstructure

At the start of the excavations, a square of 7 by 7 m was set out to cover the complete tomb structure (Pl. 3). It was later extended with one meter along its southern edge to include the displaced lime bricks from the southern wall (Pl. 4, 6b & d). Although being exposed for more than 25 years, most of the remains of

the Western wall were well preserved. The platform against the Northern facade, already severely disturbed at the time of the French excavations, could no longer be recognised as such; merely a few stones remained (Pl. 3). Only the southwestern quarter of the building was recognisable.

The West wall of the more or less square monument measured 5.20 meter and was built on a foundation of rocks. Only a few fragments of the lime brick wall were still in situ. Both sides of this wall were plastered. The inside plaster on a lime brick at the SW corner proves beyond doubt that the monument was not solid but had at least one internal room (Pl. 6c). The entrance to the building could not be established but may have been at the centre of the northern wall. The "platform" may have been a step to enter the building.

The impact of the site's bulldozing could still be seen during the excavations. Parallel NNE-SWW running grooves at regular intervals testify to the scraping of the surface by a bulldozer's blade or rock digger (Pl. 3 and 4 top). Some of the superstructures in area F must have been well preserved before the area was flattened. The southern wall of F5 stood at least 5 bricks high, i.e. a minimum of 0.70 to 0.80 meter; the bricks were dislocated and pulled away in the same direction as the bulldozer grooves (Pl. 6b & d). A single row of lime bricks from this wall was left in place at the end of the 2015 campaign, 4 rows of stones were moved to the storerooms to reconstruct this part of the wall. A lime brick stepped crenelation demonstrated that the top of tomb F5 had a similar decoration as the tombs of areas C and AV (Pl. 6e).

The floor of the superstructure was for the most part severely disturbed. An E-W trench of 0.50 meter wide through the dense loamy material of the floor made it possible to recognise its construction with mud bricks (Pl. 3 bottom). The top layer was only intact near the SW corner, in the remainder of the SW quarter only the second layer from the top was still recognisable enough to be cleared (Pl. 4).

### The Burial Chambers.

As a first stage of excavating the burial chamber, it was decided to excavate the disturbed areas of the structure: the northern half and – separated by an E-W bench – the SE quarter of the tomb (Pl. 4-5). However, it soon turned out that the lay-out of the tomb was similar to that of tombs F2 and 4 and the E-W bench was positioned on top of a separating central wall. Neither of the two rooms was fully excavated to floor level and much of the lay-out and construction needs further research.

At this stage, only a few general remarks can be made. The subsurface chambers are constructed with the same large rocks on which the walls of the superstructure were build. The orientation, however, deviates from that of the superstructure. It is directed NNE and thus resembles the orientation of the burial chambers of tombs F1 and F2. In analogy with the others tombs, one would expect an entrance from the North. However, there is a stair shaped entrance that gives direct access to the Southern chamber dug at the East side. Its orientation places it in a straight





angle to the NNE-directed wall. This would suggest that it was the original entrance and that the South chamber was some sort of vestibule. Only the entrance to the room and part of the Eastern end of this chamber has been excavated. The floor level has not been reached yet. The entrance is c. 1.18 m wide and 1.38 m long and is made up of 4 steps. It was blocked with large rocks, some of which still need to be cleared.

The Northern chamber was also accessed from the Northern side but this may have been a secondary intrusive entrance. The Northern stone wall of the underground construction is disturbed and the gap seems to have been filled up more loosely and unsystematically. The function of the large pits adjacent to the tomb need further clarification. It is possible that the tomb was entered at this point, e.g. for a re-use of the burial chamber. A re-use was also attested in the Northern chamber of tomb F2 where a storage vessel was deposited in the grave and the entrance was bricked up, apparently after the tomb had been robbed and after some 0.60 m of debris had accumulated on the floor. The Northern room has not been excavated to floor level and the central wall, separating it from the southern room is only partially visible in the bench. The excavation needs to be continued. In the centre of the separation wall and protruding from the profile, at the point where one would expect a passage between the two rooms, was a large plain lime slab of approximately 87 by 52 cm. Since several large lime slabs at Mleiha were inscribed with funerary texts, the possibility of an inscription on the back side necessitated its removal for safekeeping at the end of the 2015 excavations. The block was

leaning obliquely against a wall of lime bricks and rested on top of some rocks. The inscription on the back made it clear that it was in an upside down position. It thus seems to have fallen over forwards from higher up. Once the lime slab was removed, a lime brick wall was revealed that possibly closes a passage between the two rooms. Its irregular appearance suggests this wall may have been bricked up from the southern end which would be logical in view of the stair shaped entrance to that room. However, further excavation of the Southern room and the separation wall is needed to ascertain this.

#### The funerary inscription

The memorial slab is a rectangular block of lime measuring approximately 87 by 52 cm and 16 cm thick. A 7 to 8 cm wide rim with an Aramaic inscription is raised 2 to 2.5 cm above a central panel with 5 horizontal lines of Ancient South Arabian writing. The lower rim and part of the 5th line in the centre is damaged, the material seems to be dissolved by water infiltration. The remainder of the surface is, however, exceptionally well preserved. The letters which were cut out in the wet lime still have crisp edges and there is no encrustation on the surface. It is a clear indication that the inscription was never exposed to the elements and must have been kept inside. This suggests the superstructure was most probably roofed and not simply an enclosure. Its position and the profile suggest it fell down when the floor above the Northern room caved in.

Eisa Yousif of Sharjah's Department of Antiquities made a preliminary

reading of the Ancient South Arabian text on the day of its discovery and alerted us to its exceptional historic importance. Once the text was fully cleaned, photographs were sent to Peter Stein who provided the first preliminary transcription and translation of the Aramaic and Ancient South Arabian text. A more complete study will follow later (Overlaet, Macdonald & Stein 2016).

The inscription can be compared to two funerary slabs that were discovered out of context at Mleiha before 1986 (Robin 1994). Both begin with *nfs wqbr* "memorial and grave of...". The first slab, the whereabouts of which are unknown, was translated by A.F.L. Beeston as "Gravestone and grave of Dhariyyat", possibly followed by "servant of the kings" (Robin 1994: 80; Macdonald 2000, 42, 71 note 99). The second one, which measures 56 by 38.3 cm, is now on display in the Sharjah Archaeological Museum. It is worn, however, and not all letters can be well read. The translation by Chr. Robin was recently revised by Eisa Yusef to reveal "year ten and forty" as the last line (Robin 1994: 80-81, Pl. 41; Abbas 2009: 92-94, Fig. 2) and this suggests that the inclusion of the year was part of a standard formula on such funeral slabs. The Seleucid Era, starting in 312/311 BCE, is the most likely to be encountered along the Arabian trade routes and this would place the tombs respectively in 262/261 BCE (50 SE) and in 222/221 or 215/214 BCE (90 or 97 SE). The discovery of the slab in tomb F5 points to a much earlier date for this type of complex tombs than previously thought. It is not a development from the Area C tombs but belongs to the same PIR A timeframe. It places the monumental tombs, which are

Text (Overlaet, Macd

1. [d?]{?} npš
2. {d}y (b)n 'ly
3. šnt 20+20+2

Translation (Overlaet

1. {This is [?]} the me

Comment:

The reading of the nu

Text<sup>2</sup> (Overlaet, Macc

1. nfs<sup>1</sup> / w-qbr /
2. gr / bn / 'ly /
3. 'mn / dy / br
4. h / 'md / bn .
5. {bq}r / mx[x

Translation (Overlaet

1. Memorial and tom
4. 'md son of {'md} {

Comment:

For the title *bqr*, cf. N priest (Hoftijzer & Jo however, we may ass


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Robin 1994). Both  
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## ARAMAIC

Text (Overlaet, Macdonald & Stein 2016)

1. [d?]{?} npš 'mwd br gr
2. {d}y (b)n 'ly-h br-h 'mwd br 'mwd
3. šnt 20+20+20+20+10+3?+3?+1?[----]

Translation (Overlaet, Macdonald & Stein 2016)

1. {This is [?]} the memorial of 'mwd son of Gr 2. {which} his son 'mwd son of 'mwd {built} over him 3. year 90 [or 97].

Comment:

The reading of the number 7 at the end of face C is not certain. Perhaps the particular signs form merely some ornament.

## ANCIENT SOUTH ARABIAN

Text<sup>2</sup> (Overlaet, Macdonald & Stein 2016)

1. nfs<sup>1</sup> / w-qbr / 'md / bn /
2. gr / bn / 'ly / bqr / mlk /
3. 'mn / dy / bny / {'1}[-h] / br-
4. h / 'md / bn / {'md / bn /} gr /
5. {bq}r / mx[xxxxxxx]x{r /}

Translation (Overlaet, Macdonald & Stein 2016)

1. Memorial and tomb of 'md son of 2. Gr son of 'ly Investigator [?] of the king 3. of 'mn which built {over him} his son
4. 'md son of {'md} {son of} Gr 5. {Investigator of} [the king of 'mn] ....

Comment:

For the title bqr, cf. Nabataean bqr (D stem) “to examine”, the participle of which (mbqr) is interpreted as some sort of priest (Hoftijzer & Jongeling 1995: 187). Since the nominal pattern of the present title differs from that of the participle, however, we may assume a different function at the king’s court here.

The linguistic character of the text in Ancient South Arabian script is doubtful (Hasaitic?); it is certainly closely related to similar inscriptions which have been published by Robin (1994; cf. Macdonald 2000, 42 with note 99 and Sima 2002, 169).

The inscription may be dated to the third-second centuries BCE from a palaeographical point of view.



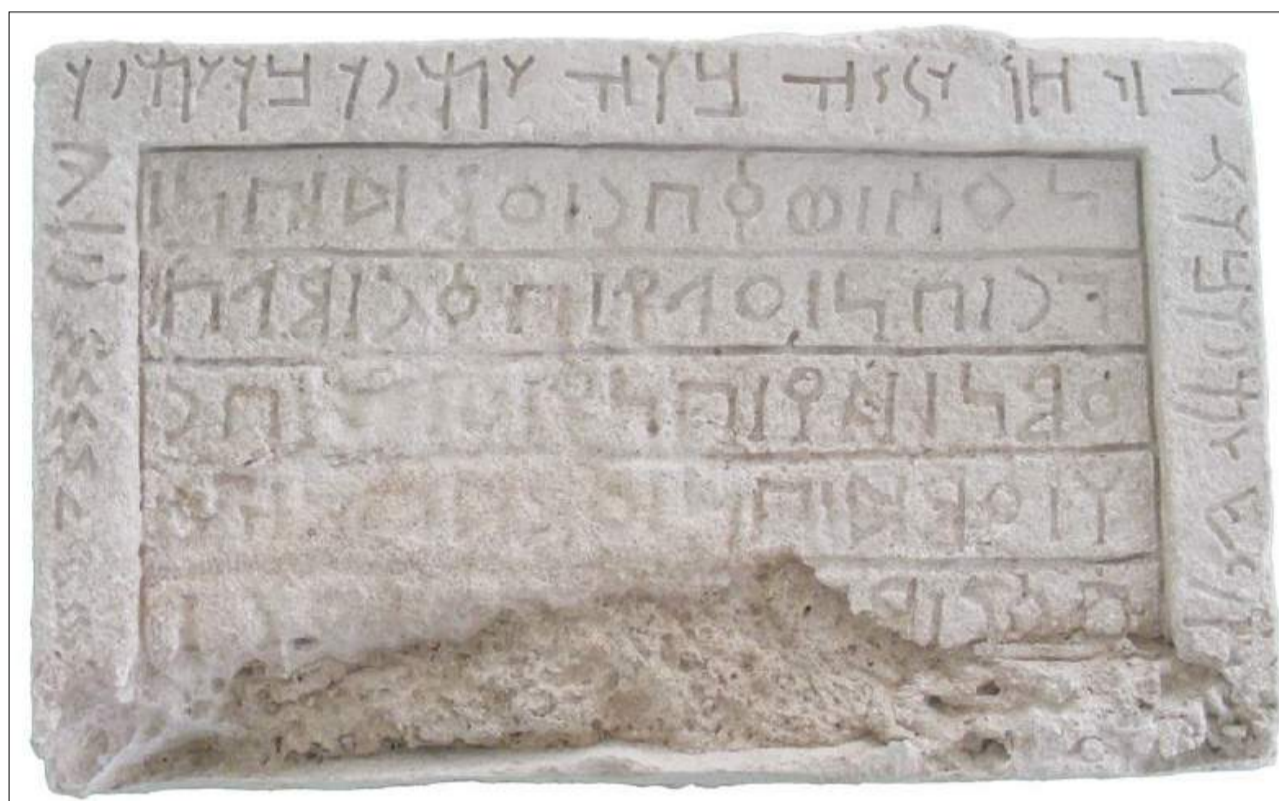


Fig. 4. The lime slab with funerary inscription from Tomb F5.

linked to the position of Mleiha as an international trade hub, as early as the mid third century BCE. This is in accordance with the oldest dated Rhodian amphora fragment from Mleiha, the surface find of a spike in Area AI dated to c. 270-250 BCE (Monsieur et al. 2013: 221, Fig. 21).

The now lost slab possibly states that the deceased was “in the service of the kings” (however, an alternative reading would provide a name, see Robin 1994: 80; Macdonald 2000, 42, 71 note 99), the tomb F5 slab identifies the deceased as in the office of the “King of Oman”. This connection of Mleiha with Royalty, possibly in the middle but with certainty in the second half of the 3rd century BCE is significant. The reference to the “King of Oman” could very well refer to Abiel; according to Callot this

ruler commenced minting at Mleiha in the last quarter of the 3rd century BCE (Callot 2010: 391-393, 395-396 “early series”; compare van Alfen 2010: 567-68). Other authors place the beginning of the Abiel coinage slightly later, in the beginning of the 2nd century BCE (van Alfen 2010: 550-551). In any case, Mleiha was the principal inland site of SE-Arabia in the Late Pre-Islamic Era and the seat of the Abiel Royal House. At least 5 Rulers, of which several with the same name, are thought to have issued coins (van Alfen 2010; possibly several of these Abiel were women, see Macdonald 2010). If Abiel is not the specific king referred to in the inscription of tomb F5, then Abiel is possibly a descendant or in any case a successor or usurper of this king. It is evident that in both situations, he

would have adopted an existing title such as “King of Oman”. The title later re-occurs on a coin issued by Meredat, king of Characene, in the mid 2nd century CE (Potts 1988: 153-155; Potts 1996).

Up to now, the oldest reference to Oman was in Classical sources from the 1st century CE. The *Periplus Maris Erythraei* (Voyage around the Erythraean Sea) and the *Naturalis Historia* (Natural History) by Plinius the Elder refer to Omana. The location of this Omana remains a point of discussion, however, but the *Natural History* places it specifically on the Arabian coast of the Gulf (Salles 1993: 510-511). Omana has been associated with various sites, but the obvious candidate for Plinius’ Omana is the site of ed-Dur in Umm al-Qaiwain Emirate. It is the only

known harbour of im Arabian side of the Qatar and the Strait o had its heydays in the The sudden rise of ed harbour is directly li of Characene on the Gulf from the end of BCE onwards (Haerin 2010: 393). The cc sources about its lc the result of changin since the name may for more than one is to be identified a ancient Oman, any l the capital may have with this name (on t the problem, see Wl 68). A site such as L and trade centre on t coast would also be a (Jasim 2006; Jasim d

This raises the q territorial boundaries “Kingdom of Or on Mleiha. If one distribution of the and the archaeologi identification with the seems evident. Thi territory of the Uniter and the Northern Sultanate of Oman. of the Sultanate is : characterised by the LIA assemblage and only been found at al Sama’il. Yule pointe

<sup>2</sup> Editorial sigla: { } i the whole word which were incorrectly carved ---- indicates a damaged or uncertain character.







known harbour of importance on the Arabian side of the Gulf between Qatar and the Strait of Hormuz and it had its heydays in the 1st century CE. The sudden rise of ed-Dur as a major harbour is directly linked to the grip of Characene on the sea trade in the Gulf from the end of the 1st century BCE onwards (Haerinck 1998; Callot 2010: 393). The confusion of the sources about its location may be the result of changing trade patterns since the name may have been used for more than one site. If Mleiha is to be identified as the capital of ancient Oman, any harbour serving the capital may have been designated with this name (on this approach to the problem, see Whitehouse 1998: 68). A site such as Dibba, a harbour and trade centre on the Arabian Sea coast would also be a likely candidate (Jasim 2006; Jasim & Yousif 2014).

This raises the question of the territorial boundaries of this ancient “Kingdom of Oman”, centred on Mleiha. If one combines the distribution of the Abiel coins and the archaeological record, an identification with the PIR assemblage seems evident. This includes the territory of the United Arab Emirates and the Northern parts of the Sultanate of Oman. The central part of the Sultanate is archaeologically characterised by the different Samad LIA assemblage and PIR tombs have only been found at al-Fuwaydah and Sama’il. Yule pointed out the rarity

of Abiel coins and Greco-Roman luxury goods that characterise the PIR in the Samad LIA dominated region (Yule 2001: 257, 265, Fig. 1; 2016, *passim*, Fig.1).

#### Final Remarks

The excavation of Mleiha Tomb F5 is a work in progress and much of the fieldwork remains to be done, yet the results have already been exceptional and are of importance on many levels. The content of the funerary inscription adds to our general understanding of the concept of these monumental tombs and in a broader sense to the understanding of the PIR period in the Oman peninsula. It is not within the goal of a preliminary report to discuss these aspects in-depth, but several observations can already be made:

- Tomb construction: It is ascertained that the superstructure of Tomb F5 was built in lime bricks, had stepped crenelations and was conceived as a room, most probably roofed. The entrance to this superstructure could not be located but may have been at the centre of the Northern wall where a small step/platform was present.

- Date and tomb types: The Aramaic inscription on the stone’s rim mentions the year 90 or 97, which refers, according to the Seleucid Era, to 222/221 or 215/214 BCE. The construction of this tomb in

the last quarter of the 3rd century BCE necessitates a revision of the chronology for Mleiha’s funerary architecture. The complex area F tombs precede or are contemporary to the monumental tombs of areas C and AV.

- The deceased: the builder of the monument was the son of the deceased who held an office for the king of Oman. The text does not state that the grave was intended for any other family members although the entrance to the burial chambers was not sealed by its superstructure. A planned re-use has been suggested for tombs with large burial chambers and similar entrances. This may have to be reconsidered for PIR A Period tombs. Although the existence of monuments for multiple burials is documented by an Aramaic text on a stray find bronze plaque from Mleiha (Teixidor 1992; Abbas 2009: 96-97, Fig. 5), it may not have been the original intent or concept in PIR A.

- The apparent necessity to use Aramaic and Ancient South Arabian for what is basically a repetition of the same contents, points to a mixed composition of Mleiha’s population.

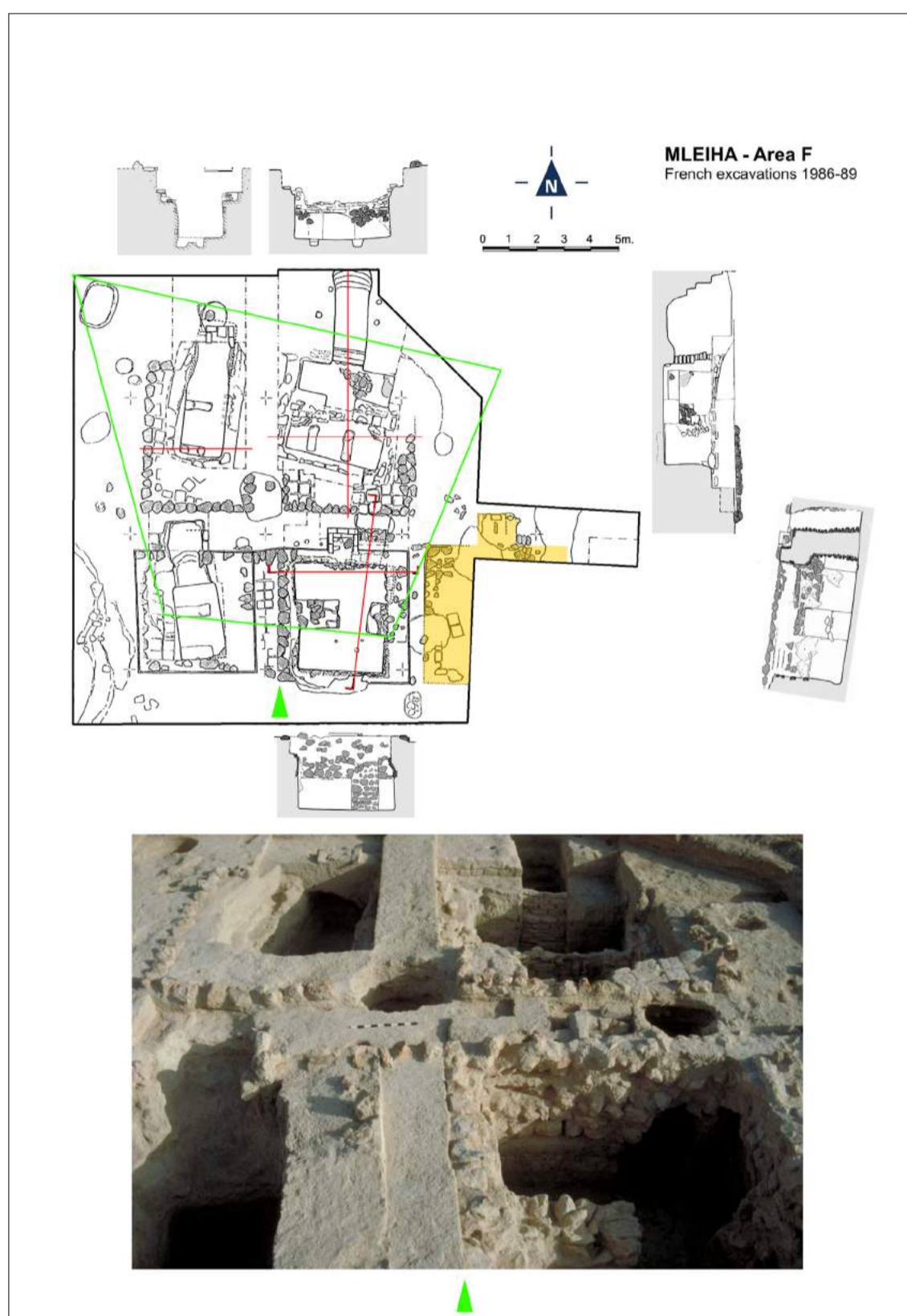
- The title “king of Oman” is at present the earliest known reference to the name “Oman”. In all probability this title was used by the Abiel dynasty. It is the only known regional dynasty to have minted coins and must have had its seat at Mleiha.

<sup>2</sup> Editorial sigla: { } in the transliterations enclose letters and passages the reading of which is doubtful, and in the translations the whole word which, in the original, contains one or more doubtful letters. ( ) in the transliterations enclose letters which were incorrectly carved. [ ] enclose letters in the transliterations, or words in the translations, which have had to be restored. ---- indicates a damaged area in which an unknown number of letters or numbers have been lost. x represents a letter of uncertain character.

pted an existing title of Oman”. The title on a coin issued by of Characene, in the CE (Potts 1988: 153- i).

: oldest reference to lassical sources from / CE. The Periplus (Voyage around the ) and the Naturalis d History) by Plinius r to Omana. The s Omana remains a ion, however, but the places it specifically t coast of the Gulf 10-511). Omana has l with various sites, candidate for Plinius’ te of ed-Dur in Umm irate. It is the only





Pl. 1. The 1986-89 excavations at Area F: plan, sections and photograph. The green line on the plan indicates the area on the photograph. The yellow overlay is the part of Tomb F5 that was cleared during these excavations. (after Mouton 2008).

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Frenc



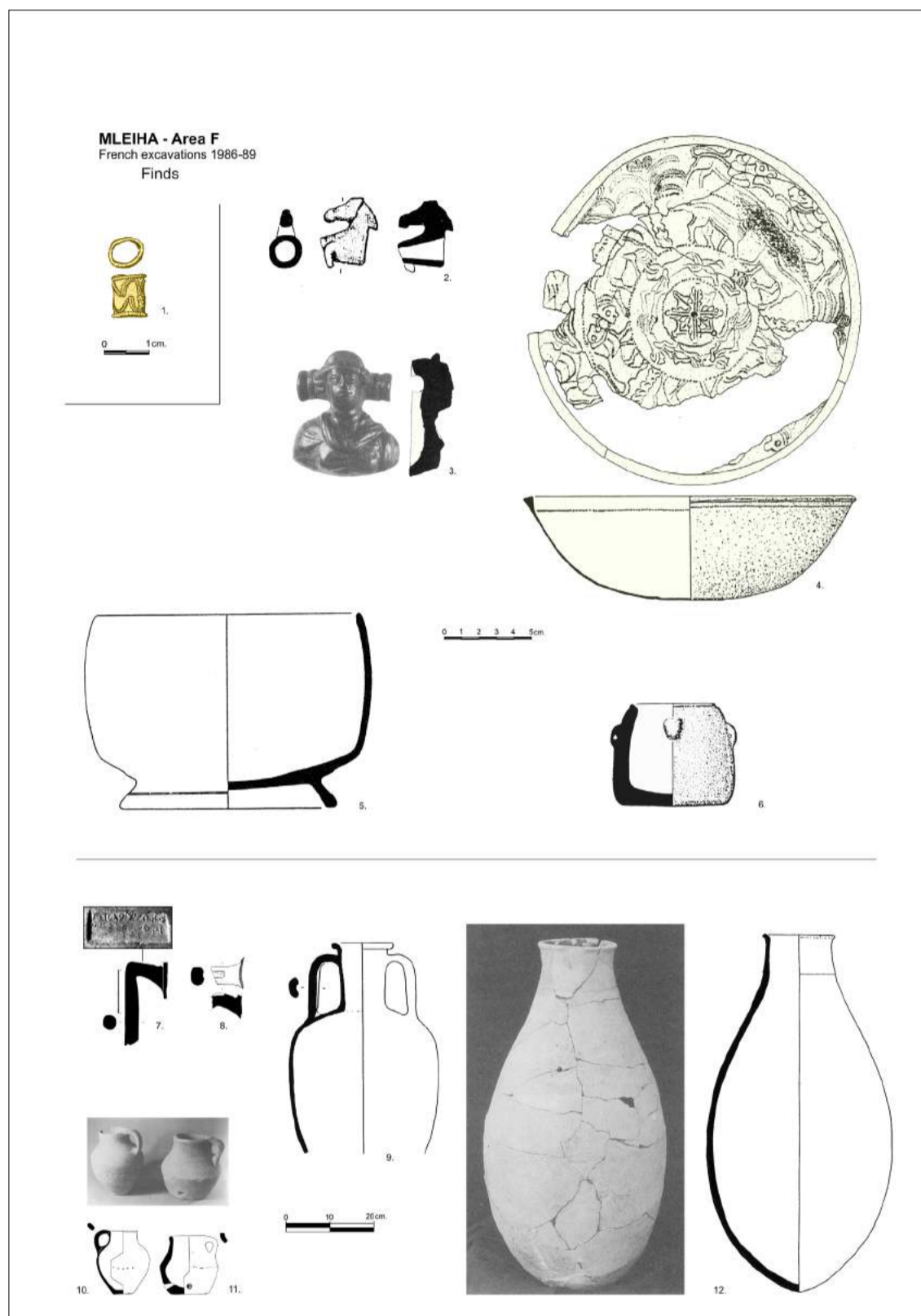
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Pl. 2. Finds from the excavations: 1 Silver spout fragment; 2 Silver vessel; 3 Silver vessel; 4 Silver vessel; 5 Silver vessel; 6 Soft-reconstructed libation vessel; 7 Soft-reconstructed libation vessel; 8 Soft-reconstructed libation vessel; 9 Soft-reconstructed libation vessel; 10 Soft-reconstructed libation vessel.





F  
1986-89



Pl. 2. Finds made during the 1986-89 excavations at Area F (after Mouton 2008). 1. Gold tubular bead; 2. Silver spout from bowl in the shape of a horse protome; 3. Female bust applique; 4. Bronze bowl; 5. Glass vessel; 6. Soft-stone beehive shaped container; 7-8. Stamped Rhodian amphora handles; 9. Amphora shape reconstructed from various vessels; 10-11. Perforated vessels dug in near Tombs F3 and 4, supposedly for libations; 12. Storage vessel from tomb F2.

on the plan  
cleared during



Pl. 3. Excavations of Tomb F5: vertical view on 2015.12.01 (top) and 2015.12.02 (bottom).





Pl. 4. Excavations of Tomb F5: vertical view on 2015.12.08 (top) and 2015.12.11 (bottom).



02



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Pl. 5. Excavations of Tomb F5: vertical view on 2015.12.15 (top) and 2015.12.17 (bottom).



Pl. 6. Sup in situ. b. in situ, no wall. e. L





Pl. 6. Superstructure of Tomb F5: a. View from the South with the West wall and mud brick floor in situ. b. Displaced lower layer of lime bricks from the South wall. c. SW-corner with lime brick in situ, note the plaster on the inside of the building. d. Displaced layers of lime bricks of the South wall. e. Lime brick stepped crenelation found at the base of the South wall.





Pl. 7. View on the excavation of the Eastern part of the Southern burial chamber and its entrance.

Pl. 8. View inscription







rance.

Pl. 8. View of the excavation of the Northern burial chamber with the lime slab in situ (the funerary inscription is on the back) and removal of the slab.





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## Report on the 2015/16 Season of Excavations at the site HLO1 in the Wadi al-Hilo (Emirate of Sharjah, UAE)

(version revised June 2016)

### Directors:

Dr. Margarethe Uerpmann

Prof. Dr. Hans-Peter Uerpmann

Dr. Sabah A. Jasim

### Aims of the excavations

Earlier excavations at Wadi Hilo concentrated on the evidence for Bronze Age copper metallurgy at the site HLO1. The results of these excavations were the subject of the Doctoral Dissertation of Johannes Kutterer (Tübingen University 2014) and were published as such in the same year<sup>1</sup>. However, evidence for the presence of Neolithic features at the site was also discovered during these excavations. It was the aim of the recent excavations to deepen the knowledge about the Neolithic occupation of HLO1. As the evidence for the Neolithic presence of people at HLO1 mainly derived from the southern parts of the site, new trenches were only opened in this area (blue in Fig. 1).

Based on radiocarbon dates from Trenches 41 and 42 of the earlier excavations, an old surface deriving from the 8<sup>th</sup> millennium BC was identified and already largely exposed in these trenches in 2013. Its surface consisted of mostly fine-grained sediments with some included small river-pebbles. Because of the radiocarbon dates for the fireplaces dug into this surface, its age must be as old or older than c. 8000 BC. Therefore the 2015 excavations were started with further exposing this surface in Trench 101. The early Holocene surface could be followed northward into Trench 78, where a heap of large pebbles was already exposed during the previous season of excavations.

Some of these large pebbles appeared to be set and to potentially represent a man-made structure. Removing the other blocks around them strengthened this impression. Final proof for a construction came from the discovery of ordered rows and layers of smaller pebbles underneath the larger blocks. The pebble-base had been laid on the above mentioned surface in order to provide stable bedding for the larger blocks on top. The whole structure turned out to be a small rounded chamber with even smaller annexes towards the east. As all these structures stood on the early Holocene surface they most probably were erected during the 8<sup>th</sup> millennium BC. Unfortunately no artefacts were found in this context.

Trench 102 was opened as a 2x2m square in the eastern part of the earlier excavations. During and after the removal of the surface and two successive layers no indications for archaeological features could be observed. Therefore excavations were not continued in this part of the site.

Another mayor discovery of the earlier excavations in Trench 75 was that of an oval structure, identified as a grave of the Wadi Suq period, which was built into an earlier subterranean grave. This is corroborated by two radiocarbon dates on human bone fragments from the fill of the grave. One of them came out as 1956-1892 BC for the Wadi Suq period and the other as 6352-6231 BC for the Neolithic bone. Fig. 3 gives a view of the well visible Wadi-Suq entrance of the chamber and of the hypothetical base

of the preceding Neolithic structure. While these assumptions could not be verified without destroying some of the structures (which had already been damaged during the discovery of the whole assemblage – see Fig. 4) it was decided not to continue excavating this area – except for the interior bottom of the grave-chamber. Some additional small fragments of human bone could be discovered as well as some small splinters of flint and pottery.

To the west Trench 75 was widened by 3m without giving the newly opened area a new trench-number. This area contains a field of large rounded boulders under which further structures may be concealed. However, given the very large size and weight of most of the boulders, none of the structures was clear enough to be considered for excavation with the now available excavation equipment (Fig.4).

In order to completely expose the Wadi Suq grave-structure, Trench 75 was also enlarged towards the north by opening Trenches 103 and 104. These trenches connected the older Trenches 75 and 76. They exposed another area of unordered large pebbles, which did not provide further information. The same surface of large pebbles was already exposed in Trench 76. As no structures could be recognized in Trenches 103 and 104 excavations were not continued in these trenches.

<sup>1</sup> Kutterer, J. 2013: The Archaeological Site HLO1. Doctoral Dissertation University of Tübingen, Germany

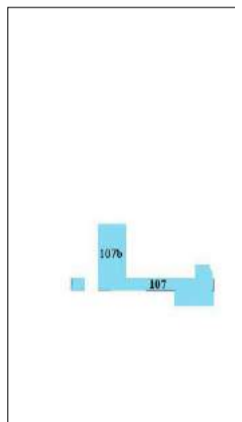


Fig. 1: Map of the trenches

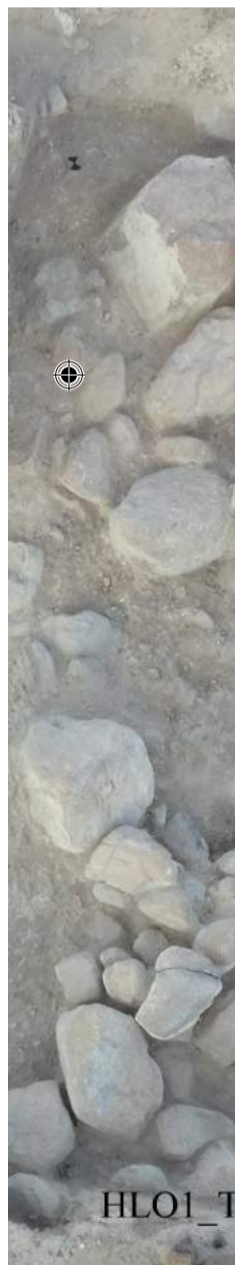


Fig. 2: Architecture in Trench 75



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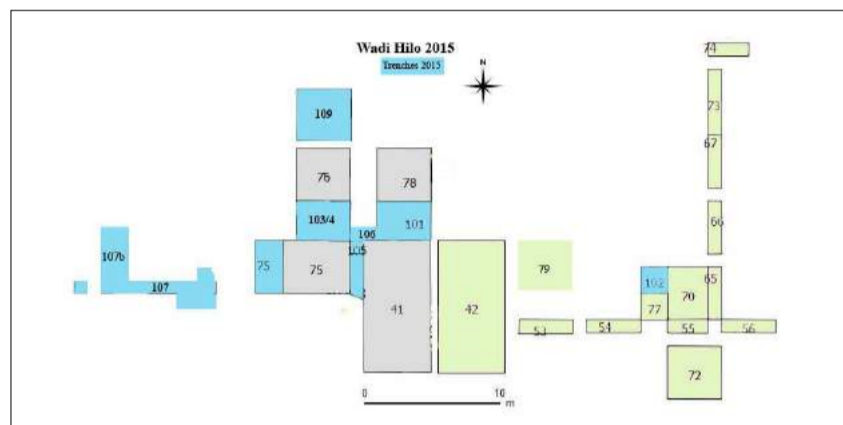


Fig. 1: Map of the trenches in the southern part of HLO1



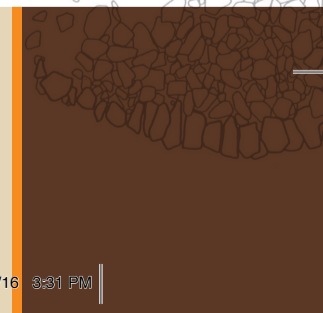
Fig. 2: Architecture in Trench 78

However, further cleaning of the boulder-field in the old trench 76 indicated the existence of a rounded wall-structure (Fig. 5). Therefore excavations were continued in this trench by taking off successive layers of the boulders left in this trench by the earlier excavations. The curved wall-structure actually continued below the first exposed surface and turned out to be the best preserved remnant of a building in this part of the site. The fireplace visible in Fig. 5 had several superimposed ash-layers, of which the upper two yielded radiocarbon dates of 799-558 BC and 915-827 BC for the Iron Age.

In order to see more of the rounded structure Trench 109 was opened north of Trench 76. The same pebble field as in the trenches south of it continued into Trench 109. Although the rounded wall seems to curve north and east in this trench, the wall is not as clearly defined as in Trench 76. Again there are several fireplaces inside the assumed round building. A first radiocarbon date of 1740-1670 BC enlarges the time span for the use of this building into the Wadi Suq period. A surprising find was an obsidian flake near the rounded wall, which may indicate an even earlier Neolithic occupation.

The extension of the Neolithic remnants in the western part of the area was explored in a narrow search trench (Tr. 107), which was opened towards the wadi-cliff. At the eastern end of this trench another structure built of large pebbles was discovered (Fig. 7). It might be an annex to a larger building, now situated below the visitor-pathway. However, according to its elongated shape it could also have been a grave-chamber (Fig. 8). Tiny fragments of a human skull from the fill of the chamber might corroborate this interpretation.

On the inside this structure was lined with pebbles of varying sizes. The curved wall to the east – disappearing under the visitors



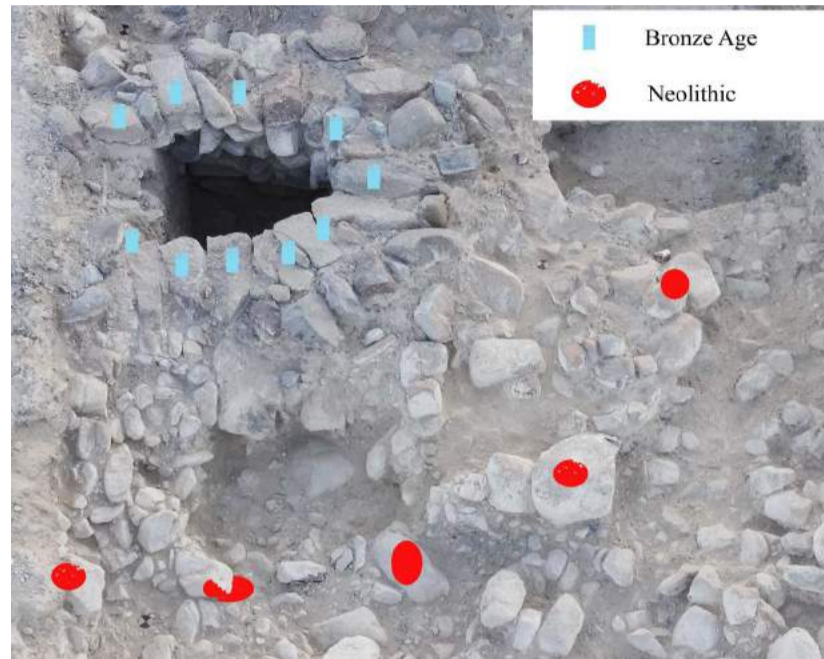


Fig. 3: Neolithic structure in Trench 75 re-used as a grave In the Wadi-Suq-Period



Fig. 4: Vertical view of Trench 75 with the opening of the grave pit (A - Wadi Suq / Neolithic grave) and the western extension (below red line) opened in 2015. The Stars indicate disturbances by test-pits dug during the first season of excavations.



Fig. 5: Stone st



Fig. 6: The curve the stone-circle c





Fig. 5: Stone structure with curved wall in Trench 76 after removal of first pebble-layer



Fig. 6: The curved wall in Trench 76 after removal of the second layer of the surrounding pebble-field. Pebble concentrations inside the stone-circle are fireplaces





pathway - to which the small structure seems to be connected - requires further excavations for a complete understanding of the whole complex and of the principle of these constructions, which are similar to those in Trench 78. Thus they might indicate a continuation of the Neolithic occupation towards the western part of the site.

### Final remarks

At the end of the 2015 field-work in the southern part of the site HLO1 it may be stated that the aims of this season were fulfilled. There is proof that not only large firepits from the very beginning of the Holocene are represented, but also structures built of river-pebbles which were erected on the same surface into which the old fireplaces were dug. This surface represents the end of the Pleistocene period (ca. 8000 BC). The architecture of these structures is difficult to interpret because of the small size of the enclosed rooms. While the beginnings of human presence at the site are clearly marked by the early firepits in trenches 41 and 42, later parts of the Neolithic period are also represented according to isolated radiocarbon dates from various fireplaces. As there are no characteristic Neolithic finds - in particular of arrowheads - which could provide an idea about the time when they were made

- no answer can be given with regard to the presence of the various phases of the Neolithic period. Obviously the excellent environmental conditions of Wadi Hilo - the "sweet valley" - attracted people during all periods from the Neolithic to the recent time - a unique feature in SE-Arabia.

**Margarethe Uerpmann**

**Hans-Peter Uerpmann**



Fig.7: The outside of the small oval structure at the eastern end of Trench 107



Fig. 8: Vertical view of the oval structure in Trench 107

Johannes Kutterer (2014): The Archaeological Site HLO1 - A Bronze Age Copper Mining and Smelting Site in the Emirate of Sharjah (U.A.E). Dissertation. Universität Tübingen. Available at: <https://publikationen.uni-tuebingen.de/xmlui/handle/10900/56440>

