

Belgian Excavations at Mleiha, Sharjah (UAE) 2009-2013.

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Abstract:

Belgian Excavations at Mleiha, Sharjah (UAE) 2009-2013.

Mleiha (Sharjah, UAE) is the main inland site in SE-Arabia from the 3rd century BCE to the 3rd century AD. The Belgian research focused on the graveyard area with monumental tower shaped tombs of the 3rd and first half of the 2nd century BCE, related to tombs along the Arabian overland caravan routes at Qaryat al Faw (Saudi Arabia) and Petra (Jordan). Reconstructions of the tombs are proposed and distribution patterns are being studied using Ground Penetrating Radar surveying.

Les fouilles belges à Mleiha, Sharjah (EAU) 2009-2013.

Mleiha (Sharjah, EAU) est le site principal dans le SE de l'Arabie du 3^{ème} siècle av. notre ère jusqu'au 3^{ème} siècle AD. La recherche belge était concentrée sur la nécropole avec des tours funéraire du 3^{ème} siècle / premier moitié du 2^{ème} siècle av. notre ère. Ces monuments funéraires sont comparables à celles de Qaryat al Faw (Arabie Saoudite) et Petra (Jordanie), sites caravaniers sur les routes des caravanes Arabes. Des reconstructions des tours funéraires sont proposées et la distribution des tours dans le nécropole est étudiée en utilisant radar à pénétration de sol (RPS).

De Belgische opgravingen te Mleiha, Sharjah (VAE) 2009-2013.

Mleiha (Sharjah, UAE) is de belangrijkste site in het binnenland van ZO-Arabia van de 3^{de} eeuw v. Chr. tot de 3^{de} eeuw AD. Het Belgisch onderzoek is toegespitst op het grafveld met de restanten van monumentale torenvormige graven uit de 3^{de} en de eerste helft van de 2^{de} eeuw v. Chr. Deze zijn verwant aan tomben in karavaansteden langs de Arabische landroutes zoals Qaryat al Faw (SA) en Petra (Jordanië). Reconstructies van de torengraven worden voorgesteld en de distributiepatronen van de graven worden onderzocht op basis van een Ground Penetrating Radar survey.

Keywords: Arabia, tomb, Mleiha, UAE, caravan routes
Arabie, tombe, Mleiha, EAU, route des caravanes
Arabië, tombe, Mleiha, VAE, karavaan routes

A Belgian Archaeological Expedition is working since 2009 at Mleiha in the Emirate of Sharjah (United Arab Emirates). It is a collaboration between the Royal Museums of Art and History (Brussels), Ghent University and Sharjah's Directorate of Antiquities². The present report provides a survey of the main activities during the first five years of our work.

THE LOCATION OF MLEIHA

Mleiha is one of the main archaeological sites of the Oman peninsula, situated about half way on the road from Sharjah on the Persian Gulf coast to the Gulf of Oman and on the inland route from Dhaid to al-Ain. It is situated in the alluvial gravel plain to the west of the al-Hadjar or Oman Mountains at an altitude between 150 and 160 m ASL. Mleiha is protected from the northwestern dune sands that stretch to the Persian Gulf coast by the anticlinal Jebel Fayah mountain ridge (Fig. 1). The geological water storage capacity of the

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² The 2009-2013 Belgian expedition by the Royal Museums of Art and History, Brussels, and Ghent University was funded by both institutions, the FWO (*Research Foundation - Flanders*) and the IAP VII (*Greater Mesopotamia: Reconstruction of its Environment and History*) and worked 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 was directed by B. Overlaet (RMAH) and E. Haerincx (UGent), members of the team were ing.-arch. A. Timmerman, draughtsman-photographer E. Smekens and archaeologists M. Coppejans, B. De Prez, M. Farjami-rad, P. Pincé, Th. Van de Velde, L. Van Goethem, C. Van Hecke and L. Verdonck. The research project continues since 2014 as a collaboration between the Royal Museums of Art and History, Brussels and the Directorate of Antiquities of the Emirate of Sharjah.
KAOWARSOM 06-2015 (adapted after review)

area and the confluence of several hydrographic systems results in a high water table and made the Dhaid plain with Mleiha well suited for human occupation (Dalongeville 1994, p. 7). As such, the archaeological site that covers several square kilometres is, not surprisingly, still partly covered with modern habitations and palm gardens.

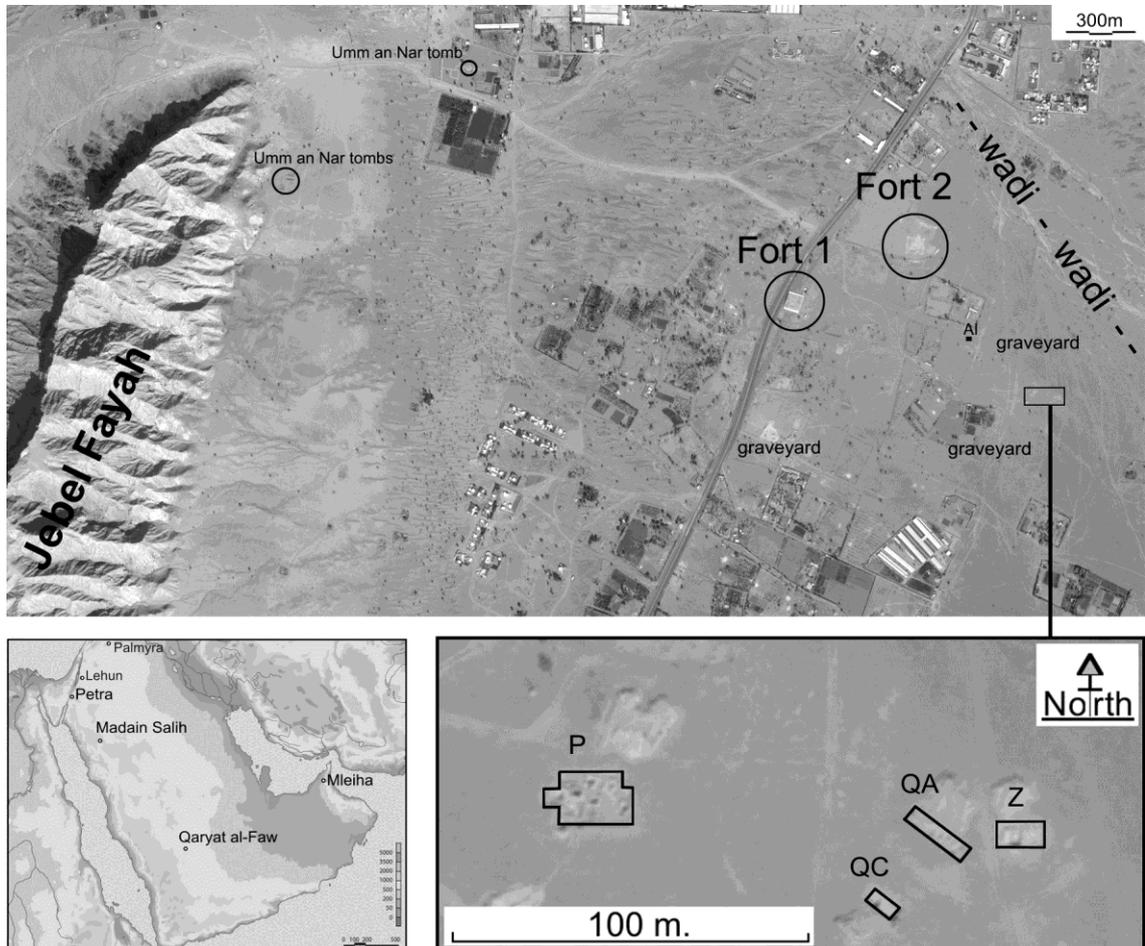


Fig. 1. Location of Mleiha and Google Earth view with indication of monuments and excavation zones mentioned in the paper. The details show the main excavation areas of the Belgian expedition.

THE ARCHAEOLOGY OF MLEIHA

The site of Mleiha became known to the scientific world in 1968, when the ruler of Sharjah Sheikh Khaled bin Muhammad al-Qasimi invited the Danish archaeologist Karen Frifelt to show her some objects he had found during one of his hunting expeditions (Frifelt 1969, p. 175). The first excavations at Mleiha were carried out a few years later by an Iraqi team (Madhloom 1974) but extensive research started only in 1986 with the French excavation-project, first headed by Rémy Boucharlat and later by Michel Mouton (1986-2000, 2010-11) (Mouton 1999; 2008, p. 19-20; Mouton et al. 2012, p. 205). The Directorate of Antiquities of Sharjah Emirate excavates at several locations on and around the site and manages the site's cultural tourism with the conservation and reconstruction of major monuments. The Directorate of Antiquities also takes measures to safeguard the site by raising awareness and acquiring archaeologically important areas to include them in the protected heritage site. The Belgian team joined the Mleiha research in 2009 with KAOWARSOM 06-2015 (adapted after review)

excavations that focused on the habitations and graveyards (Haerinck & Overlaet 2011a & 2011b; Kutterer et al. 2014; Verdonck et al. 2014; Overlaet & Haerinck 2014).

Mleiha has a long occupation history dating back to at least the third millennium BCE, as documented by the discovery of three Umm an Nar type tombs (Fig. 1 and Fig. 7, top right). Such monumental tower shaped tombs remained in use over many centuries and from other sites in the Oman peninsula, we know that they are associated with important habitations (Potts 2009, p. 31-32). These have not yet been located at Mleiha, however, possibly they are covered by some of the nearby modern constructions. The most extensive occupation of the site is to be dated later, from the 3rd century BCE to the 3rd-4th century AD, at which time it was apparently the only inland site of importance in SE-Arabia. A chronological framework for SE-Arabia and Mleiha for this period was proposed by Michel Mouton, partially based on the results of the French excavations at Mleiha (Mouton 1999; 2008, p. 22-35).

The present paper is mainly concerned with the “Pré-islamique récent A” or PIR A period, *i.e.* the archaeological phase II at Mleiha, dated to the 3rd and first half of the 2nd c. BCE. The preceding Late Iron Age in the Oman peninsula is characterised by a decline of settlements. Mud brick or stone houses seem to have ceased to exist in the PIR A period. Nevertheless, 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 assemblage. To explain the changes, it has been suggested that nomadic newcomers may have arrived from outside the Oman Peninsula and may have settled at Mleiha (Mouton 2008, p. 278-282). PIR A seems to have been constituted predominantly by dwellings made of light materials such as wood and palm leaves, like the so-called *barasti* that are still used in the region, since excavations only revealed mud brick houses from the following PIR-B period onwards (second half 2nd-1st century BCE). This is odd, however, in view of the presence of monumental funerary structures in the PIR-A period, mostly concentrated at the eastern and southern limits of the site. These are built with mud bricks and gypsum bricks. It demonstrates that the technology and know-how of brick production was not lost at Mleiha and that production continued during the PIR A period in the Oman peninsula, although apparently mainly for constructions such as funerary monuments. Mleiha flourished in the PIR period as an economic and political centre with a local dynasty that had its own mint. The so-called Abi’el coins, probably named after a local ruler, circulated in SE Arabia from the late 3rd or early 2nd century BCE onwards and may have been primarily introduced as a political statement by what was in reality a relatively minor local kingdom. The coins had limited circulation outside their own region, only a few were found in NE-Arabia (Haerinck 1999: p. 126-127). During this early expansion of Mleiha, roughly contemporary to the Seleucid and early Parthian era in the remainder of the Near East, the site’s boost may have been largely based on its agricultural produce. Like other cities and oases on caravan routes, e.g. Palmyra or Petra, the availability of water and its use to exploit the site’s agricultural potential, lies at the very heart of the city’s economic development (Hauser 2012). Luxury commodities, such as Rhodian wine, traded in amphorae, and Greek black-varnished vessels are found at Mleiha from the 3rd century BCE onwards and probably reached the site overland from NE-Arabia since there is no coastal settlement on the UAE’s Persian Gulf coast at that time. The oldest identified Rhodian amphora fragment from Mleiha, a toe with part of the lower amphora wall, was discovered by the Belgian team in 2009. It can be dated to 270-250 BCE (Monsieur et al. 2013, p. 221, fig. 21). Mleiha may have acquired such wealth through its role as an intermediary trader and/or through the control on the passage of camel caravans between NE-Arabia and the Oman coast. From about the middle of the 1st century BCE, the appearance of harbours like ed Dur and of other coastal sites all along the

Arabian coast between Qatar and the Strait of Hormuz indicate the growing importance of sea-trade as opposed to the traditional land routes (Haerinck 1998) but Mleiha appears to have been able to preserve its economic and political importance.

With the information at hand, habitations, gardens and workshops during the “Pré-islamique récent” periods seem to have been centered around two major fortified dwellings, a pattern which is documented in many parts of Arabia (Hoyland 2001, p. 170) and which is very similar to that of inland oases in the region, such as Al Ain and Lewa, until the mid 20th century AD. A large necropolis along the wadi bordered the settlement at the East and South (Fig. 1). The role of Mleiha as a political and economic center came to an end in the 3rd or early 4th century AD, possibly as a result of a military intervention since one of the two fortresses at Mleiha was besieged, burned down and plundered (Mouton et al. 2012). Who the assailant was and whether this was a single military assault that destroyed the whole site and displaced or eliminated the local population, or rather an attack on one specific building remains unknown, but the fortress was left in ruins and never rebuilt. The weakening position of Mleiha, somewhere in the 3rd or early 4th century AD at the latest, must be placed in the wider geo-political events of the 3rd century AD when the Sasanian dynasty (224-642 AD) came to power in Iran and Mesopotamia and sought to gain control of the international trade routes (Kennet 2007). Ardashir I (224-240) conquered the Arabian coast of the Persian Gulf and later rulers send expeditions as far as Yemen and Ethiopia (Potts 2008).

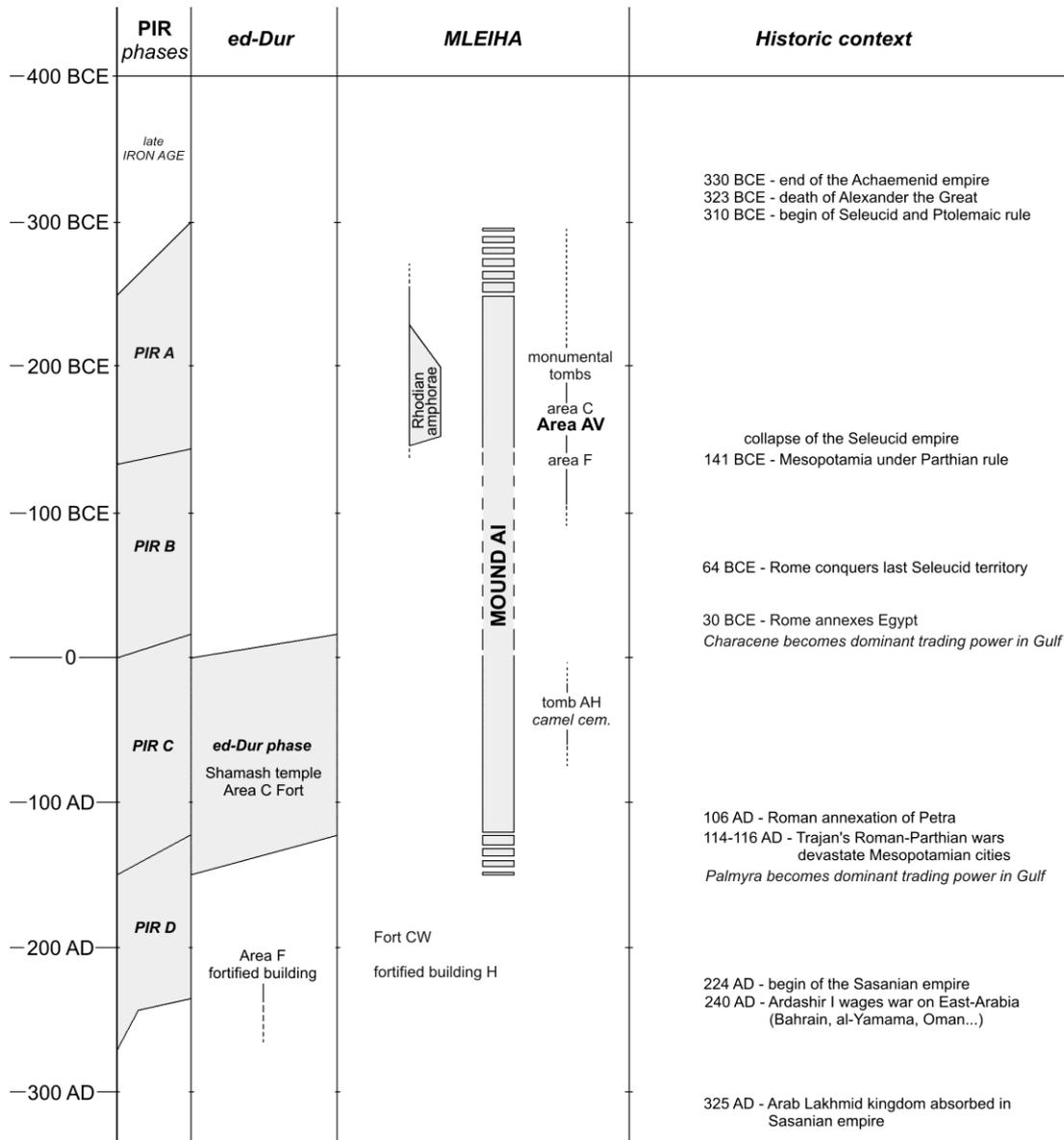


Table 1. The chronology of the Oman peninsula in relation to the historic events in the Near East with special reference to the archaeological sites of Mleiha and ed Dur.

Many questions and uncertainties remain as to the specific chronology of Mleiha and its position within the larger Arabian world, its population and its cultural and socio-political background. The Belgian expedition wants to contribute to the understanding of the mechanisms behind the fast development of the site in the PIR A period by focusing on the extensive graveyard with its monumental tombs. Earlier excavations by the French team and Sharjah’s Directorate of Antiquities had revealed the existense of a large graveyard area at the east and south of the site. This area bordered the wadi and was made up of several low mounds, merely 50 cm to 1 meter above the wadi plain. These low mounds covered graves which once had mud brick tower shaped monuments that resembled some of the monumental tombs from the Nabataean cities of Petra and Qaryat al-Faw, a relation that has been discussed on several occasions by M. Mouton and R. Boucharlat (Boucharlat & Mouton 1998; Mouton 1997; 2006; 2010). In between these monumental tombs (and between the low mounds) less prominent graves are attested which lack these grand surface constructions. All of the excavated tombs at Mleiha had been plundered but fragments of the

burial goods left behind by the looters provide dating criteria and offer a glimpse on the richness that they once contained. There are fragments of jewellery, glass and bronze vessels, iron weaponry, stone vessels of S-Arabian origin and sherds of Rhodian wine amphorae and of other luxury pottery imported from South Mesopotamia, Iran and India. All this testifies to a flourishing economy in which it was possible to take such large amounts of valuables and luxury items out of circulation by depositing them in tombs. One of the surprising discoveries was that not a single tomb contained human remains (Kutterer et al. 2014, p. 175-176). Since animal bones were well preserved, this can only be the result of a deliberate action. It is likely that the corpses were richly dressed, possibly also wearing jewellery, before being wrapped in a funerary shroud and placed in the tomb. The Mufaddaliyat, an 8th century AD anthology containing mostly 6th - early 7th century poetry that offers valuable insights into Arabian pre-Islamic beliefs and traditions, specifically mentions this practice (Lyll 1918, p. 239, Muf. LXXX / Hoyland 2001, p. 175). Tomb robbers would have to pull the shrouded corpses from the small underground burial chambers to be able to strip them down. They could afterwards have left the remains on the surface to decay or even have burned the bones to use the ashes as fertilizer. The excavations documented an edifice of the PIR period where animal bones were incinerated, probably to this end. It is a practice which survived until recent times in the Gulf area (Jasim 2001, p. 126, 131). Another explanation can only be envisaged if the site would have been destroyed in a single military raid, something which seems probable in view of the above mentioned siege of one of the two Mleiha fortresses and in view of the discovery of many items, including luxury objects, and broken pottery in the latest levels of the other fort and of neighbouring buildings (Mouton 1999, p. 28). All these elements rather support the idea that a single dramatic incident led to a sudden abandoning of Mleiha. It is documented on several occasions that the destruction of tombs and the deliberate dispersal of human bones was a manner to sever the ties between a population and its ancestral location, to almost literally uproot them. A displaced population could no longer motivate a return to their land claiming that it held the remains of their ancestors in need of ritual offerings. The Assyrian king Assurbanipal alludes to this in his annals about the destruction of the Elamite capital Susa in 646 BCE *“The sepulchres of their earlier and later kings, who did not fear Assur and Ishtar, my lords, (and who) had plagued the kings, my fathers, I destroyed, I devastated, I exposed to the sun. Their bones I carried off to Assyria. I laid restlessness upon their shades. I deprived them of food-offerings and libations of water”*. Punishing the deceased and targeting the ancestral roots is in line with the ancient Near Eastern way of thinking (Henkelman 2011, p. 117). The Sasanians are also known to have exhumed bodies, but in this case for religious reasons. Zoroastrianism condemned burying in the ground (Herman 2010, p. 39, 41-53). If the end of Mleiha could specifically be linked to a Sasanian incursion as part of the empire’s expansion policy, this is also a way to explain the complete disappearance of human bones, and not only of the valuable burial goods. In any case, the visibility of the monumental as well as the more humble tombs at the surface made them easy to locate and an easy targets to plunder, be it by straightforward looters or by religiously or politically motivated enemies. At the moment we do not have human remains that can be linked to the PIR period at Mleiha. Some camel and horse burials, which sometimes surrounded the human interments as funerary offering, were found intact, some still with valuable gold trappings; probably because these were simply not marked at the surface (Jasim 1999).

THE BELGIAN RESEARCH: SURVEYS AND EXCAVATIONS.

KAOWARSOM 06-2015 (adapted after review)

The Belgian research is focused on the chronology of SE-Arabia and particularly on the transition from the Late Iron Age to the PIR A period. To this end, excavations were started at two separate locations, in a habitation or industrial zone to the east of the fortresses (Area AI) and in the graveyard zone (Area AV with sectors P, Q and Z) (Figs. 1 and 5).

Area AI – The Habitation Zone.

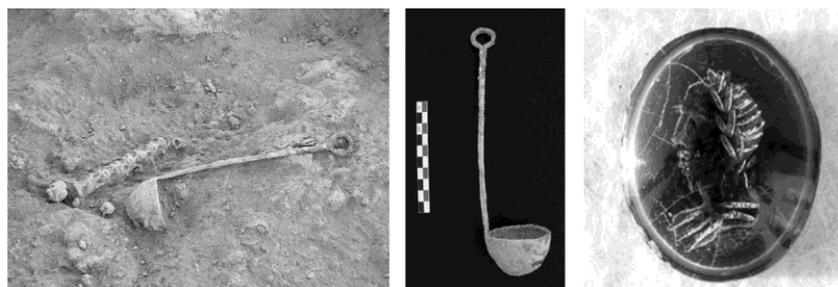


Fig. 2. A bronze ladle left next to fish bones, the remains of a meal, in a small room of Area AI (left & center) and a Roman gem found in the surface layer of Area AI.

The habitation Area AI was a low mound to the east of Fort 1, towards the edge of the graveyard area (Fig 1). It had been surveyed by the French mission in 1988 who had found several bronze and silver coins, but had not undertaken any excavations (Mouton 1997, p. 66). In 2009 a test trench of 2 by 10 m revealed the first finds immediately below the surface. Within a small room, delineated by the remains of a single row of mud bricks, a bronze ladle was found next to fish bones, apparently the remains of a meal. The presence of sea fish at this inland site is not surprising, earlier excavations had documented the site's regular supply of dried or pickled fish from the Persian Gulf or sea of Oman (Van Neer et al. 2013). A large oyster shell, a woven basket with bitumen, a bronze Abi'el coin and a Roman gem were found close by (Haerinck & Overlaet 2011a). In 2012 the excavations in Area AI were resumed and extended to a total area of 306 m² with the aim to elucidate the stratigraphy of the site. The archaeological layer amounted to about 1.30 m but the whole area turned out to have been heavily disturbed by intensive use. The mud brick architecture was badly preserved and no coherent plans or reconstructions of structures were possible. The only exception was the lowest level where two small buildings were found, one roughly circular, the other more or less square, both delineated by a single row of mud bricks placed on edge (Fig. 3). The presence of *tannurs* or ovens and storage jars suggests these were simple cooking facilities. The whole area displayed an irregular pattern of post holes indicative for *barasti* type dwellings. The use of mud bricks set on edge at the base of such *barastis* may have been as protection from rodents or other animals, or simply to keep rain water out. It documents a modest use of mud brick in PIR A dwellings. The ceramics indicated a general 3rd century BCE date for this earliest level at Area AI.

Among the small finds were some unfinished softstone beads and spindles but nothing to suggest that this amounted like anything on a semi-industrial scale. The area clearly was an habitation zone with *barasti* type dwellings and, over time, some limited mud brick constructions. The later levels saw an increased presence of glazed and other imported luxury ceramics, illustrating the growing importance and wealth of the site (Haerinck & Overlaet 2015). It was only in the surface layer that next to these ceramics, also other luxury products appeared. It supports the hypothesis of a sudden abandoning of the settlement in times of danger.



Fig. 3. Top left: *Barasti* made of wood and palm leaves (Abu Dhabi 1962). Top right and bottom: Area AI at the end of the 2012 excavations. Note the many post holes for the construction of *barasti* type dwellings.

Area AV – The Graveyard.

The second location where excavations were started was further to the east of the site, in the graveyard Area AV (Fig. 1, 5). Sector P was a low mound with some traces of gypsum bricks at the surface. Such bricks were, like regular mud bricks, produced in moulds and sun dried. They are more weather resistant than mud bricks, however, and were known to have been used as outer wall facing and for decorations on some of the tomb towers of the PIR period. The excavations by the French team and the Directorate of Antiquities had documented the existence of tomb towers at Mleiha and their general chronological framework. Our goal was to study the earliest phase of their development and their distribution patterns to gain insight into the growth of the site and the interrelations between the various groups of monumental tombs that seemed to be characterized by cluster forming around the rim of the settlement. The approach was to extensively excavate one of the mounds and to survey the adjacent areas up to the next low mound using Ground Penetrating Radar. This would allow targeted excavations in the GPR surveyed area.

Previous research had shown that the earliest type of monumental tombs at Mleiha consists of a simple rectangular burial pit dug of about 1 by 2 meter that was closed with beams and sometimes also matting and plaster. On top of this grave, a square tower-like monument was built (Figs. 4 to 6). It effectively sealed the grave that was obviously destined for a single individual. None of these monuments is preserved more than 30-40 cm above the antique surface but fallen wall fragments indicate that they stood several meters high. Their outside had a white plaster coating and sometimes a small, low platform (often the size of a single square mud brick measuring 30 to 40 cm) was placed against the northern wall. Possibly it was used to place offerings. Gypsum bricks were sometimes used, either as outer lining or for the wall construction itself and for decorative ridges and stepped battlements or crowsteps (Figs. 5-6). Mouton suggested that these early tomb-towers were solid blocks with crowsteps mounted against the upper rim, in analogy with the so-called block tombs at Nabataean Petra. The Petra block tombs consisted of an underground burial chamber with a solid, cube-shaped rock monument next to its entrance. Later tombs at Mleiha had larger underground tomb chambers that could be re-used and which had an entrance adjacent to the tomb tower. The solid “blocks” of the early tomb towers at Mleiha were then seemingly replaced by comparable monuments with an room or open space inside. The PIR A tombs are dated by the often fragmentary remains left by the looters, among which there are sherds of glazed pottery and of Rhodian wine amphorae bearing stamps of the 3rd and the first half of the 2nd centuries BCE (Monsieur et al. 2013).

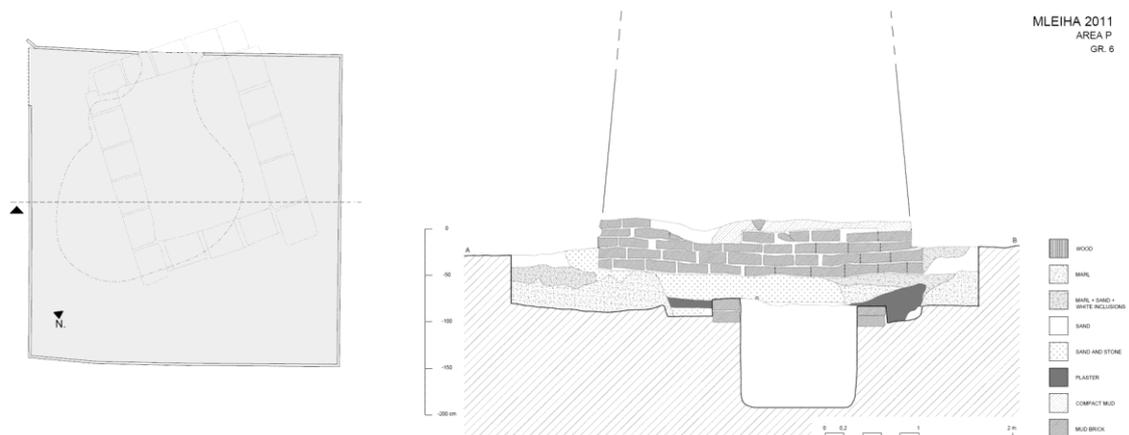


Fig. 4. Top view and section of the monumental tomb nr. 6 at sector P (drawing A. Timmerman)

The Petra monuments to which the Mleiha tombs are compared, are the monolithic block tombs or so-called *djinn* blocks, known to be among the oldest edifices at Nabataean Petra, dating from the 3rd century BCE. These free-standing monuments were originally solid blocks cut from the natural mountain rock, merely decorated with one or more rows of crowsteps/battlements above simple mouldings (on the history and significance of crowsteps, see Rababeh & Al Rabady 2014). They were standing next to or above underground burial chambers that were entered from a vertical shaft next to the djinn block. Some were later re-used, however, and adapted by carving on decorative mouldings and hollowing out the interior to create burial chambers. It relates them to the later and better known “façade tombs” at Petra that are sculpted in the mountain side. The Petra Façade tombs, also known from other Nabataean sites to the south such as Madain Salih, are a later development and can be dated by their stylistic characteristics (Wadeson 2013). Since all of the original underground burials chambers of the block tombs were looted, a precise date for

their creation is difficult to establish, but the earliest archaeological material found in association to them suggests a 2nd to 1st century BCE date (Mouton & Renel 2012, p. 159). The concept of block tombs is also related to that of the tower shaped funerary monuments found in the Syro-Mesopotamian realm, e.g. at Palmyra, Dura Europos and Hatra (Colledge 1977, p. 60-62).

Block tombs are not only known from Petra but were also discovered at another major site along the caravan routes, at Qaryat al-Faw in central Arabia (Fig. 1). A series of underground tombs were centred around or in association with massive (but now heavily weathered) square mud brick monuments. Crowsteps found in the associated rubble indicated that the visual concept would have been similar to the Petra block tombs. The Qaryat al-Faw mud brick monuments are linked to the earliest phase of the site and possibly date as early as the 3rd century BCE (al-Ansari 1981, p. 20, 46-50; Mouton 1997, p. 91, fig. 11-12; Mouton & Renel 2012, p. 159) but a more precise dating is at the moment not possible.

Reconstructing the Tomb Towers.

The excavations at Mleiha sector P revealed new insights into the construction and decoration of the monumental tombs and their relation with the Nabataean tombs at Petra and Qaryat al-Faw. Sector P revealed 7 monumental tombs with a more or less square ground plan, varying in width from 3.20 to 3.70 meters and 5 smaller pit graves dispersed between them (Figs. 4 to 6). Although all these tombs were plundered, fragments of stone vessels, iron weaponry and pottery securely indicated a PIR A date. An amphora handle found next to tomb 1 had a rectangular stamp with a *kerykeion*, the Greek herald's staff, above the fabricant's name *Antimachos* whose production can be dated in the timespan between 188 and 150/147 BCE (Monsieur et al. 2013). A radiocarbon date obtained from a wooden beam that once covered the grave pit of tomb 5 provided a calibrated date of 384-233 BCE. Taking into consideration that it dates the wood and not its date of use in the tomb construction, it does confirm an early date for the sector P graveyard (Kutterer et al. 2014).

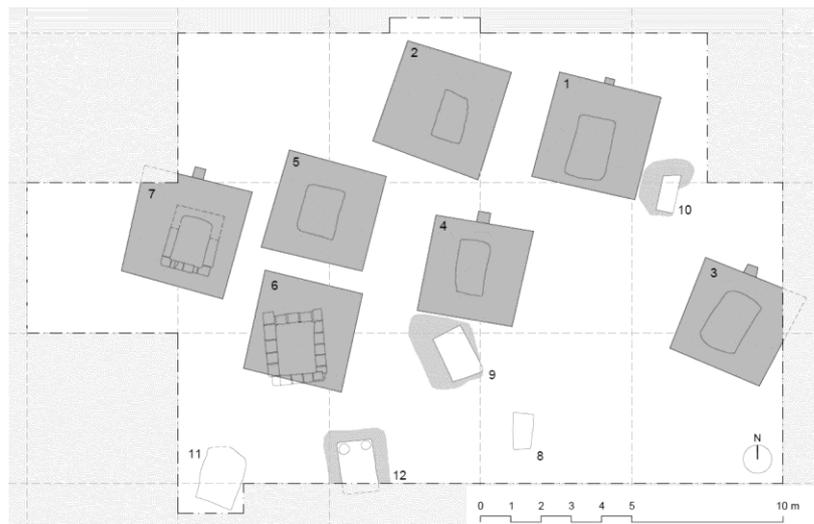


Fig. 5. Sector P : plan (drawing A. Timmerman) and views of the excavations. Note the debris of fallen gypsum bricks around tomb nr. 1 on the lower photographs.

Tombs 1 and 2 at sector P were exceptional as they stood amidst a mass of fallen gypsum bricks and crowsteps/battlements (Figs. 5-6). The other tombs may also have had crowsteps, but if so, they were probably made in traditional mud brick which would not be preserved. The use of mud brick battlements has a long tradition in Arabian architecture and can still be seen in many variations on traditional buildings (Fig. 7). The gypsum bricks may have been used because they were more weather resistant, necessitating less upkeep or repair of the funerary monuments. The state of preservation of the gypsum bricks was sometimes exceptional. Some still had crisp edges and even the imprint of the reed matting on which they were placed to dry out during the production process could often still be seen (see Fig.

6). Unfortunately, many others were broken or heavily weathered and completely crumbled when touched. The large number of fragmentary or decayed blocks makes the reconstruction of their original placement a speculative undertaking. However, the discovery of a collapsed part of the decoration of tomb 1 provided a breakthrough. It made it possible to reconstruct the original position of the ridges and battlements (Fig. 6). The tomb had a single row of crowsteps above three layers of gypsum stones, the middle one with a protruding moulding. The distance between the tomb and the fallen wall fragment indicated that the monument stood originally *at least* 2.20 meters high, but based on the data from collapsed walls at other tombs at Mleiha (Mouton 2008, p. 38), the height can be expected to have been at least the length of the side, i.e. about 3.50 meters or more.

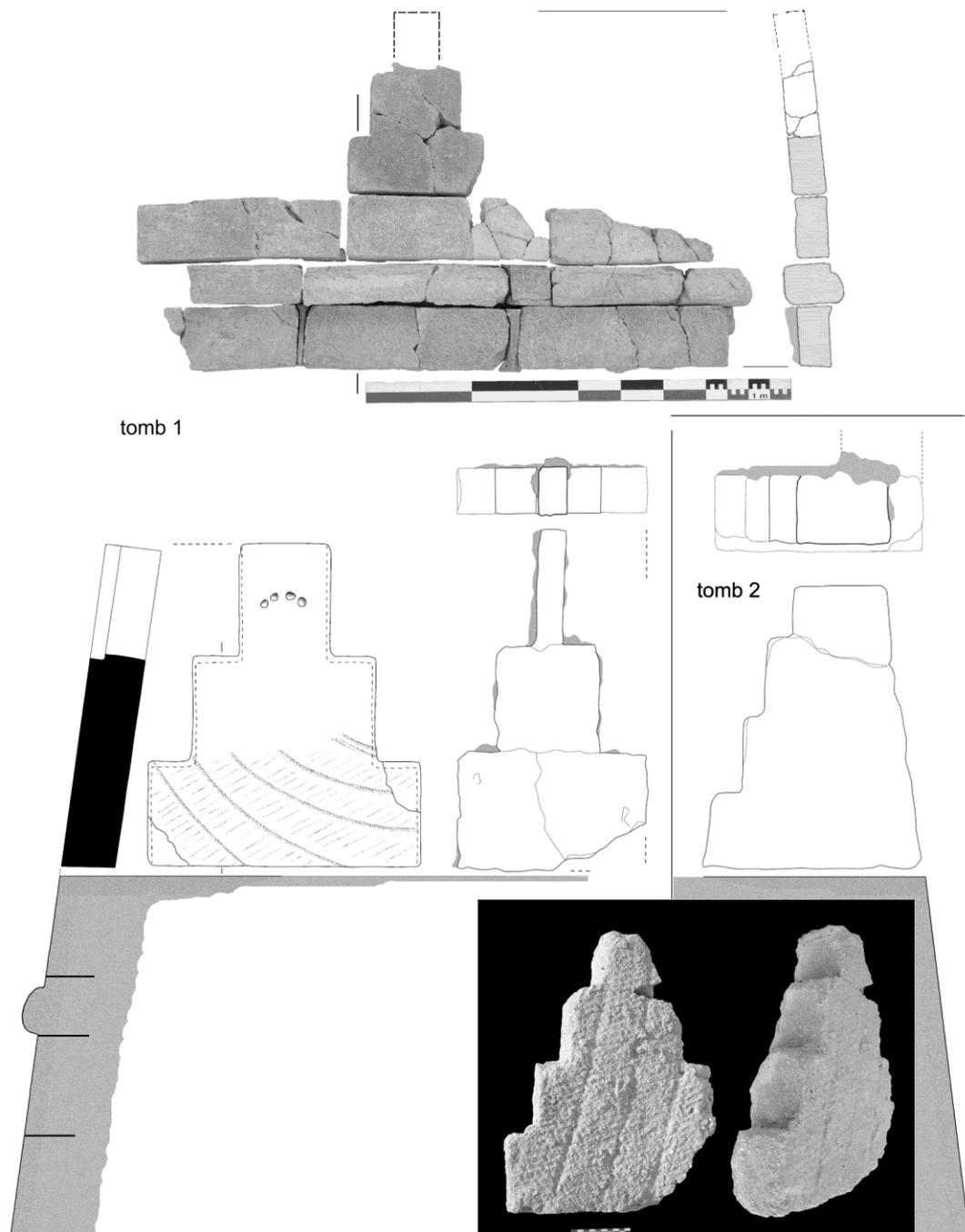


Fig. 6. Fallen gypsum top border of the south side of tomb 1 and gypsum crowsteps with three steps from tombs 1 (left) and 4 steps from tomb 2 (right). Note the projected inclination of the crowsteps.

The discovery and distribution of the gypsum bricks and crowsteps around the four sides of tombs 1 and 2 revealed important new information :

- The first observation was that there was an apparent lack of uniformity in the shape and size of the battlements on the same tomb. Apart from the number of steps that was constant per tomb, 3 on tomb 1 and 4 on tomb 2, the details of the individual crowsteps can differ from one to the other. It shows that they were not produced in one and the same mould. Tomb 1 had e.g. two narrow crowsteps at the south side that are visually very different (fig. 6 centre). It is imaginable that these could be later repairs of the monument, replacing originals that were somehow damaged or lost.
- The gypsum decoration consisting of a horizontal moulding between rows of bricks topped by crowsteps (fig. 6 top) stood on top of the mud brick construction.
- The distribution of the fallen debris around tombs 1 and 2 shows that an identical gypsum decoration ran around the four sides of the monument.
- The way gypsum plaster was smeared against the back of the gypsum bricks of the fallen wall fragment, made it clear that they were freestanding and not placed against a wall. This can be compared to some of the Petra block tombs as they also had freestanding crowsteps on top (Mouton 2010, p. 279-281, fig. 5-6).
- Many of the crowsteps, including the corner ones, were originally tilting slightly backwards. It suggests the square monuments above the tombs narrowed towards the top, i.e. had backwards reclining walls. Reclining surfaces is something that is firmly rooted in the SE-Arabian building traditions. It is, for example, also encountered on 3rd millennium BCE Umm an Nar type tombs at Hili and Mleiha, and the 1st century AD temple at ed Dur (Haerincx 2011 & 2012) to name but a few examples. It was until recently also a common characteristic of (watch)towers and defensive dwellings. Fig. 7 shows an 18th century AD summer residence that illustrates this building tradition (Velde 2005). The tower combined living and storage rooms with defensive elements (rooftop with crenelated wall, vertical firing slots and a hooded firing point). The use of inclined walls is different from the block tombs at Petra where the natural rock did not necessitate this stabilising building technique. The Qaryat al-Faw monuments are heavily weathered and it is not clear whether these may have had reclining sides. They did have crowsteps but the details of these are not published. As it stands, the inclined walls may very well be a SE-Arabian characteristic.

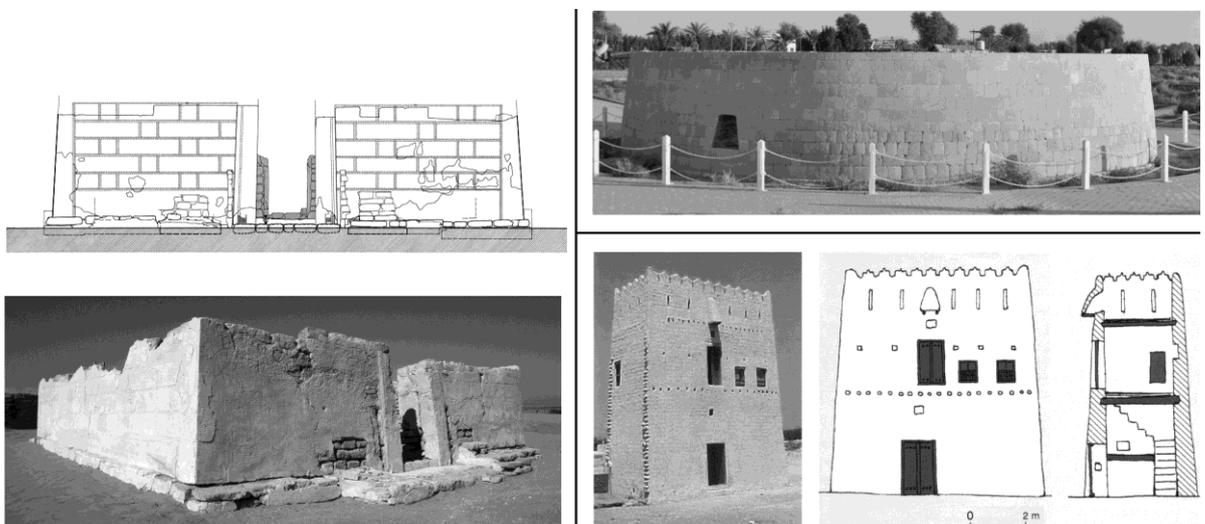


Fig. 7. SE-Arabian monuments with reclining walls: 3rd millennium BCE Umm an Nar type tomb at Mleiha (top right); 1st century AD temple at ed Dur (left; after Haerinck 2011, Pls. 12 and B2); mud brick tower with inclined walls and battlements, 18th century AD summer residence at Falayah, Ras al-Khaimah (Bottom right; after Velde 2005, figs. 1, 13-14).

CONCLUSIONS AND ONGOING RESEARCH

To investigate the distribution patterns of the graveyard it was decided to extend the research on sector P towards the east using an archaeological Ground Penetrating Radar prospection (Verdonck et al 2014). Four parallel 500 MHz GPR antennas, positioned by a Leica TS15 I robotic total station, were slowly towed behind a four-wheel drive car (Fig. 8). In total, an area of around 1.1 ha was mapped in this way. Although heavy rainfall had a negative impact on the results and made it impossible to detect the more modest pit graves that are present between the monumental tomb towers and in between the clusters of towers (visible as low mounds), the square tomb towers stood out clearly on the processed images. The remains of at least 8 monumental tombs, forming a low ridge in the landscape can be seen immediately to the right of sector P on fig. 8. Several more can be seen in a low mound at 100 m to the east of sector P (Fig. 1: sector Z; Fig. 8 top and right). Their excavation started in 2013 and will be continued in the fall of 2015. The insert of fig. 8 demonstrates the detailed accuracy of the GPR results. The patches in the centre of the square monuments mark the areas that were dug by looters. Since the modest pit graves could not be recognised on the GPR images, several test trenches were dug between the low mounds P and Z (Fig. 1). Trench QA revealed a dense pattern of small graves, whereas trench QC, slightly more distant from sector Z, had two more widely interspaced graves. More trenches will be needed to complete this first impression about the distribution and density of this type of graves. The finds from the monumental tombs and pit graves of sectors P, Q and Z, generally reflect the PIR A period. Rhodian amphora stamps from the first half of the 2nd century BCE were found in sector P and Z and in trench QC. Glazed wares imported from Southern Mesopotamia, alabaster vessels of SE-Arabian origin and iron weaponry all fit this time frame, but our data are for the moment still too incomplete to allow a more precise dating.

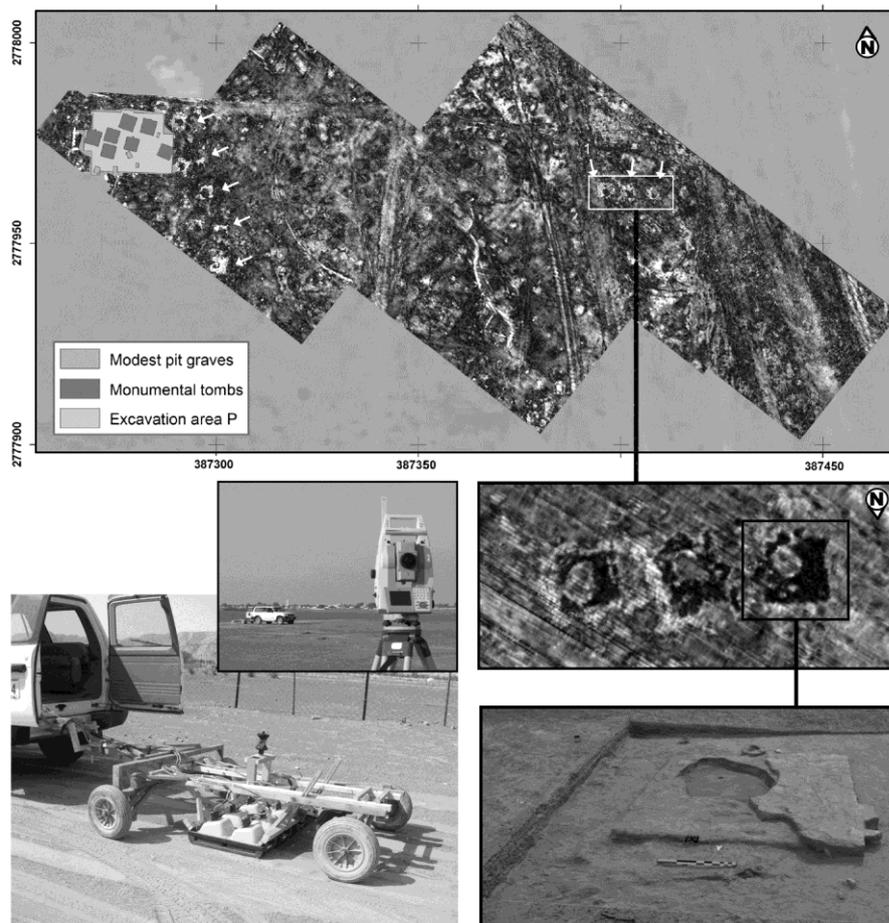


Fig. 8. The GPR survey of the area between low mounds P and Z (compare fig. 1) by towing antennas and using software that communicates with a robotic total station. The resulting plan reveals tomb towers next to sector P (indicated with white arrows); the inserts shows traces of three funerary towers at mound Z, one of which is being excavated. (production of top GPR image by L. Verdonck)

The research at Mleiha has allowed to develop some new ideas about the monumental tombs of the 3rd / early 2nd century BCE and the role of Mleiha in the Arabian caravan trade. The fieldwork will continue in the next years to refine the chronology of the site and the role of SE-Arabia in the Hellenistic/Parthian Near East.

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