

LANDSCAPES OF SURVIVAL



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LANDSCAPES OF SURVIVAL

THE ARCHAEOLOGY AND EPIGRAPHY OF JORDAN'S
NORTH-EASTERN DESERT AND BEYOND

edited by
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East of Azraq: settlement, burial and chronology from the Chalcolithic to the Bronze Age and Iron Age in the Jebel Qurma region, Black Desert, north-east Jordan

Peter M.M.G. Akkermans and Merel L. Brüning

Abstract

Recent survey and excavation in the Jebel Qurma region in the basalt desert (*harrah*) of north-eastern Jordan have revealed substantial evidence for settlement and burial from the Chalcolithic, Bronze Age and Iron Age. The new data demonstrate considerable diversity in site layout as well as clear shifts in habitation patterns and locational preferences over time. Particularly, the sites from the mid-fifth to fourth millennium BC regularly were of an impressive size, with many dozens or even hundreds of stone-built structures for dwelling at a single site. In later periods, the emphasis seems to be increasingly on small, temporary camp sites. In addition, the fieldwork provided detailed insight into the many cairns for burial in the Jebel Qurma area and the Black Desert at large. These tombs were of different types and sizes, and predominantly date to the first millennium BC.

Keywords: Jebel Qurma, Jordan, Black Desert, nomad, Chalcolithic, Bronze Age, Iron Age, Hellenistic, Roman

Jebel Qurma east of Azraq

The Black Desert begins some 130 km east of Amman, and is characterised by rough and rugged, dark lava fields (*harrah* in Arabic; plural *harrat*). The lava expanse in Jordan has an area of around 11,000 km², and is locally known as the Harrat al-Shaba, which itself is part of a much larger basalt plateau (the Harrat al-Sham), stretching from southern Syria through Jordan and into northern Saudi Arabia (cf. Edgell 2006). On the fringes of the volcanic belt is the Jebel Qurma range, situated east of the small oasis town of Azraq, and close to the Jordanian-Saudi border (Fig. 1). This highly arid area (with less than 50 mm of average annual precipitation) comprises basaltic high grounds and table mounds, alternating with stretches of limestone hillocks, gravel plains, and mud flats. A myriad of narrow, shallow wadis carve through the varied desert landscape, and they lead into broad mud flats or into two much larger wadi systems on either side of the Jebel Qurma range: Wadi Rajil in the west and Wadi al-Qattafi in the east (Figs. 2-3). These wadis serve as long, natural corridors through the basalt barrier, and are connected to the flat, shallow depression of the Wadi Sirhan further to the south-west, a major caravan track and communication route between



Figure 1. Map of Jordan showing the location of the Jebel Qurma region (red rectangle) and other principal sites mentioned in the text (source: Terra-MODIS image, adapted from Jacques Descloitres, MODIS Rapid Response Team, NASA/GSFC).

the Levant and Syria on the one hand and the Arabian Peninsula on the other hand.

Annual programs of survey and excavation in the Jebel Qurma region since 2012 (within the framework of the Jebel Qurma Archaeological Landscape Project; cf. Akkermans and Huigens 2018) have sought to examine local settlement

and burial from a multi-period, *longue-durée* perspective, and investigate how these relate to the diverse landscape and environment. The fieldwork detected many hundreds of archaeological find spots, ranging from inconspicuous lithic scatters to tombs of different shapes and sizes and concentrations of basalt-built dwellings spread over



Figure 2. Wadi Rajil near Jebel Qurma in the rainy season (April 2017). Most of the water is not collected locally but is directed to Jebel Qurma from the wadi's upper reaches in southern Syria (photograph: Jebel Qurma Project Archive).



Figure 3. The harsh landscape of the Jebel Qurma range. Basalt-covered table mounds alternate with sand dunes and extensive gravel plains, which are cut by erosion gullies and wadis (photograph: Jebel Qurma Project Archive).

several hectares. In addition, the fieldwork has identified several thousands of petroglyphs and inscriptions in Safaitic and Arabic (Akkermans *et al.* 2014; Akkermans 2019; Huigens 2015; 2019; Brusgaard 2019).

This article summarises the evidence for settlement and burial in the Jebel Qurma region from the Chalcolithic to the Bronze Age and Iron Age, roughly between 4500 BC to the beginning of the common era. There were substantial socio-economic transformations and transitions in the southern Levant during this long period, from the development of complex societies in the fifth millennium BC and the onset of urbanism in the fourth millennium, to the rise of highly stratified empires in the Iron Age and afterwards. The effects of these long-term developments on the eastern desert cultures are still poorly understood. There is good evidence for significant population aggregations in the basalt expanse in the Chalcolithic and Early Bronze Age, coupled with the creation of fortifications, extensive pastoralist efforts, and the large-scale, specialist production of cortical flint blanks for tool manufacture. These finds have fuelled hypotheses about the *badia* as an economic centre of considerable significance in these early periods (e.g. Philip 2008; Müller-Neuhof 2014). Later periods indicated reduced settlement and a more restrained, localised economy, which served the needs of small and highly mobile groups of herders and hunters. Burial evidence equally suggests that, despite many external ties, the desert communities in the Iron Age displayed a deeply entrenched local character.

Late Chalcolithic and Early Bronze Age I settlement

Jawa is the archetypical Early Bronze Age I (EBA I) site in Jordan's north-eastern *harrah*, dated to the mid/late fourth millennium BC on the basis of pottery finds and recent ¹⁴C evidence (Helms 1991; Müller-Neuhof *et al.* 2015). Located on the western fringes of the basalt plateau, close to the Jordanian-Syrian border, the 10-ha site has massive retaining walls for defence, extensive areas with roughly circular domestic architecture, as well as complex hydrological installations (Helms 1981; Betts 1991). Jawa has long been considered as a conundrum, because of its remote and isolated location, situated far from other, concomitant sites. In the southern foothills of Jebel al-Druze, Rukais was the only other broadly contemporary settlement with round EBA I architecture (Betts *et al.* 1996). However, Bernd Müller-Neuhof's recent research in the Jawa hinterland revealed exciting proof for other fortified sites of this period, such as at Khirbet Abu al-Husayn, Tulul al-Ghusayn and Khirbet al-Ja'bariya (Müller-Neuhof 2017; Müller-Neuhof and Abu-Azizeh 2018a; 2018b; see also Müller-Neuhof, this volume). In addition to these hillfort sites with their probably more permanent habitation, there were many temporary camp sites, often with groups

of enclosures (Müller-Neuhof *et al.* 2013, 127-128). There is also evidence for garden terraces, irrigation agriculture, herding, and the large-scale exploitation of flint mines (e.g. Müller-Neuhof 2013a; 2013b; 2014; Meister *et al.* 2017; 2018). In short, these finds have shown the basalt expanse to be anything but the remote and deserted backwater it is often interpreted to be.

Survey and excavation in the Jebel Qurma region also have identified many sites which we believe to date to the Late Chalcolithic to Early Bronze Age (LC/EBA) periods, primarily on the basis of their lithic assemblages. LC/EBA chronologies in the basalt wasteland still are very preliminary in nature. Both lithic and pottery typologies serve as dating tools, although these have their inherent flaws, particularly in regards to sites known only from their surface materials. A relatively common formal tool type in local lithic assemblages are the tabular scrapers: roughly oval or fan-shaped, unifacial tools, about 5 to 15 cm in size, made on cortical flakes from large flint nodules (cf. Rosen 1997, 71ff.) (Figs. 4-5). These products probably were imported into the Jebel Qurma region, brought from the mining areas in the Jafr basin in the south-west or from the Ruwayshid area in the north-east (e.g. Quintero *et al.* 2002; Müller-Neuhof 2013a). However, the scale of the trade must have been limited, as the number of cortical artefacts was restricted to a few pieces from all of the sites in the Jebel Qurma area; the remainder of the lithic assemblages mainly consisted of *ad hoc* tools on flakes.

Although excavations at, for example, Dhuweila and Wisad Pools have suggested that tabular scrapers and other cortical elements first appeared in the Late Neolithic (Betts 1998, 105, 119; Rollefson *et al.* 2013, 16; see also Henry 1995, 372), they are usually considered to be characteristic of the LC to EBA I-III periods, c. 4500-2500 BC (see e.g. Rosen 1997; Braun 2011; Barket and Bell 2011; Müller-Neuhof 2013a; 2014). Although their chronology needs further detailing through excavation, the occurrence of cortical tools may serve as a *Leitfossil* for dating the find spots in the Jebel Qurma range between the late fifth and early third millennium BC. Pottery from this period is still absent in the Jebel Qurma area, and the earliest ceramics found until now belong to the very end of the third millennium. A caveat is required here, in terms of the very long time frame involved (some 2000 years): we cannot simply assume continual use, let alone contemporaneity, of all recorded sites. Some find spots may fit early in the sequence and others may date later in the period. While the Jebel Qurma area overall has a significant number of recorded LC/EBA sites, their distribution (and hence the size of the population) at any given time was probably much more limited.

Until now, the fieldwork in the Jebel Qurma area has yielded 26 LC/EBA dwelling sites with tabular scrapers and related cortical tools (Fig. 6). The sites predominantly occur

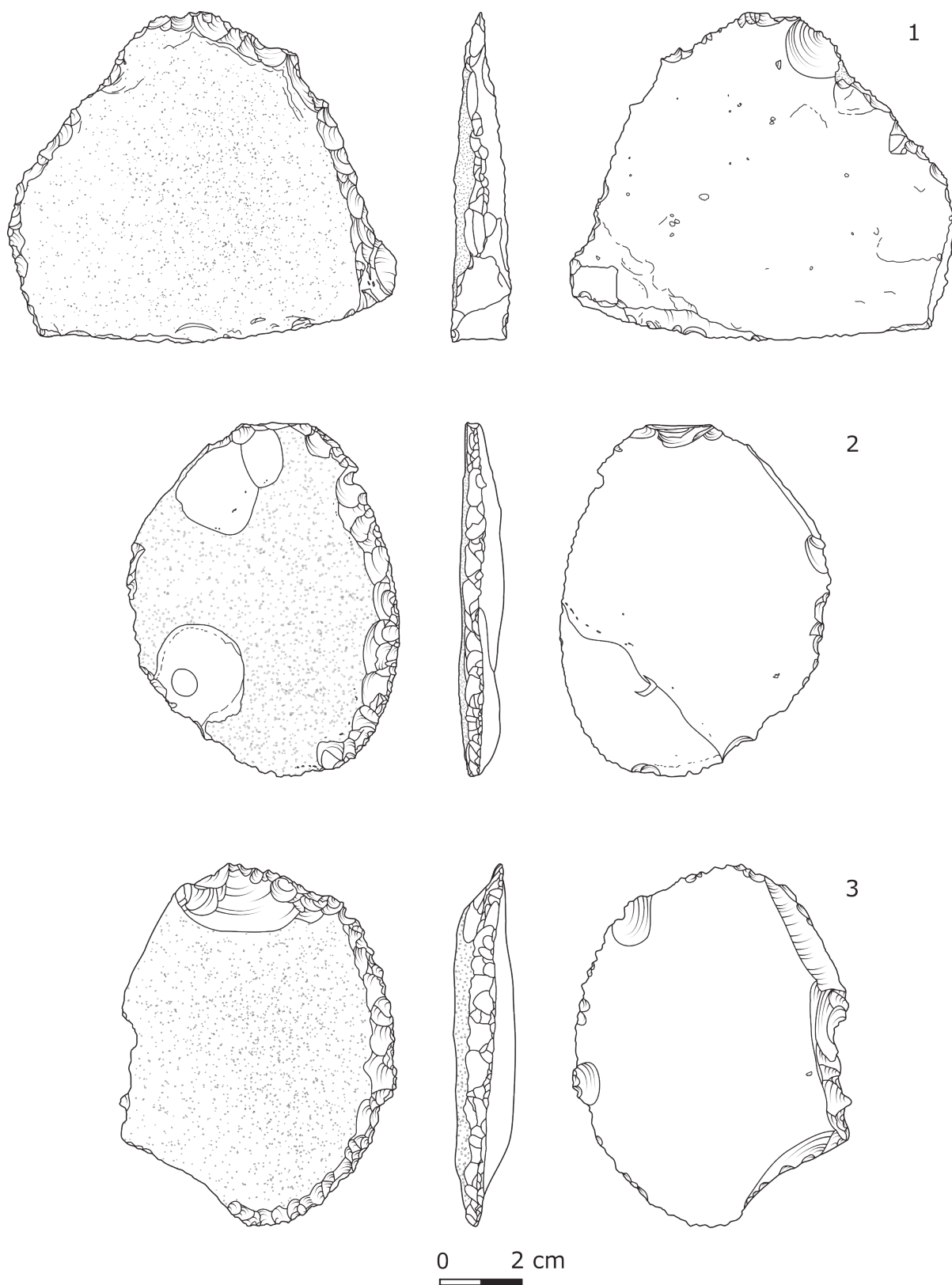


Figure 4. LC/EBA cortical scrapers from sites in the Jebel Qurma region. No. 1: from a double cell building at QUR-619. No. 2: from a wheel at QUR-144. No. 3: from a wheel at QUR-124 (drawing by Keshia Akkermans, Jebel Qurma Project Archive).

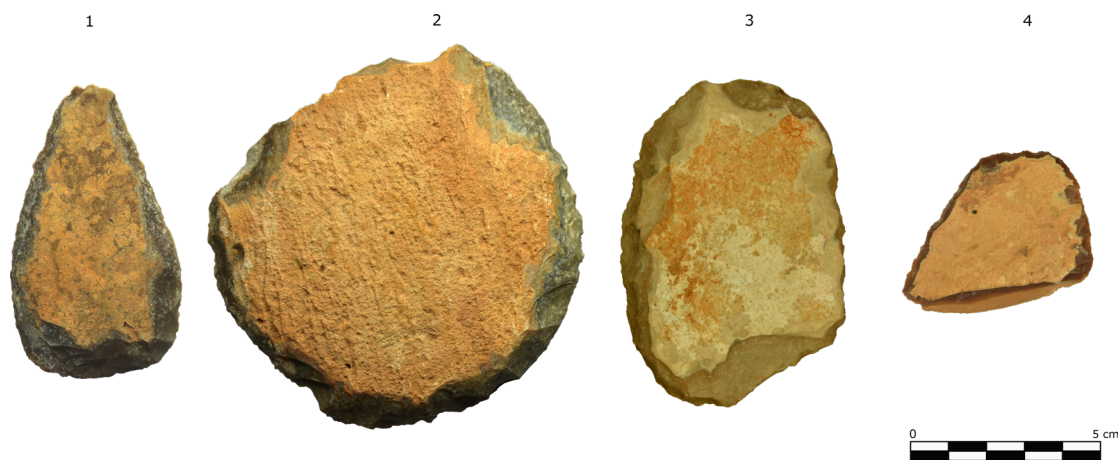


Figure 5. LC/EBA cortical tools from sites in the Jebel Qurma region. Nos. 1-3: from the large site of QUR-6. Nos. 1 and 2 were found together in an open area at the site. No. 4: from a wheel at QUR-147 (photographs: Jebel Qurma Project Archive).

on the lower slopes and spurs of the basalt prominences on the edges of the *harrah*, sheltered from the prevailing cold winds in winter and spring by topographic relief. Usually, they were located within close proximity (a few hundred metres at most) to wadis and mud flats that provided water in the wet seasons. In some cases, the sites are found deeper inside the basalt expanse or high on the plateau, where they may appear in association with burials. Find spots also exist in the gravel plains beyond the basalt terrain, often in sheltered locales at the foot of low limestone hillocks.

Some of the find spots were very small and short-lived open-air places with no visible traces except lithic scatters, while others were renewals of pre-existing installations of a much earlier, Neolithic, date. For example, the typical cortical tools repeatedly were found in extensive grouped enclosures that also had substantial amounts of burins of Late Neolithic type, c. 6400-6000 BC. A presently unresolved matter with regard to chronology is the regular occurrence of cortical tools in so-called 'wheels': roughly circular arrangements of enclosures, often surrounded by a string of round hut structures (cf. Akkermans *et al.* 2014, 197-200; see also Smith, this volume). The exact dating of these wheels is still uncertain. OSL analysis from two wheels in Wisad Pools suggested that one of them dates to the Late Neolithic period, c. 7500-4900 BC, and the other to the LC-EBA I transition, c. 4700-3300 BC (Rollefson *et al.* 2016). More recently, charcoal from two fireplaces uncovered in a wheel (QUR-147) in the Jebel Qurma region produced two ^{14}C samples; they dated to 5310-5080 cal BC and 4720-4560 cal BC, respectively. The dates appear to demonstrate that the wheel at QUR-147 was used for a considerable time period, although probably on an intermittent basis. We consider a date for the wheels in the seventh, and certainly the eighth, millennium

highly unlikely, given the concurrent site structures and established lithic sequences. We believe it is much more likely that the wheels date from the late sixth to the early fourth millennium BC. In this respect, the cortical tools found in the wheels may date relatively early in the local sequence.¹ An alternative, which cannot be ruled out, is to consider the tabular scrapers as evidence for the later re-use of the wheels.

An arrangement perhaps typical of the fourth millennium BC were the groups of small, free-standing, single or double cell *ghura* huts,² usually found in association with enclosures of different sizes (Rowan *et al.* 2015). While some of these places had a handful of buildings distributed over a few hundred square metres, others consisted of many dozens or even hundreds of structures over several hectares. The sites themselves tend to cluster in several places in the basalt expanse, although there were single, isolated occurrences as well (Fig. 6). Highly relevant with regard to their dating is the excavated site of Tulul al-Ghusayn in the Jawa hinterland, where great numbers of small *ghura* dwellings, including 126 double cell structures, were situated in and around the crater of a volcano, about nine km north of the Amman-Baghdad road (Müller-Neuhof and Abu-Azizeh 2016; 2018a; see also Müller-Neuhof, this volume). The double cell installations were about 3 to 4.5 m long and 1 to 1.4 m wide, with their walls preserved to a height of about 0.5 m. Charcoal samples from a fireplace in an excavated double cell building (TAG 209) dated to 3640-3525 cal BC and 3760-3640 cal BC, respectively (Müller-Neuhof and

1 Importantly, a cortical scraper lay next to one of the aforementioned fireplaces at QUR-147, dated to 4720-4560 cal BC.

2 The name is derived from the basalt-capped table-mounds, locally referred to as *ghura*; see Rowan *et al.* 2015, 177.

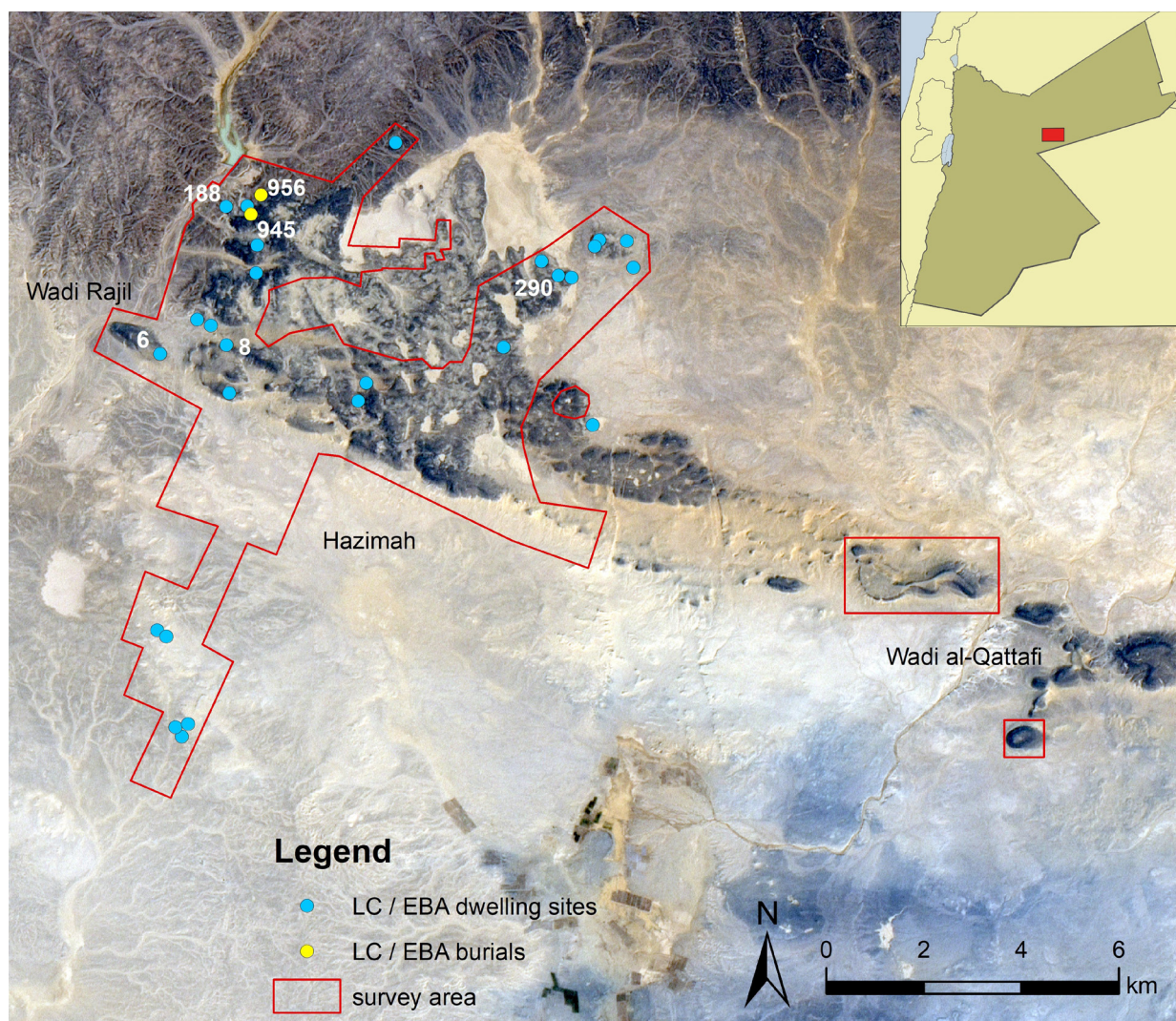


Figure 6. Distribution of LC/EBA sites in the Jebel Qurma region (base map: Landsat 7 – United States Geological Survey; Jebel Qurma Project Archive).

Abu-Azizeh 2016, 5ff.). Another excavated structure at the site (TAG 181) consisted of a single large room (about 4.5 by 1.7 m) with a central fireplace as well as a sizeable, non-local, pottery jar *in situ* nearby. Two AMS dates from the hearth dated to 3640-3350 cal BC (*ibid.*, 4).

Two round buildings at the hillfort of Khirbet al-Ja'bariya, west of Tulul al-Ghusayn, have produced additional ^{14}C evidence with dates ranging between 4450-3715 cal BC (Müller-Neuhof and Abu-Azizeh 2016, 10). Importantly, the double cell *ghura* huts appear to be absent at the site. Excavation also took place at Maitland's Mesa in Wadi al-Qattafi, north-east of Jebel Qurma. The site had approximately 200 structures across the entire top of the table mound. Soundings focused on two small circular buildings, one a single cell installation and the other a double cell structure with haphazardly piled walls

and small compartments about 2-3 m² in extent (Rowan *et al.* 2015, 179-180). Unfortunately, their shallow deposits produced no dateable artefacts, although a LC/EBA date is assumed on the basis of some cortical scrapers scattered across the wider site (Wasse *et al.* 2012, 17, 23).

In the case of Jebel Qurma, the largest sites with both single and double cell *ghura* huts occur in the surroundings of its eponymous hill, where Wadi Rajil debouches out of the basalt into stretches of gravel plains. Low on the northern slope of Jebel Qurma itself is the 8-ha site of QUR-6 with some 225 structures of different shapes and sizes (Fig. 7).³ The site may even cover a much larger area

3 An earlier paper tentatively dated the site of QUR-6 to the sixth millennium BC (Akkermans *et al.* 2014, 195) but this view now appears to be incorrect.

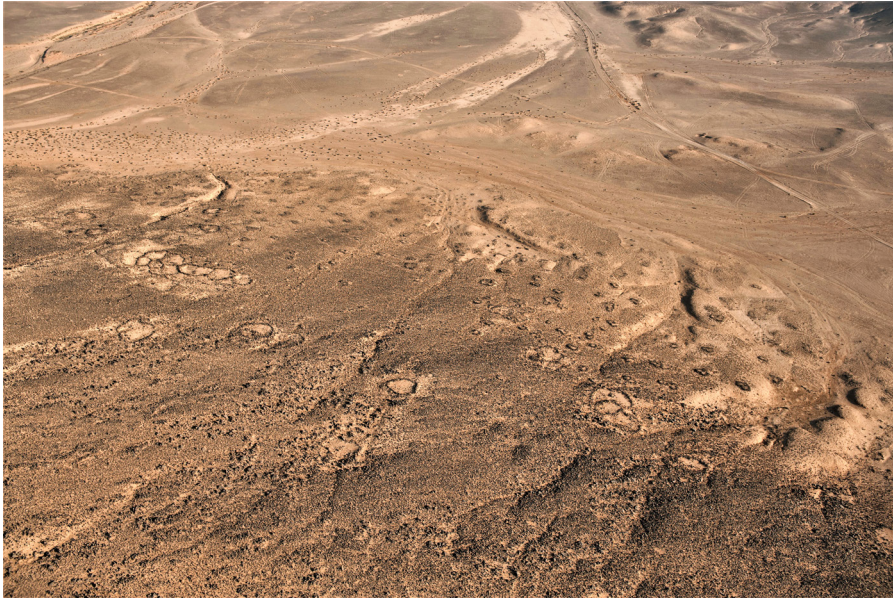


Figure 7. The numerous *ghura* dwellings and enclosures at the site of QUR-6, at the foot of the hill of Jebel Qurma. View to the north. The area of settlement visible here is about 450 m wide (photograph: APAAME_20111027_DLK-0091, David Kennedy).

(up to 12 ha) if we include an outlying area with dozens of cell buildings on the far eastern portion of the hill. Similar spatially separate arrays of dwellings *within* sites are found elsewhere in the Jebel Qurma area and may be due to internal chronological variation or social constraints (Akkermans *et al.* 2014, 192-197).

High on the slope above the settlement at QUR-6 was a string of round or oval, stone-walled enclosures up to 21 m in diameter. Several enclosures also stood in the settlement area lower down, with sometimes one or more double cell structures or other installations attached to them. The enclosures may have been used for keeping livestock or, perhaps, the intermittent storage of run-off water in the rainy season (Akkermans *et al.* 2014, 196; Philip and Bradbury 2010, 141, 145).

The lower-situated area for habitation had roughly 70 circular or horseshoe-shaped, single cell structures as well as a similar amount of double cell buildings; in addition, there were 17 structures with three or four compartments. The single cell dwellings were generally small, measuring c. 2-3 m across. The double cell installations were between 2.8 and 9.5 m long and between 2.4 and 6.5 m wide. The compartments in each building varied from 1 to 4 m in diameter and were divided from each other by narrow partitioning walls. One or more passages c. 0.7 m wide gave access to the buildings. The walls of the features were made of piled basalt boulders, with a maximum preserved height of about 1 m. The roofing of the structures remains unknown; it was probably low and made of perishable materials, such as hides and branches. Narrow pathways (40-50 cm wide) ran through the settlement and connected the various structures in the rocky basalt setting, which is otherwise difficult to move across.

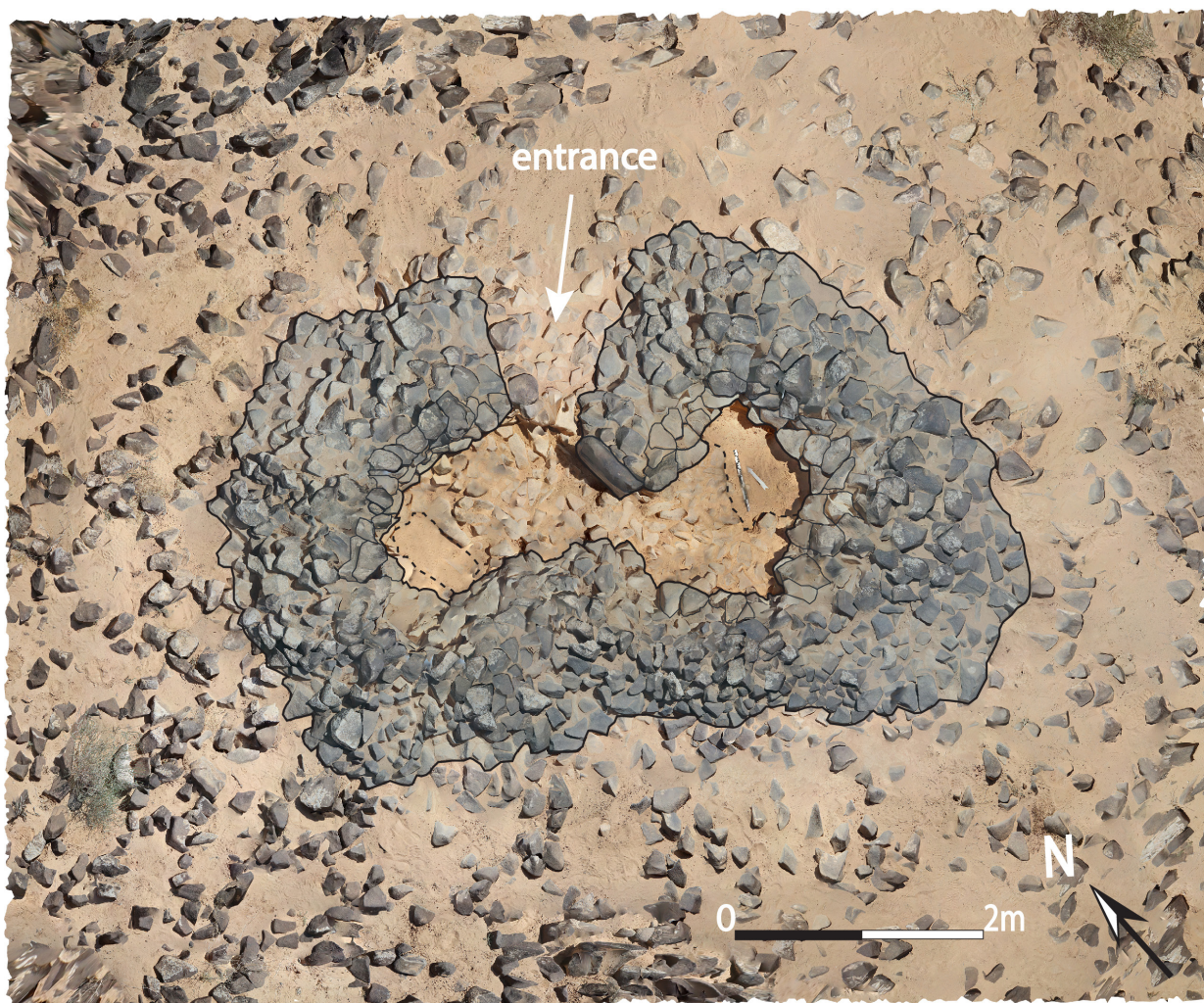
In 2017 we excavated two examples of the double cell buildings at QUR-6, both of which were filled with up to 0.5 m of thick wind-blown deposits and loose basalt rocks (probably wall collapse) (Figs. 8-11). They had an exterior measuring about 7 m in length and 4.3-4.6 m in width. Their walls were remarkably wide (1-1.6 m) and low (0.5-0.7 m), and were made of irregularly piled basalt blocks that gently sloped on the outside; in contrast, the cell interiors had straight and carefully stacked facades.⁴ A single doorway c. 0.4-0.65 m wide gave access to each of the buildings, located either at its long side (structure 126) or at its end (structure 144). A passage in the middle connected the two cells. In structure 126, a large flat upright stone served as wall facade in the opening that connected the compartments. Since it protrudes 20-30 cm above the top of this connecting wall, it may have been placed there to reinforce the passage or, perhaps, to support the roof. When compared to the wall sizes, the interior cells in the buildings were astonishingly small: about 1.1 x 1.6 m and 1.3 x 1.5 (in structure 126) and about 1.6 x 2 m and 2 x 2.8 m (in structure 144). The floor in structure 144 simply consisted of bedrock (cleared of its natural basalt carpet), while structure 126 had an irregular pavement made of small, flat basalt stones. One or more small, shallow hollows (lacking any finds) were sunk into the floors, next to walls. The buildings were practically empty, with the exception of a cortical scraper identified in the main entrance of structure 144 and a worked flint nodule in each of its cells; hence, the exact date of the buildings remains uncertain. Nothing is known about the superstructure of these cell

4 None of the walls showed the “double-faced masonry” said to be characteristic of the sites in the Jawa hinterland; cf. Müller-Neuhof 2017, 125.

Figure 8 (right). The double cell *ghura* structure 126 at QUR-6, prior to excavation (photograph: Jebel Qurma Project Archive).



Figure 9 (below). The double cell *ghura* structure 126 at QUR-6, after excavation (photograph: Jebel Qurma Project Archive).



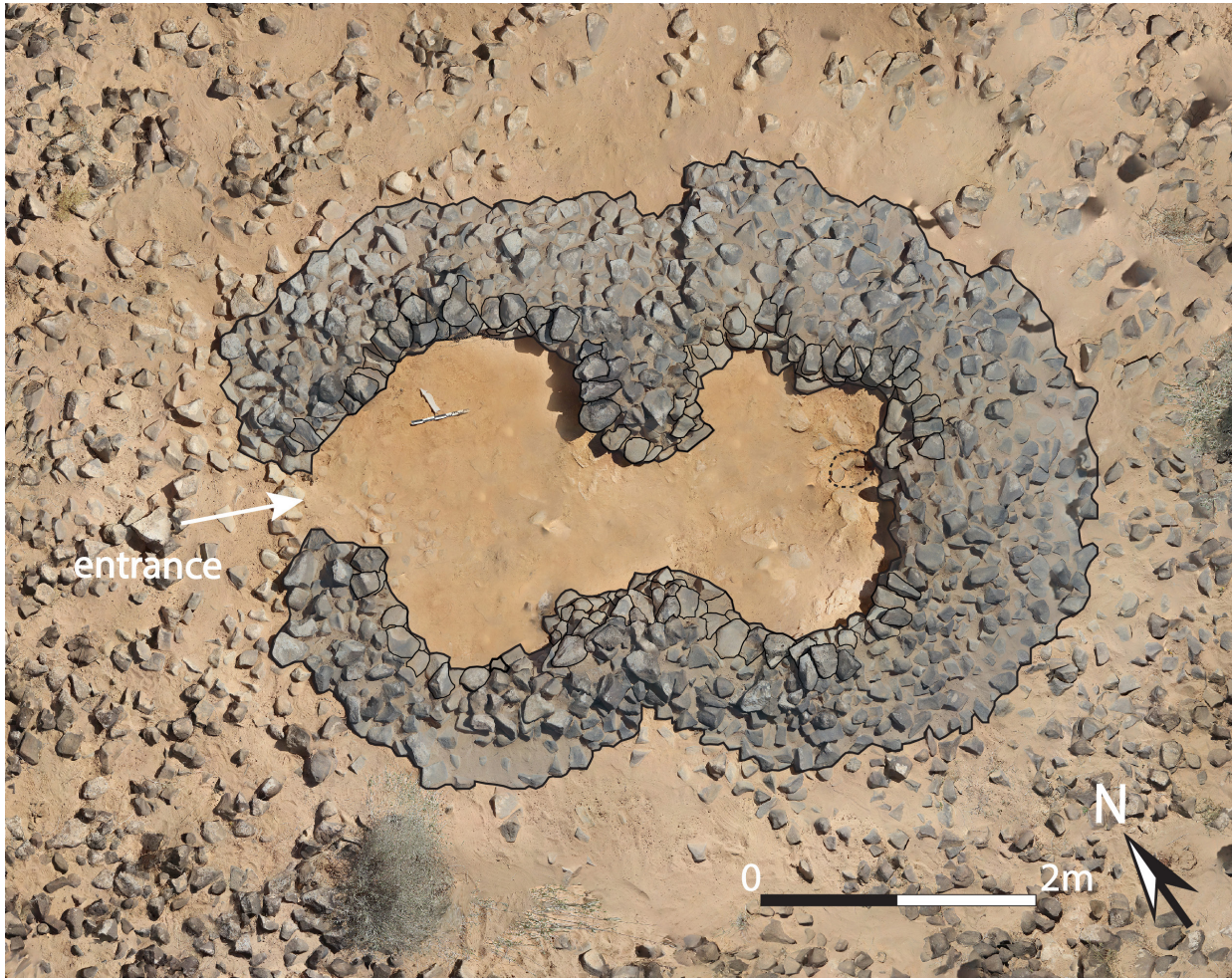


Figure 10. The double cell *ghura* structure 144 at QUR-6, after excavation (photograph: Jebel Qurma Project Archive).

buildings, although the use of perishable materials is likely. For example, Rowan *et al.* (2015, 180) suggest that the low walls were used to hold down the edges of hide roofs. Such – highly portable – roofing materials would suit the interpretation that there was a relatively short-lived, temporary occupation of the buildings, with people perhaps seasonally returning to them. Actually, one of the excavated cell buildings (structure 144) contained evidence for possible re-use, although in only one of its cells: part of the wall of the other cell had collapsed, after which the passage originally connecting both cells seems to have been blocked.

Another major LC/EBA I site (QUR-371) is found at the foot of a basalt-strewn hill at a distance of only 700 m from QUR-6. This site is about 2 ha in areal extent. In its core area, measuring about 160 by 80 m, stood some 50 single and double cell structures, clustered in three distinct groupings around several large enclosures. An outlying area to the north-west had a much more dispersed alignment of seven round dwellings. About

900 m east of QUR-371 is yet another concentration of 37 *ghura* structures, spread over an area of about 100 by 50 m (QUR-8). Most of the buildings were round, although there is also a double cell structure. Significantly, the site is located next to a so-called kite (an extensive installation primarily related to hunting activities; on kites in the Jebel Qurma area, see Akkermans *et al.* 2014, 188-190); it is not excluded that this kite is the main reason for the presence of the *ghura* structures here. If so, the hunting of large game must have been highly important to the local LC/EBA community. Two other (very) small occupations with only two or three circular installations were close by this kite.

Although unambiguous contemporaneity cannot be established yet, we suggest that the agglomeration of sites at the mouth of Wadi Rajil, in close proximity and in clear sight of each other, maintained intimate reciprocal relations. Their specific location – at the interface of the basalt uplands and the vast gravel plains – probably had strategic advantages, such as the availability of



Figure 11. The double cell *ghura* structure 144 at QUR-6, after excavation. The entrance is on the right (photograph: Jebel Qurma Project Archive).

seasonally abundant sources of water and extensive grounds for herding, hunting, as well as (small-scale) agriculture. The attractive setting also facilitated access to, and control of, the major north-south route that ran through Wadi Rajil that helped to connect Arabia and Syria. Given the size of the sites and the large number of structures in them,⁵ many hundreds of people may have lived and worked together in the area.

The importance of Wadi Rajil for local settlement is emphasised by a second sizeable cluster of LC/EBA sites only 2.5 km upstream. These are spread in places along Wadi Rajil and several smaller tributaries in the hinterland. The main site was QUR-188, with dozens of round, single cell structures as well as a few double cell buildings, which were all set in rows along the foot of a basalt promontory. Such a position offered a sweeping view over Wadi Rajil below and Qa' Mejalla in the distance. The site stretches over an area of at least 350 by 60 m (c. 2 ha), although its original extent and layout of settlement remains unknown, due to severe

bulldozing associated with the construction of a dam in Wadi Rajil in the late 1980s.⁶ There were three other occupations situated on high ground in the sheltered wadi valleys deeper inside the basalt terrain, less than 1.5 km to the east of QUR-188: all of these were made in pre-existing enclosures and wheels. Maximum site sizes were between 0.1 and 0.5 ha. One site also had a few LC/EBA I tombs (see below).

A third major group of LC/EBA sites is situated in an entirely different setting of the Jebel Qurma region, on two low, basalt-covered rises that lie opposite each other on the edge of an extensive mud flat (cf. Fig. 6). The southern rise had a 200 by 50 m concentration of several dozen single cell 'huts' on the slope (QUR-290), in addition to a wheel about 60 m across. A similar-sized wheel stood 2 km to the south and contained cortical scrapers. Still further to the south-east were several enclosures measuring about 100 by 60 m, partly surrounded by single cell buildings. The northern rise opposite QUR-290 had three typical wheels c. 60-70 m in diameter with cortical

5 These structures, we suggest, were in use more or less simultaneously, as most of them seem not to overlie each other or to have been modified in later phases.

6 Corona satellite imagery from the 1970s shows several large enclosures and what may be many more *ghura* structures that do not exist anymore today. See: <https://corona.cast.uark.edu/>



Figure 12. LC/EBA enclosure at the site of HAZ-47 in the Hazimah plains. The single-row structure is about 18 m in diameter (photograph: Jebel Qurma Project Archive).

tool assemblages, as well as some enclosures about 45 m across at the foot of the mound.

There are also a few small LC/EBA enclosures found on terraces along an inland wadi that sliced through the steep-sloped southern rim of the basalt plateau. Still further south, survey in selected parts of the Hazimah plains identified several enclosure sites situated in sheltered areas near limestone hillocks with relatively dense LC/EBA lithic assemblages (Fig. 12). LC/EBA material was not confined to the enclosures but also extended to the limestone hilltops and their slopes, characterised by small but distinctive lithic scatters without architecture. At least one of these places served as a knapping site, with many cores and debitage pieces loosely spread over an area of roughly one hectare (cf. Akkermans *et al.* 2014, 200-202; Huigens 2015). The sites clearly show that LC/EBA settlement was not restricted to the basalt expanse proper but also included the persistent exploitation of the adjacent *hamad* plains. This conclusion is in agreement with finds from, for example, the Ruwayshid region in north-eastern Jordan (Betts 2013; Müller-Neuhof 2013a). It also aligns with contemporary developments in steppe and desert settings south of Jebel Qurma, such as in the Jafr basin (Fujii 2013) and, still further to the south, the Thulaythuwat area (Abu-Azizeh 2013).

Fourth millennium burials

While there is an abundance of LC/EBA domestic sites in the Jebel Qurma area, the number of associated burials is still astonishingly low: only two cairns can be securely dated to this period at present (cf. Fig. 6). Although we may expect many more tombs in the region, issues such as frequent re-use and looting have led to often substantial adjustments, which limit their identification. To a very large extent, typological quantification depends on excavation (cf. Akkermans *et al.* 2020). Additionally, it cannot be excluded that the practice of burial in cairns was selective in the period under consideration. Perhaps the majority of the dead were disposed of in ways that are still elusive to us. In a recent paper, Bradbury and Philip (2017, 89) state: “...the EB I, at least in the Southern Levant, is characterised by a distinct peak in burial activity; the dead, as well as the living, in this period would appear to be highly visible, rather than invisible, to us.” They hasten to add, however, that there also was a substantial degree of spatial and temporal variation, with certain areas intensively used for burial, whilst others were restricted to specific individuals or groups (*ibid.*). Perhaps the latter option is valid for the Jebel Qurma area in the LC/EBA I period.



Figure 13. The fourth millennium BC tower tomb at QUR-956 (photograph: Jebel Qurma Project Archive).

One of the two tombs from the Jebel Qurma area is a round tower tomb, about 3.4 m in diameter and 1 m in height, which is free-standing at a prominent high point along Wadi Rajil (QUR-956; Fig. 13). The tomb was built of large, flat basalt slabs, resulting in a relatively straight and even façade. Its original contents were not preserved, due to the re-use of the tower for burial in the second century AD.⁷ Material from underneath the outer wall of the tomb gave an OSL date of 5580 ± 420 BP, or roughly 3980-3140 BC (see Table 2).

The other tomb, about 4.8 m across and 1.1 m high, was partly set on the walls of an earlier built wheel (QUR-945; see Fig. 6). It had a central burial chamber that was oval to rectangular in shape, and had a pavement of flat, unworked stones. Large, flat capstones covered the chamber, with another layer of basalt blocks of different sizes deposited on top. Inside the chamber were the poorly preserved remains of an adult individual *in situ*. Significantly, a flint tabular scraper was laid next to the head of the deceased, apparently as a burial gift. In addition, there were two stone beads, one made of carnelian and the other of a green translucent stone.

⁷ By the time of re-use, the tomb was partially ruined. However, its interior chamber was renovated and the entire tomb was given a new covering of basalt blocks, which entirely hid the original structure from view.

Late third millennium developments

Although the occurrence of cortical scrapers and related tools formally allows for a date in the middle of the third millennium BC (Rosen 1997, 75), evidence for an extended, early third millennium presence at the *harrah* sites in Jordan is conspicuously absent until now (cf. Smith, this volume). The nearest EBA II-III occupations are found at the sites of Khirbet al-Umbashi and Khirbet ed-Dab'a some 100 km further north on the fringes of the basalt zone in Syria (cf. Braemer 1993; Braemer *et al.* 2004). While this may be a reflection of the current, limited state of research in the basalt expanse, it may, alternatively, indicate local abandonments and reorganisations.

Significantly, in addition to its extensive fourth millennium settlement, Jawa had a minor phase of re-use at about 2000 BC, primarily characterised by a single 'citadel' building about 30 by 26 m in extent (Helms 1981; 1989). It is assumed that the planned, symmetrical residence with its many cubicles and upper storey was used for about a century or so, perhaps as an isolated caravanserai (Bourke 2013, 471). It also may have acted as a multi-functional intermediary between desert pastoralists and more sedentary communities in Transjordan and southern Syria (Helms 1989). Jawa's brief resettlement has long been

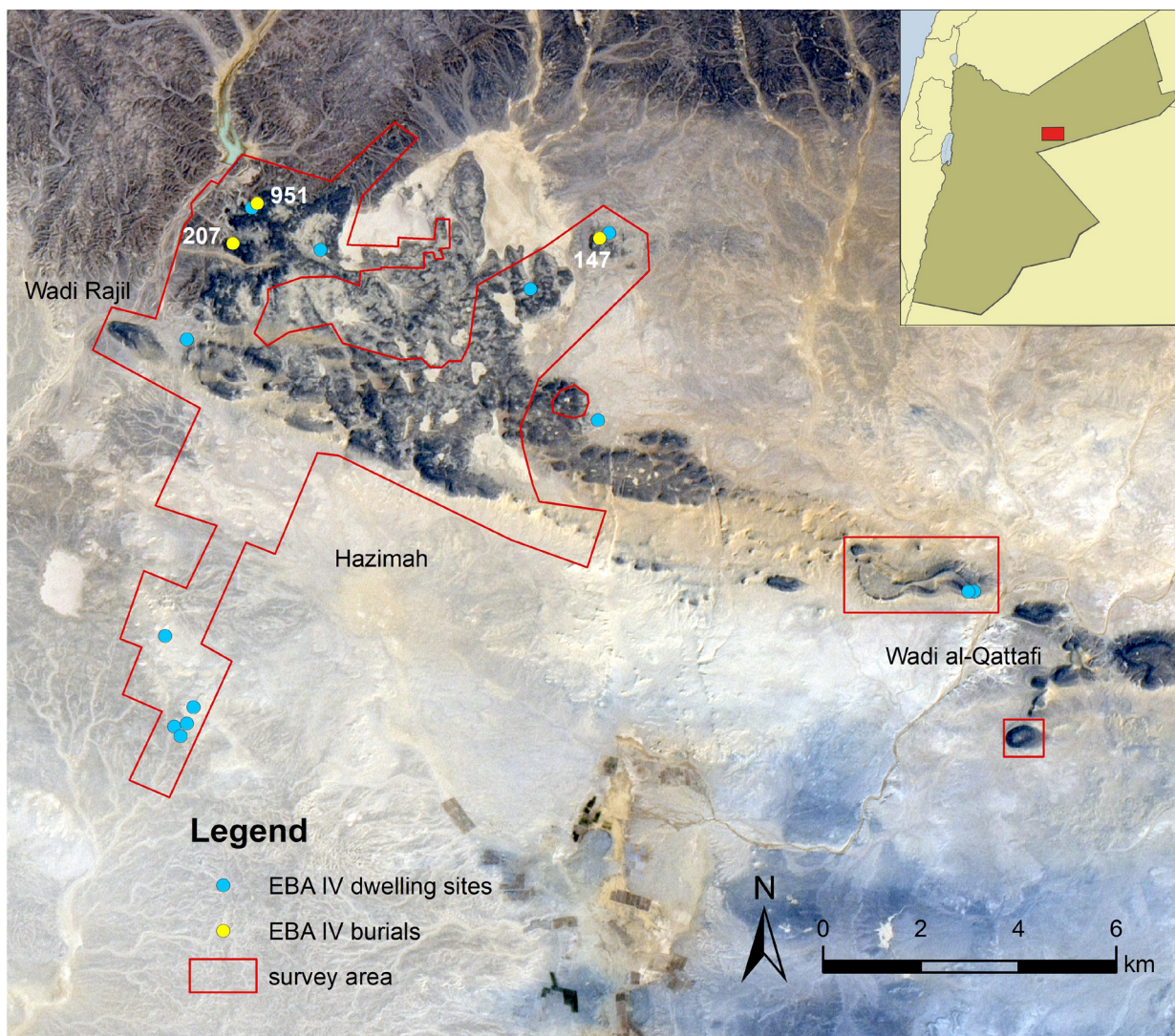


Figure 14. Distribution of EBA IV sites in the Jebel Qurma region (base map: Landsat 7 – United States Geological Survey; Jebel Qurma Project Archive).

deemed to represent an isolated, intermittent phenomenon. Helms (1989, 141) notes that from the EBA IV ‘citadel’ it is possible to see the southward path of Wadi Rajil, which served as a major north-south route through the otherwise difficult-to-cross basalt uplands. While Jawa is at the upper reaches of Wadi Rajil, the Jebel Qurma range is some 70 km downstream where the wadi emerges from the basalt onto the open plains of Hazimah. In this respect, it perhaps comes as no surprise that recent survey and excavation in the Jebel Qurma area have identified a number of EBA IV domestic sites and cemeteries. Jawa, it appears, stood not on its own but was one of probably many sites in the *harrah* at the end of the third millennium BC, connected through relatively easy-to-travel wadis and mud pans.

The sites of this period, dated to c. 2300-2000 BC (EBA IV or Intermediate Bronze Age; cf. Richard 2013; Prag 2013)

based on pottery finds and/or ^{14}C and OSL dates, comprise both dwelling sites and burials. Until now, only 13 residential sites have been identified in the Jebel Qurma region (Fig. 14), although we suspect more of the identified sites to date within this period; the sites cannot be dated properly, due to their undiagnostic ceramics. The dwelling sites varied from groups of enclosures at the foot of the basalt promontories to wheels in relatively secluded high grounds, and simple open clearings in the basalt for camping. Several small enclosures sites were also made in sheltered locales in the Hazimah plain, to the south of the basalt range (Fig. 14). None of the sites were newly founded in the EBA IV; without exception, they were palimpsests, with evidence for repeated, periodic use over many centuries or even millennia. The size of the area of habitation in a given period is often difficult to establish, due to the limited number of artefacts. However,

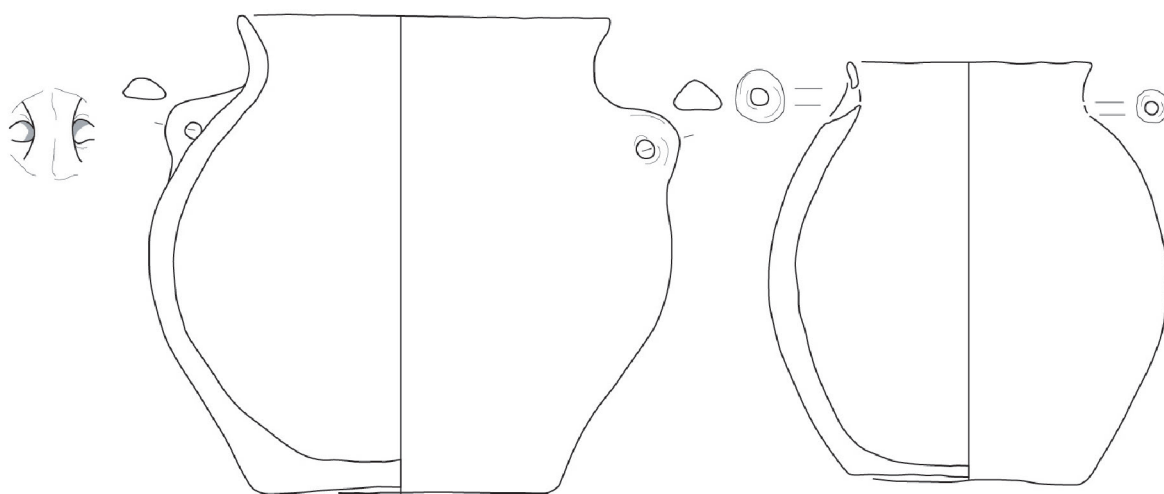


Figure 15. EBA IV *amphoriskoi* from tombs at QUR-951 in the Jebel Qurma region (photograph: Jebel Qurma Project Archive).

most of the identified sites measured only between 40 and 100 m across.

The domestic sites each yielded pottery fragments, although in (very) small quantities. The shapes range from hole-mouth pots and bowls with (sometimes incised) ledge handles to medium-sized jars with everted rims, flat bases and ledge handles low on the body (Figs. 15-16). These types of pottery have parallels at late third to early second millennium sites elsewhere in the southern Levant, such as

Jawa (Helms 1989, 152ff.; 1991, 99-100 and Fig. 154), Tiwal esh-Sharqi (Helms 1983; Tubb *et al.* 1990), Bab edh-Dhra' (Schaub and Rast 1989), Jericho (Kenyon and Holland 1983, 168, fig. 66.5; Nigro *et al.* 2005, 174, figs. 182.16-182.17), Khirbet Iskander (*e.g.* Richard *et al.* 1984, 81ff.) and Tell Rukais (Betts *et al.* 1996).

Pottery also occurred in four tombs high up on the slope of a basalt-covered hillock along Wadi Rajil. They each contained a single small, short-necked jar with a flat

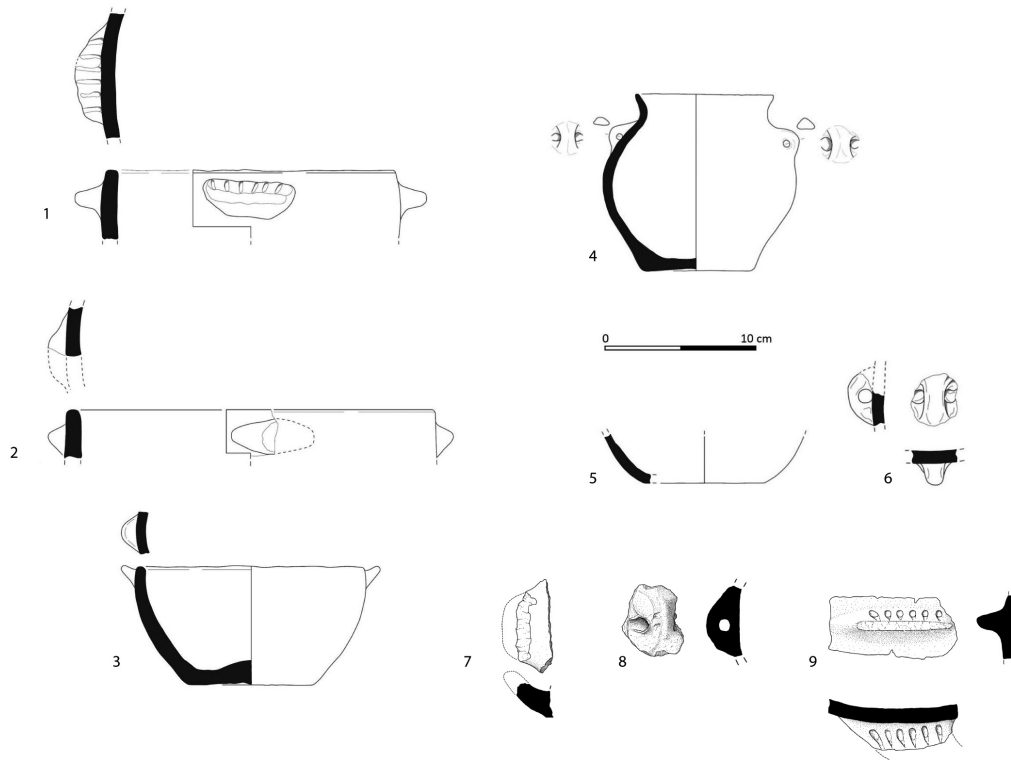


Figure 16. Hand-made, mineral-tempered EBA IV pottery from sites in the Jebel Qurma area. No. 1: pot with incised ledge handle from a wheel at QUR-146. No. 2: pot with ledge handle from an enclosure at QUR-637. No. 3: complete bowl with upward ledge handle from an enclosure at QUR-300. No. 4: *amphoriskos* from a tomb at QUR-951. No. 5: flat base from a tomb at QUR-951. No. 6: loop handle from a wheel at QUR-172. No. 7: ledge handle from an enclosure at HAZ-47 in the Hazimah plain. No. 8: loop handle from a wheel at QUR-147. No. 9: impressed ledge handle from a wheel at QUR-146 (drawings: Jebel Qurma Project Archive).

base and, occasionally, loop handles (Fig. 15). The pots closely resemble the *amphoriskoi* found in the late third millennium cemeteries at Bab edh-Dhra' near the Dead Sea and Tiwal esh-Sharqi in the central Jordan Valley (Helms 1983, 74 and Fig. 18, nos. 4, 12-14; Schaub and Rast 1989, 473ff.; Schaub 1973, Fig. 6; Tubb *et al.* 1990). They also have parallels at EBA IV settlements like Khirbet al-Batravi near Zarqa (Sala 2006a, 103 and Fig. 3.9) and Tell Umm Hamad (e.g. Kennedy 2015, 14 and Fig. 3, nos. 18-25).

The four tombs with ceramics were part of a larger cemetery (QUR-951), consisting of some thirty cairns in total (Akkermans and Brüning 2017; Akkermans *et al.* 2020). The cairn field was high on the slope of a basalt-covered hillock, with a panoramic view over the meandering flood plain of Wadi Rajil below. The area with the cairns was used previously for groupings of stone-walled enclosures from the Late Neolithic period (c. 6400-6100 BC). Excavation of 13 cairns showed that they mainly consisted of small and low tower tombs, up to about 3 m across and up to 0.6 m in (preserved) height. Some of these tombs were round and

others were more square-shaped with rounded corners (Fig. 17). They were all rather quickly built structures with relatively rough and uneven stacked façades. The interior burial chambers were notably small: round chambers were about 1 m in diameter, while oval chambers were about 0.7-1.4 m in length and 0.5-0.8 m in width. Their internal height varied between 0.3-0.6 m. The chamber walls were either corbelled or straight and covered with capstones. Given their size, the tombs cannot have been used for interment in a supine position but must have facilitated contracted burial, with the deceased resting on the side. Unfortunately, the preservation of the skeletal remains in the tombs was extremely meagre, with at most a few small fragments of bones or teeth remaining. Moreover, most of the tombs were looted, further contributing to the poor preservation of the bones (and other finds). In addition to the tower tombs, there were also a few other small cairns in the cemetery, consisting of conical piles of stones, with a small corbelling burial chamber inside. They resemble the so-called 'ring cairns' (see below) but lack the typical

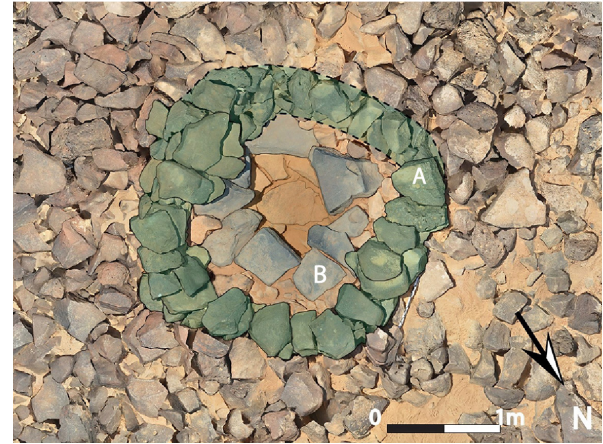


Figure 17. A typical tower tomb in the EBA IV cemetery at QUR-951, with on the left the tower in 3D and on the right its plan. A: the outer wall of the tomb. B: the interior burial chamber. The area between the outer wall and the central chamber was filled with basalt stones (photograph: Jebel Qurma Project Archive).



Figure 18. The large EBA IV ring cairn at QUR-207. The cairn is about 10 m in diameter and about 1.8 m high (photograph: Jebel Qurma Project Archive).

outer ring of large basalt blocks. No finds are associated with these tombs.

Although none of these other tombs contained pottery,⁸ we believe them to be roughly contemporaneous with

⁸ Some tombs had a few beads made of stone and shell, but most of the (excavated) EBA IV cairns yielded no artefacts at all.

each other on the basis of the strong similarities in their type and construction. A cemetery of this size suggests a use by a fairly large population, although the sites for the living remain unknown; perhaps the large enclosures on a terrace below the graveyard served this purpose.

Two other tombs, one at the site of QUR-147 and the other at QUR-207, can be ascribed to the EBA IV period,

Lab. No.	Sample No.	Material	Site	Tomb Type	Date BP	2 σ calibrated date (95.4% reliability)
GrM-12051	SN17-051	Human bone bioapatite	QUR-147	Ring Cairn	3701 $\pm$ 14	2139-2035 BC
GrM-12076	SN17-051	Human bone bioapatite	QUR-147	Ring Cairn	3740 $\pm$ 14	2202-2050 BC
GrM-13351	SN17-051	Human bone bioapatite	QUR-147	Ring Cairn	3593 $\pm$ 18	2018-1891 BC
GrM-13204	SN17-093	Human bone bioapatite	QUR-207	Ring Cairn	3586 $\pm$ 14	2009-1891 BC
GrM-11920	SN17-092	Human bone bioapatite	QUR-207	Ring Cairn	1585 $\pm$ 16	421-537 AD
GrM-12056	SN17-092	Human bone bioapatite	QUR-207	Ring Cairn	1779 $\pm$ 12	218-328 AD
GrM-17740	SN18-002	Charcoal	QUR-80	Ring cairn	2240 $\pm$ 25	388-206 BC
GrA-67063	SN15-202	Human bone collagen	QUR-215	Ring Cairn	2215 $\pm$ 35	380-198 BC
GrA-67032	SN15-096	Human bone collagen	QUR-186	Tower Tomb	1795 $\pm$ 35	132-328 AD
GrA-68304	SN16-217	Human bone collagen	QUR-9	Tower Tomb (re-used)	1545 $\pm$ 30	425-579 AD
GrA-67035	SN15-201	Human bone collagen	QUR-956	Tower Tomb (re-used)	1890 $\pm$ 30	56-217 AD
GrM-12053	SN17-088	Human bone bioapatite	QUR-118	Tower Tomb	1941 $\pm$ 12	23-116 AD
GrM-13207	SN17-088	Human bone bioapatite	QUR-118	Tower Tomb	1670 $\pm$ 13	341-411 AD
GrM-12054	SN17-090	Human bone bioapatite	QUR-118	Tower Tomb	2222 $\pm$ 12	365-207 BC
GrM-13206	SN17-090	Human bone bioapatite	QUR-118	Tower Tomb	2041 $\pm$ 13	95 BC - 4 AD
GrA-68436	SN16-208	Human teeth collagen	QUR-2	Tower Tomb	1970 $\pm$ 40	50 BC - 125 AD
GrA-68302	SN16-204	Human bone collagen	QUR-2	Cist grave	1905 $\pm$ 30	25-211 AD
GrM-13139	SN17-087	Human bone collagen	QUR-148	Cist Grave	1815 $\pm$ 25	128-254 AD
GrM-13134	SN17-025	Human bone collagen	QUR-148	Cist Grave	2050 $\pm$ 25	164 BC - 16 AD
GrM-11918	SN17-087	Human bone bioapatite	QUR-148	Cist Grave	1957 $\pm$ 14	7-77 AD
GrM-11919	SN17-087	Human bone bioapatite	QUR-148	Cist Grave	1996 $\pm$ 14	41 BC - 52 AD
GrM-12052	SN17-087	Human bone bioapatite	QUR-148	Cist Grave	2020 $\pm$ 12	49 BC - 19 AD
GrM-13139	SN17-087	Human bone collagen	QUR-148	Cist Grave	1815 $\pm$ 25	128-254 AD
GrM-13134	SN-17-025	Human bone collagen	QUR-148	Cist grave	2050 $\pm$ 25	164 BC -16 AD
GrA-67037	SN14-152	Human bone collagen	QUR-829	Inhumation	1740 $\pm$ 30	236-386 AD

Table 1. Radiocarbon dates from tombs in the Jebel Qurma area. Calibration based on OxCal 4.3 (dating carried out by the Centre for Isotope Research, Groningen University, The Netherlands).

Lab. No.	Sample No.	Tomb	Tomb Type	Date BP	Date BC / AD
NLC-8216145	SN16-154	QUR-956	Tower Tomb	5580 $\pm$ 420	3985-3095 BC
NLC-8217187	SN17-097	QUR-147	Ring Cairn	3100 $\pm$ 1200	2300 BC - 100 AD
NCL-8216141	SN16-040	QUR-215	Ring cairn	2150 $\pm$ 450	585 BC - 320 AD
NLC-8216147	SN16-234	QUR-2	Cist Grave	2190 $\pm$ 150	325-25 BC
NLC-8216146	SN16-155	QUR-9	Tail	2770 $\pm$ 470	1225-285 BC
NLC-8216144	SN16-153	QUR-970	Tail	2690 $\pm$ 460	1135-215 BC
NLC-8216142	SN16-041	QUR-215	Tail	2500 $\pm$ 460	945-25 BC
NLC-8216143	SN16-075	QUR-32	Tail	2390 $\pm$ 380	755 BC -10 AD
NLC-8218140	OSL18-2	QUR-75	Tail	2200 $\pm$ 600	780 BC - 420 AD
NLC-8218142	OSL18-7	QUR-80	Tail	2300 $\pm$ 600	880 BC - 320 AD
NLC-8218143	OSL18-8	QUR-98	Tail	1400 $\pm$ 300	320 AD - 920 AD

Table 2. Optically Stimulated Luminescence (OSL) dates from burial cairns in the Jebel Qurma area (dating carried out by the Netherlands Centre for Luminescence Dating, Wageningen University).

on the basis of ^{14}C data from the skeletal remains in them. Both were so-called ‘ring cairns’, 8.5–10 m in diameter and up to 1.8 m high. They were conical in shape and characterised by a central burial chamber encircled by an outer ring of large stones (Fig. 18). Each of them contained the poorly preserved remains of a single adult individual in a probably contracted position; importantly, the individual at QUR-207 was associated with a stone wrist-guard (see for a detailed description the contribution by Keshia Akkermans, this volume). Bone material from the cairns gave ^{14}C dates between 2200–1890 cal BC (QUR-147) and 2010–1890 cal BC (QUR-207; see Table 1). An OSL date from underneath the outer ring of the cairn at QUR-147 has very large margins (2300 BC – 100 AD) but is still within the ranges of the ^{14}C dates (Table 2).

The single ring cairn at QUR-147 clearly was a later addition to a (Chalcolithic) wheel which had no other evidence for late third millennium use. However, proof (in the form of a few pottery fragments) for contemporaneous occupation was found at the neighbouring wheel of QUR-146, some 200 m to the north. Perhaps people at the latter site made use of the former wheel for the burial of (some of) their dead.

While the cairn at QUR-147 stood on its own, the ring cairn atop the hill of QUR-207 on Wadi Rajil had three, or possibly four, small tower tombs in its close vicinity, assumedly contemporaneous in date. At the time of construction of these cairns, a series of extensive enclosures dating between the late seventh to fourth millennium stood at the foot of the mound; their additional use for dwelling in the late third millennium BC is likely.

Second millennium BC: absence of pottery

Tell Rukais and other find spots on Wadi al-‘Ajib, on the boundary of the dry steppe some 50 km west of Jawa, produced evidence of substantial, lengthy use as well as fortifications in the Middle Bronze Age, after 2000/1900 BC (Betts *et al.* 1996; Sala 2006b). However, proof for settlement in the second millennium BC is extremely sparse in the desert region further to the east. Some late second millennium tombs (after c. 1150 BC) have been found in the Jebel Qurma heights and at Wisad Pools (see below). However, the associated areas for dwelling have not yet been identified, despite comprehensive survey of both highly visible places with dense artefact scatters and ephemeral sites with low visibility and few finds. It has been suggested that detrimental climatic conditions contributed to a wholesale evacuation of the basalt wasteland (cf. Akkermans *et al.* 2014, 204; Akkermans and Huigens 2018, 507; Müller-Neuhof 2014, 235), but solid environmental data are absent for the region in the period under consideration.

An alternative, and probably more likely, explanation is that the current absence of sites is predominantly a matter

of visibility. Both survey and excavation have demonstrated that the local communities did not use pottery (or any other durable mass artefact, for that matter) from the EBA IV until the late Roman period, making them extremely difficult to detect in the field (Akkermans 2019; see also, *e.g.*, Banning 1996 on site visibility). The absence of ceramics for some 2000 years should not be confused with the lack of people in the basalt desert. Recent excavation of tombs in the Jebel Qurma area have begun to fill the hitherto assumed ‘gap’ more and more, with the discovery of apsidal tower tombs probably dating to about 1150–800 BC (cf. Akkermans *et al.* 2020). While habitation sites have not yet been identified for the second and early first millennium BC, they are known from the late first millennium, after c. 400 BC (see below). Their existence in earlier contexts is, we believe, a matter of increasing investigation in the field.

The absence of pottery in the basalt desert for about two millennia is an intriguing and as of yet unexplained phenomenon. Ceramics were used in great abundance by contemporary (Middle Bronze Age and Iron Age) settled communities in Transjordan as far east as the foothills of Jebel al-Druze, only a few dozen kilometres from the fringes of the basalt expanse. It can hardly be doubted that people in the *harrah* were aware of pottery and its uses, thanks to the good evidence from burials for the import of a variety of exotic products (jewellery, metal; see Akkermans 2019; Akkermans *et al.* 2020). This interregional exchange existed for many centuries, although its scale and intensity remains elusive for the moment. The exclusion of pottery from this trade must have been intentional and meaningful – it was a deliberate, enduring choice to *not* participate in either the production, exchange or use of ceramics. Because of its fragility, pottery is often considered to be inconsistent with nomadic lifeways but this perspective appears to be too simplistic: there were (and still are) many mobile groups that either produced or traded ceramics for their own use (see *e.g.* Cribb 1991; Beck 2009; Gibbs 2012; Grillo 2014; Heitz and Stapfer 2017). That is why a purely functional explanation for the absence of ceramics in the Black Desert over so many generations and centuries is unlikely. In all probability, self-imposed social constraints were in place, which kept the local groups to a very large extent apart from the settled communities of Transjordan and elsewhere. Although the current evidence remains admittedly fragmentary, there is reason to believe that the desert groups of the second and first millennium BC were highly autonomous in their lifeways and deliberately refrained from an overly close affiliation with the urban polities of their time. The often-dismissed dichotomy between the ‘desert-and-the-sown’ may have been a reality to a very large extent in this period (Akkermans 2019).

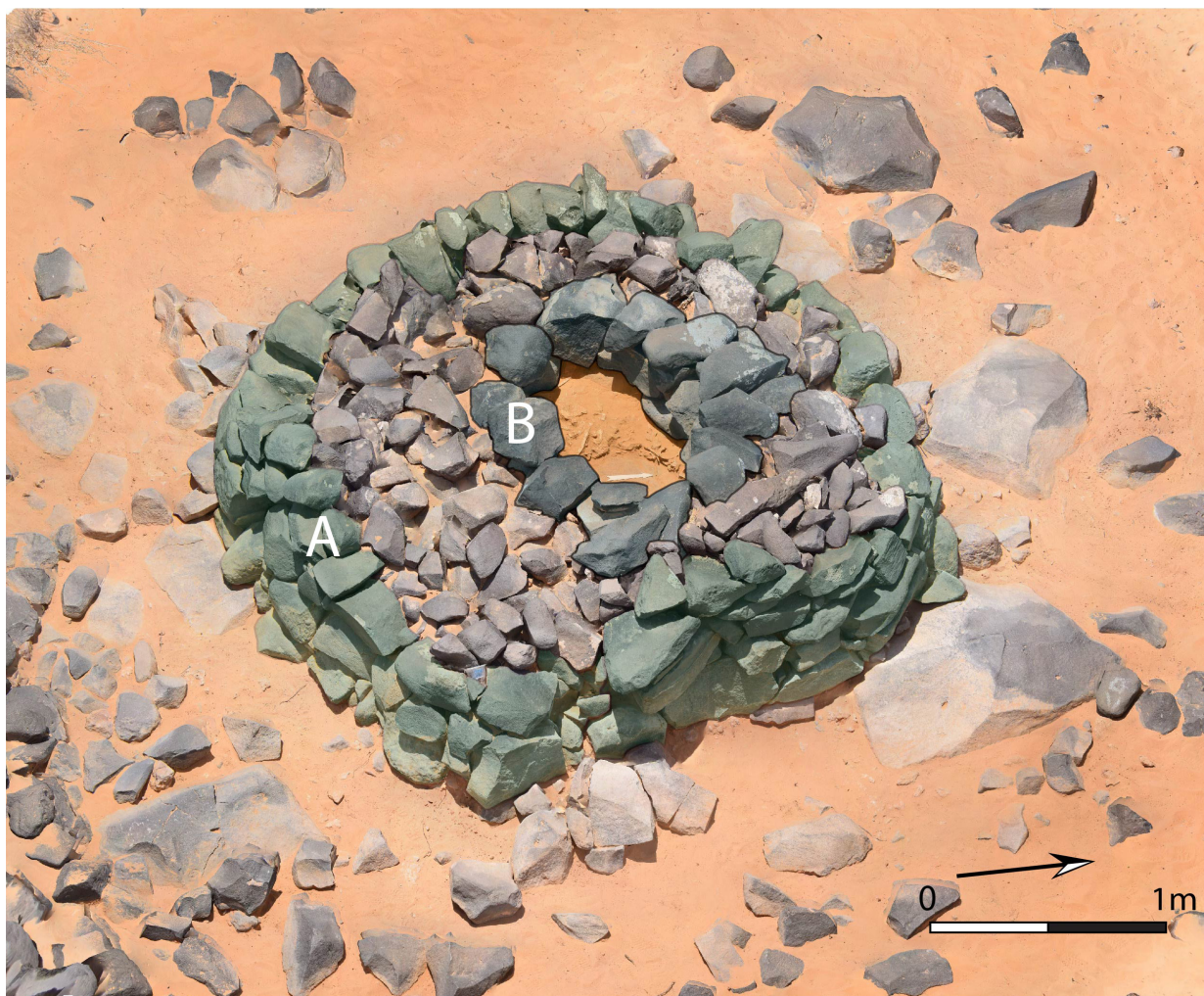


Figure 19. 3D image of the apsidal tower tomb at the site of QUR-1075, with its explicitly straight façade oriented to the east. A: outer wall; B: burial chamber. The cairn measures about 3.8 by 3.5 m, with a preserved height of about 1.2 m (photograph: Jebel Qurma Project Archive).

Iron Age cairns

While first millennium settlements are still few and far between, there is an abundance of contemporary cairns for burial in the Jebel Qurma area, particularly for the period after c. 700/600 BC (Akkermans and Brüning 2017; Akkermans *et al.* 2020). The cairns were on relatively difficult-to-reach high plateaus and the summits of the basalt hills, above and away from the areas of settlement. They mainly were isolated, single installations; concentrations of graves in Iron Age cemeteries are absent until now, although the latter seem to be present near Qaf and Ithra' at the onset of the Wadi Sirhan, close to Saudi-Jordanian border (Adams *et al.* 1977, 36). Significantly, tombs of this period are not restricted to the basalt terrain proper but also are found on top of low hills in the adjacent *hamad*. People, it appears, exploited the entirety of the north-eastern *badia* and buried their dead at favourable

places in a range of different environments. So far, some 45 cairns have been excavated in the Jebel Qurma region, offering new and exciting insights. Very few tombs have been investigated systematically in other parts of the Black Desert (see Harding 1953, 1978; Clark 1981; Richter 2014; Rowan *et al.* 2015; also Kennedy 2012).

Several types of Iron Age cairns can be distinguished, which remained essentially unchanged for hundreds of years. Large, conical ring cairns and round tower tombs occur most frequently, while rectangular cist graves are found only occasionally and only between 300 BC and 200 AD.⁹ A fourth type of cairns, apsidal tower tombs, seem to be an exclusively early feature. These tentatively date to c. 1150-800 BC, on the basis of artefacts in them, including a typical early Iron Age

9 Dated on the basis of both ¹⁴C and OSL samples; see Tables 1 and 2.



Figure 20. The ring cairn at the site of QUR-1078 in the Jebel Qurma area. The typical outer ring of large basalt blocks at the base of the cairn is clearly visible. The cairn is about 4.5 m in diameter and 1.5 m high (photograph: Jebel Qurma Project Archive).

scarab in one tomb and a carnelian axe-shaped pendant in another tomb. These tombs, about 4 m across and up to 1.2 m in height, are roughly hemispherical or squarish in plan with one straight façade which is usually oriented towards the east (Fig. 19). Until now, they occur in groups of two to seven cairns at only two, neighbouring sites in the easternmost part of the Jebel Qurma range. In one instance, the interior burial chamber contained the mixed skeletal remains of three individuals laid next to each other in a single event (a mature adult, flanked on either side by an adolescent and a child, 10-16 years of age). All were placed in a strongly contracted position on their side, roughly oriented east-west, and with the head to the west.

A common type of Iron Age burial was the conical 'ring cairns', with their characteristic outer ring of large basalt blocks that encircled an oval, corbelled burial chamber in the centre (Fig. 20). Basalt blocks filled in the area between the outer ring and the central chamber. These tombs are typically 5-8 m across at their base and about 1-1.5 m high. Occasionally, larger ring cairns do occur, measuring up to 10-12 m in diameter, but these appear to consist of two superimposed cairns (Akkermans *et al.* 2020). Although skeletal preservation is generally poor, it is clear that the

deceased consistently were laid to rest in a flexed position on the side – a characteristic which the ring cairns shared with the other types of tombs.

The ring cairns seem to represent an enduring form of burial that was used locally already in the late third millennium BC, if not before (see above). A momentous innovation in the first millennium BC was the attachment of a chain of small cairns off of the head of the main cairn, which could be up to 135 m in length (Figs. 21-22). These chains consisted of five to fifty round or roughly rectangular cairns: some of these were low, inconspicuous heaps of rocks, while others were prominent features (up to 2 m long, 0.8 m wide, and 1 m high). Selected excavation of cairns of twelve chains at different sites yielded no evidence whatsoever of human remains or artefacts within or underneath them. Hence, their function as actual tombs can be excluded. Several researchers have suggested a commemorative role for these chains of cairns (Kennedy 2011, 3190; Rowan *et al.* 2015, 180), but their precise meaning remains elusive.

The tailed tombs are often assumed to be prehistoric in date (e.g. Parr *et al.* 1978, 40; Rollefson *et al.* 2016, 941; see also Kennedy 2011, 3195) but this view is incorrect.

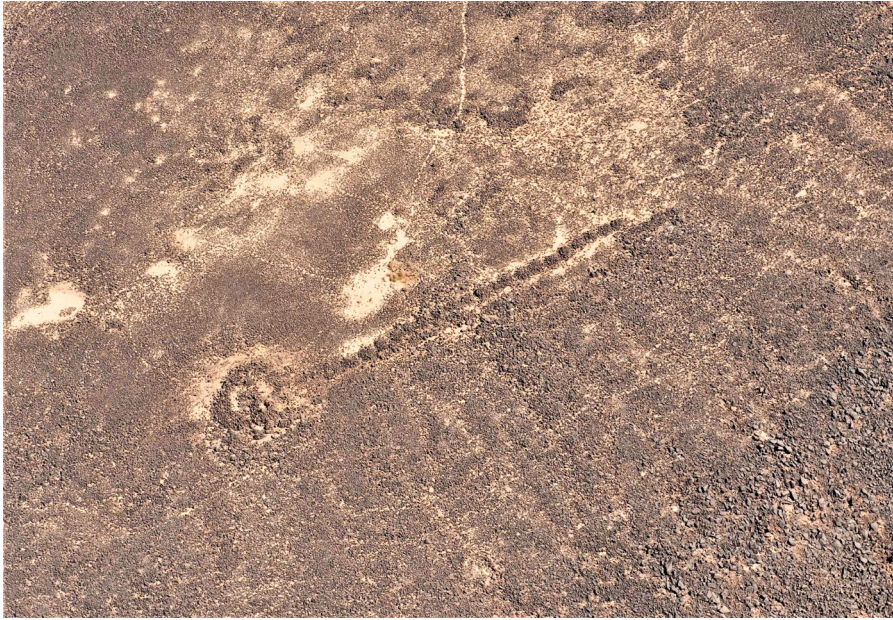


Figure 21. Aerial photograph of the tail of 26 small cairns and its associated tomb at the site of QUR-28 in the Jebel Qurma region. The chain of small cairns is about 67 m long (photograph: APAAME_20081102_DLK-0141, David Kennedy).



Figure 22. Detail of the tail and its individual, rectangular cairns at QUR-28. They measure each about 2 by 1.5 m and are about 0.6 m high (photograph: Jebel Qurma Project Archive).

OSL dates from seven cairn chains, supported by ^{14}C dates and/or artefact assemblages from the associated main tombs, show that these features were made in the first millennium BC and afterwards, probably up to c. 300 AD (see Tables 1-2). Additional evidence for a date of the tailed tombs in the first millennium BC comes from excavated burials in Yemen (De Maigret 2009, 331).

Yet another common type of Iron Age burial cairn was the large, round tower tombs, up to 5 m in diameter and 1.5 m high (Fig. 23). In contrast to the early first millennium apsidal tower tombs, the round tower tombs always occur as *single* installations, situated on prominent, eye-catching high grounds with great visibility from the plains below.

These tombs, we believe, were “powerful and permanent vehicles for commemorating the dead and linked the past and present in a highly visual and public way. Far from being “secretive” or understood by insiders only, these tombs were easily recognised by locals and foreign visitors to the region alike and may have inspired awe and reverence. These burial grounds must have been liminal places full of social memory; the continual re-use and the repeated burial events at these sites over many centuries confirmed their long-lived role as focal points for social and ritual gatherings of the communities in the area.” (Akkermans and Brüning 2017, 139).

Figure 23. Round tower tomb at the site of QUR-1075. The cairn is 3.7 m in diameter and preserved to a height of 1.2 m (photograph: Jebel Qurma Project Archive).



Several round tower tombs had rectangular, east-west oriented cist graves attached to them later, which were up to 2.7 m long, 1.5 m wide, and 1 m high. Originally, these graves were covered with capstones. During later re-use, a layer of basalt rocks replaced the capstones, being laid directly on the remains of one or two individuals in a crouched position. Remarkably, one of the cist graves was accompanied with a small, irregular hollow covered with basalt blocks, containing selective skeletal parts (skulls and long bones) of two individuals. It clearly was a secondary deposit, probably consisting of remains removed from the cist grave in order to facilitate a new burial.

Each type of tomb contained grave goods in various numbers, in the form of either personal jewellery or, occasionally, iron weaponry (arrowheads, javelins; see Keshia Akkermans, this volume). Pottery was entirely absent, but several tombs had fragments of a single, small bronze bowl. An extraordinary find was the discovery of griffon vulture legs in two late first millennium BC tower tombs, which may have served as amulets. Finds from one cist grave included four (weathered) Seleucid bronze coins, one of which could be securely dated to the reign of Antiochus IX Cyzicenus (114-95 BC). Another cairn provided a silver Seleucid *tetradrachme* dated to Antiochus VII Euergetes (138-129 BC; cf. Houghton *et al.* 2008) (Fig. 24).

Interestingly, the Iron Age cairns in the Jebel Qurma area are often found in places that also have substantial numbers of petroglyphs, roughly dated between the third/second century BC and the third/fourth century AD. Although it is tempting to assume a direct, funerary relationship between the cairns and the rock art (e.g. Oxtoby 1968; Winnett 1978; see Macdonald 2015 for a recent evaluation), the proof for such an intimate bond is very meagre. Fieldwork in the Jebel Qurma region has identified almost 10,000 petroglyphs and inscriptions at present (cf. Brusgaard 2019; Della Pippa,



Figure 24. Seleucid coins from tombs in the Jebel Qurma region. No. 1: silver Seleucid *tetradrachme* from the surface of a looted cairn at QUR-238. Obverse shows the diademed head of Antiochus VII Euergetes (138-129 BC). Reverse shows an eagle with closed wings standing left on a ship's bow, with a palm branch under the right wing. ΒΑΣΙΛΕΥΣ ΑΝΤΙΟΧΟΥ. Minted in Tyre and dated 130/129 BC. No. 2: bronze coin from the floor of a cist grave at QUR-2, showing the head of Athena with helmet. Reverse shows a ship's bow and ΒΑΣΙΛΕΥΣ ΑΝΤΙΟΧΟΥ ΦΙΛΟΠΑΤΟΡΟΣ. Dated to Antiochus IX Cyzicenus (114-95 BC). No. 3: bronze coin, from the same cist grave as coin no. 2. Obverse wholly weathered. Reverse shows a palm tree. Date unknown (possibly Demetrius II, 129-125 BC) (photographs: Jebel Qurma Project Archive).



Figure 25. Safaitic inscription on the base of the ring cairn at the site of QUR-1078 (cf. Fig. 20). The text reads: *l hs'yb bn dkr bn qmhz bn {k}n bn {h}---- bn fdg w hwr*, "By Hs'yb son of Dkr son of Qmhz son of {Kn} son of {H}---- son of Fdg and he wept with grief". It appears to give to name of one of the mourners rather than giving the name of the person buried there (photograph: Jebel Qurma Project Archive. Reading: Michael Macdonald, Oxford).

forthcoming), but only two Safaitic inscriptions explicitly refer to a burial (Fig. 25). Excavation indisputably revealed that many tombs were built with basalt blocks that were previously inscribed with Safaitic rock art, and so they must post-date the rock art.

In her study about the petroglyphs from Jebel Qurma, Nathalie Brusgaard (2019, 166ff.) emphasises the strong connection between the carvings and prominent vantage points in the landscape. The latter, she argues, were vital to the desert nomads and their lifeways, from a strategic, economic, social, and ideological viewpoint. Because of the great importance attached to specific locales, they "perpetuated the production of carvings, continuously creating new visual histories while reinforcing old ones. Through the creation and accumulation of narratives, these places probably took on special socio-economic meanings for the desert nomads." (*ibid.*, 179). It is not a coincidence that these places imbued with great social significance also attracted other powerful visual expressions of reverence and memory, namely the burial cairns. The tombs further enhanced the significance of the rock-art sites in the landscape and *vice versa*.

Settlement in the Hellenistic to Roman and Roman/Byzantine periods

Solid evidence for domestic settlement is available from the fourth/third century BC onwards, with several new strands of data increasing overall site visibility. Some sites had pre-Islamic (Safaitic) inscriptions on stone, dating from perhaps as early as the third century BC up to the fourth century AD, which referred to the construction or the ownership of enclosures and other installations at these places. Others had surface finds of Roman or Roman/Byzantine pottery (no Hellenistic ceramics were found). Excavation in an enclosure at QUR-595 uncovered two fireplaces that were radiocarbon-dated to 400-210 cal BC and 95 cal BC – 60 cal AD, respectively (Table 1); this suggests that the enclosure was used more than once.

In a recent doctoral thesis, Harmen Huigens has extensively discussed the evidence for settlement in the Jebel Qurma region from the Hellenistic to the Early Islamic periods, and we refer to his work for details on this topic (Huigens 2019). Huigens has identified around 30 dwelling sites for the period between c. 400/300 BC and 300 AD, ranging from sites with stone-walled enclosures to simple

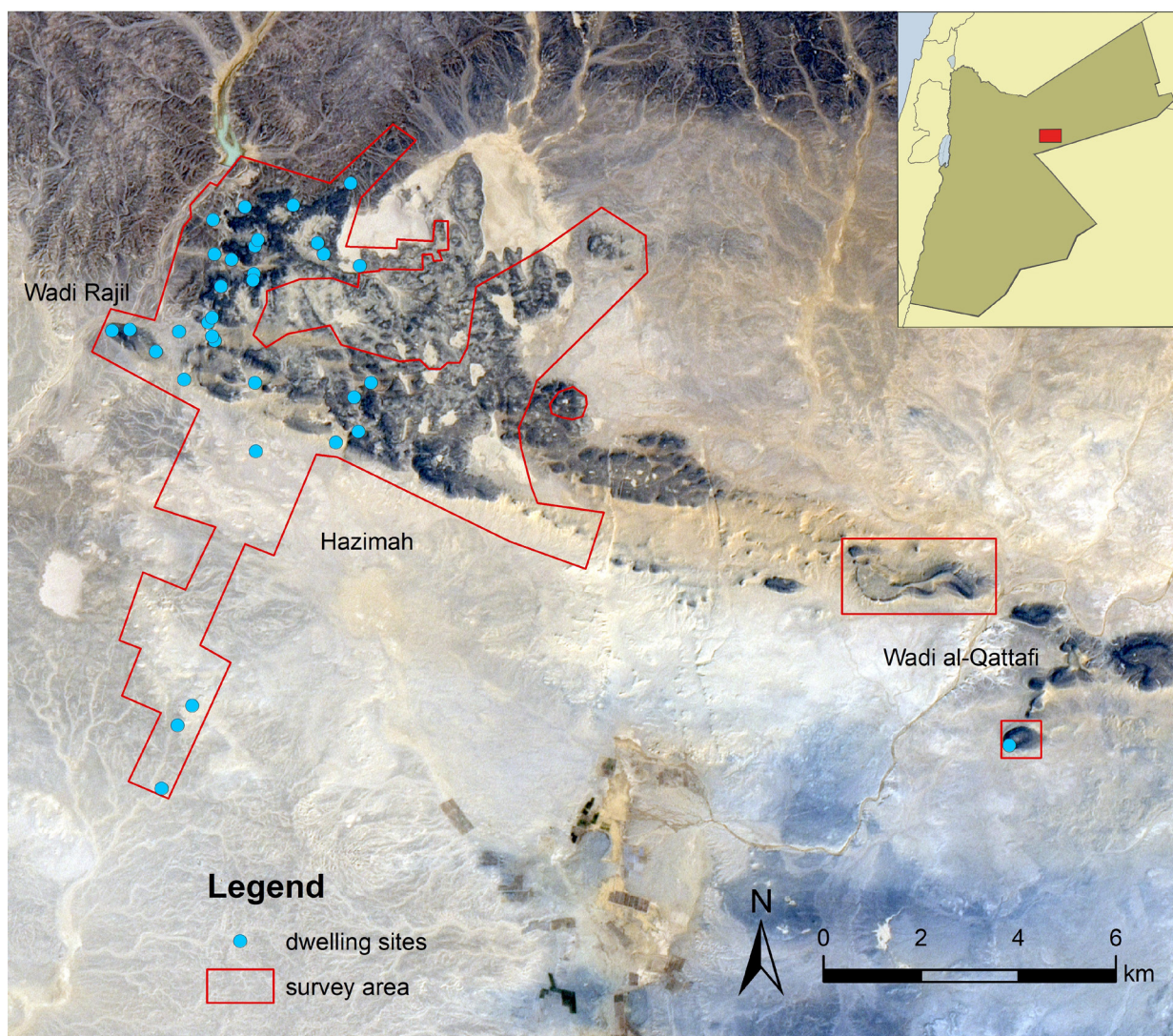


Figure 26. Distribution of Hellenistic to Roman and Roman/Byzantine dwelling sites in the Jebel Qurma region (base map: Landsat 7 – United States Geological Survey; Jebel Qurma Project Archive).

open clearings for camping, or combinations thereof (*ibid.*, 138) (Fig. 26). More recent discoveries also include sites with a single round building about 2-3 m in diameter, provided with a narrow doorway and one or more pre-Islamic inscriptions claiming its ownership (Figs. 27-28). The enclosures also regularly had inscriptions, and consisted either of single structures or of small, irregular groupings several dozen metres across (Fig. 29). The many shallow fireplaces in them suggest domestic and residential activity, in addition to the oft-assumed function of the enclosures for corralling animals. The enclosures may have easily shifted roles according to need and preference, in agreement with their discontinuous, episodic use. Huigens (2019, 140) notes that the enclosures tend to be situated predominantly in rather secluded, inland areas with low visual prominence, perhaps indicating security concerns. Another option is that

they were the preferential winter camps of local nomadic groups, with provisions for shelter and protection from the cold for both humans and animals.

The clearings consisted of open areas between 20-50 m in diameter, emptied of their natural basalt cover, probably for camping. Architectural features are absent. The clearings tend to occur in relatively easily accessible, low-lying areas in valleys and near mud pans, close to seasonal water sources and potential grazing areas. There is good evidence for intermittent, *ad hoc* usage of the clearings, in the form of artefact scatters from many different periods.

The different types of sites were small in size, usually little more than several dozen metres across (a few larger sites were around 1 ha in extent), and dispersed over the basalt terrain and adjacent gravel plains. It appears that people were living in single, small groups, in the order of



Figure 27. Small, round installation (Structure 11) in the middle of heavy basalt blocks, high on the slope of QUR-98. The site offers an amazing outlook over the gravel plains below. The structure was surrounded by three Safaitic inscriptions, one of which claimed ownership (photograph: Jebel Qurma Project Archive).



Figure 28. One of three Safaitic inscriptions next to the entrance to Structure 11 at QUR-98, and claiming its ownership. The text reads: / 'hs'n bn gdy h-zrb, "By 'hs'n son of Gdy is the enclosure" (photograph: Jebel Qurma Project Archive. Reading: Michael Macdonald, Oxford).

a few dozen people at most. Given the shallow sediments and their limited artefact assemblages, many sites were used briefly yet repeatedly (perhaps on a seasonal basis). They may have served the recurrent residential needs of highly mobile and nomadic groups, which exploited the basalt landscape and the adjacent plains in a variety of ways (cf. Huigens 2019).

Significantly, the majority of the domestic sites tend to occur along Wadi Rajil and its nearby hinterland, with only a few sites found until now in the basalt uplands further to the east (cf. Fig. 26). Although Wadi Rajil was a main focus of settlement through the ages, we should probably refrain from any overly rigid interpretation. When compared with Wadi Rajil, the paucity of sites in the eastern half of

the Jebel Qurma range is at least partially explained by the lower intensity and coverage of surveys here, particularly in the low-lying areas. The occurrence of contemporary tombs in the region also implies the presence of (as yet unrecorded) areas for the living.

Conclusions

Earlier, we strongly interpreted settlement development in the Jebel Qurma range in terms of cyclical shifts and rearrangements, in association with factors such as climate change. For example, in a 2014 report we concluded: "...it is difficult to *not* assume substantial hiatuses in the regional archaeological record; the Jebel Qurma area, it seems, was punctuated by episodes of distinct settlement and regional



Figure 29. Group of enclosures, covering an area of about 80 by 40 m at the foot of Jebel Qurma (QUR-595). They were repeatedly used for domestic activities between 400 BC and 60 AD, according to ^{14}C dates (photograph: Jebel Qurma Project Archive).

abandonment.” (Akkermans *et al.* 2014, 203; see also Müller-Neuhof 2013a, 227 for a similar conclusion regarding the Jawa hinterland). To some extent, this perspective needs revision. With increasing research, some hiatuses in the local sequence of occupation have narrowed substantially or even disappeared in their entirety. To give an example: it was long assumed that people were absent in the area in the Iron Age, until the arrival of ‘Safaitic’ groups in second or first century BC, but this viewpoint has been dismissed by recent excavations of burials. They show that most cairns actually date to the first millennium BC, emphasising an intensive use of the basalt region in this period (Akkermans 2019; Akkermans *et al.* 2020). However, from the data in the present paper, it should be clear that we still cannot claim settlement continuity in the Jebel Qurma region (and perhaps the Black Desert at large) for all periods and ages. There is extensive evidence for habitation in the late fifth and fourth millennium but it is virtually absent for the larger part of the third and the entirety of the second millennium BC. These hiatuses may be realities, although they undoubtedly also reflect research intensities and strategies to a considerable extent. To mention but a few restrictions: the scale of fieldwork is

still limited; the problems associated with it are manifold (e.g. often restricted site visibility); and the chronological framework needs substantial refinement which can be achieved only through excavation at relevant sites.

Significantly, the data from Jebel Qurma suggest that the main landscapes of Jordan’s north-eastern ‘panhandle’ – the *harrah* and *hamad* – were inhabited and exploited by people in each and every period under consideration (cf. Huigens 2015, 192). From the fifth to fourth millennium onwards (if not before), the sites in the basalt range had their contemporary counterparts in the gravel plains, in the form of both settlement sites and tombs. From the late first millennium BC onwards, we find Safaitic inscriptions also in the *hamad* of Jebel Qurma. However, these are still very rare, perhaps due to matters of preservation, as the few known examples were made on limestone, which is prone to weathering. With regard to the LC/EBA period, the largest (and probably more permanent) sites with their many cell structures were on the fringes of the basalt expanse, whereas the *hamad* hinterland had evidence of small and dispersed locales of enclosures, lithic scatters, and knapping sites. The basalt terrain, it appears, was the preferential area for settlement in this period, because of natural benefits, such

as good grounds for shelter and the availability of water, but perhaps also because of social considerations, such as ancestral belongings and attachment to the area. It is likely that the LC/EBA groups were engaged in forms of logistical mobility, pursuing specific tasks in the *hamad* while moving back and forth from their basecamps in the *harrah*.

When compared with the fifth/fourth millennium sites, settlement in the later periods seems to change rather dramatically. Settlement in the late third millennium BC (EBA IV) is restricted to the re-use of older installations in selected places, without the cell buildings of the previous period. First millennium sites seem to predominantly consist of the temporary camp sites of nomadic populations. None of these later sites were ever as large as the late prehistoric settlements. The associated investments in architecture were likewise much more restricted in the later periods, with the exception of cairns for burial.

It should be recalled that the number of LC/EBA tombs is still extremely low. With the onset of the EBA IV, cemeteries with several dozen small and low tower tombs made their appearance, emphasising the importance of the community as a whole; local groups brought their dead to selected, shared grounds instilled with ritual and social memory. In the first millennium BC, the focus shifted from the communal to the individual, with the emphasis on relatively isolated, elaborate tombs of different types on prominent high grounds. These single tombs were in keeping with the small-scale and dispersed nature of settlement in this period. Because of their size and location on panoramic vantage points, they also commemorated the dead in a most visual and spectacular way, and conveyed notions of remembrance and permanence to nomadic people that frequently moved around. The ancestors, it appears, were vital to the first millennium BC communities.

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