DEATH AT A REMOTE CROSSROADS

IRON AGE BURIALS IN JEBEL QURMA, BLACK DESERT, JORDAN

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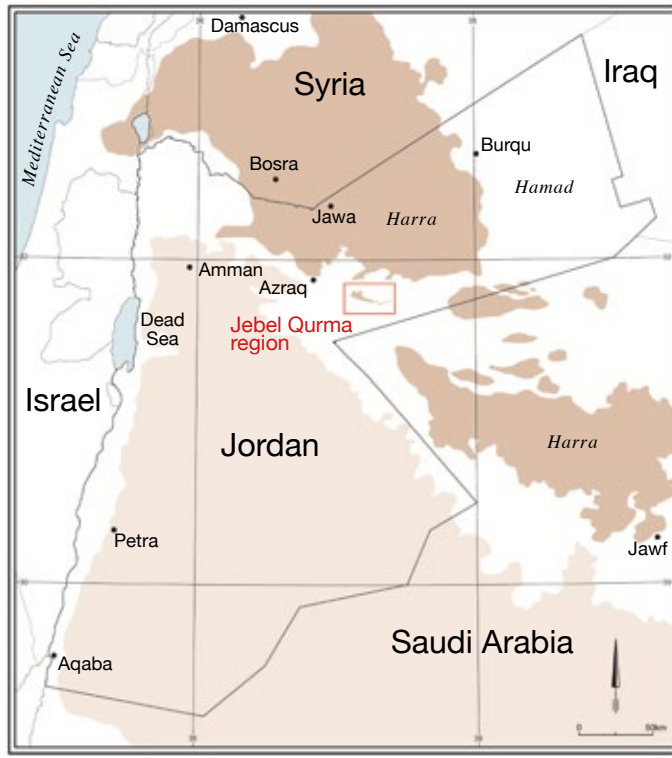

Fig. 1 Map of Jordan with the location (in red) of the Jebel Qurma research area. The Arabic term 'harra' refers to lava fields.

ROUGH, RUGGED, ROCKY: JEBEL QURMA

The Black Desert (or *Harrat ash-Sham*) in north-eastern Jordan is characterized by vast expanses of rough and rugged, dark lava fields with a forbidding appearance, covering many thousands of square kilometres. Jebel Qurma lies on the fringes of this huge volcanic belt, to the east of the small oasis town of Azraq and near the border between Jordan and Saudi Arabia (Fig. 1). The region consists of high plateaus and table mounds with a broken basalt cover, alternating with stretches of limestone hillocks, gravel plains, and mud flats (Figs. 2-3). The rough, rocky, and dissected terrain is cut by numerous drainage channels or wadis, which are dry except after rains. This network of shallow wadis empties into extensive mud flats or converges with two much larger channels on either side of the Jebel Qurma range, i.e., Wadi Rajil to the west and Wadi al-Qattafi to the east. They serve as major natural corridors through the basaltic barrier, linking to the wide but flat depression of Wadi Sirhan to the south-west. Wadi Sirhan has historically served as a major caravan route connecting the Levant and Syria in the north with the Arabian Peninsula to the south.

Fig. 2 Jebel Qurma's harsh desert, with its basalt-covered table mounds and rocky plains.

Fig. 3 The lonesome beauty of Jebel Qurma is captivating: sandy, dark, basalt-covered mounds rise amidst endless stretches of gravel and rock, carved by erosion gullies and winding wadis.

Summers in the Jebel Qurma range are dry and hot, up to 45 °C. Winters can be harsh, with strong, cold winds and average temperatures between 2 and 9 °C, occasionally dropping as low as –10 °C. It may come as no surprise that the region is highly arid, with an annual precipitation of around 50 mm. Most rainfall occurs intermittently as intense storms in winter, leading to substantial surface runoff that feeds into the wadis and mud flats. During periods of sufficient rainfall, shallow but extensive pools can form on these flats, persisting for weeks or months and attracting migratory birds and other wildlife. Permanent natural water sources are absent, with the exception of the wells at Hazim and ʻUmari and, at larger distance, the spring-fed seepages and marshes at Azraq.

Currently, the basaltic wasteland is primarily utilized by small, scattered Bedouin groups during the winter months, as water and grazing resources are scarce at other times. Large portions of the region have become severely barren due to modern

overgrazing by sizable herds of sheep and goats. The availability of trucks for transporting water and, to a lesser extent, animal fodder has enabled herds to remain in areas that were previously out of reach (Lancaster and Lancaster 1999; Roe 2000). The current barren landscape raises questions about past environmental circumstances in the region. Although evidence is sparse, it seems that conditions were not always as arid as they are today. Sediments from the Azraq oasis and the Dead Sea reveal episodic wet and dry phases over the past 3100 years (Woolfenden and Ababneh 2011; Migowski *et al.* 2006). Excavated prehistoric sites in the basalt expanse like Mesa-7, Wisad, and QUR-147 yielded evidence of an arboreal vegetation requiring higher rainfall, including deciduous oak, pistachio, plane, and fig, alongside drought-resistant shrubs (Jones *et al.* 2022). These findings imply rainfall levels far exceeding today's 50 mm annually, with wetter conditions persisting into the third millennium BCE. Bronze Age settlements like Khirbet al-Umbashi and Jawa on the western boundary of the basalt belt indicate forest-steppe vegetation, depending upon at least 350 mm of rainfall annually. The forest-steppe species at Umbashi declined in layers dated to 2000–1400 BCE, replaced by drought-resistant chenopods and olive, with minimum requirements of 200–250 mm of annual rainfall (Willcox 1999). Evidence at Umbashi and Jawa indicates significant water management through dams, canals, and cisterns, suggesting active efforts to sustain communities. These modifications included the cultivation of crops like barley and emmer wheat, and the herding of caprines and cattle (Willcox 1981; Köhler 1981; Braemer *et al.* 2004). By the Roman period, evidence of charcoal from iron-working activities in Jebel Qurma highlights a transition to more arid conditions, though traces of hydrophilous trees (plane, fig, ash) suggest that localized wetter and greener environments persisted in some areas (Akkermans and Brüning 2020b).

AN EPITOME OF LONELINESS?

Archaeologists have long neglected the desert interiors of Syria and Jordan, which as a consequence remain largely unknown and underappreciated, even among specialists in the field. Notions of remoteness, harshness, marginality, and relevance only to wandering Bedouin have dominated since early twentieth-century travelers portrayed the inland areas unfavourably in their accounts. The basaltic Jebel Qurma region is no exception. T.E. Lawrence (of Arabia), travelling with his men-at-arms through the Wadi Sirhan on their way to the fortress at Azraq in 1917, stated: "The landscape was of a hopelessness and sadness deeper than all the open deserts we had crossed… there was something sinister, something actively evil in this snake-devoted Sirhan waste" (Lawrence 1935, 271). RAF pilot Roderic Hill, writing in the 1920s, echoed this sentiment: "I once landed in this country for the night on a grey winter evening… That place was the epitome of loneliness. All around the hills rose like odious flat-topped slag-heaps, and filled me with a sinister foreboding" (Hill 1929, 9). Captain Lionel Rees, another British colonial officer, described the volcanic land as follows: "… the whole of this country looks like a dead fire — nothing but cold ashes" (Rees 1929, 389). And Agnes Horsfield, travelling on the road to Kilwa (then in Transjordan, now in Saudi Arabia) in 1932, wrote: "On the way there we met neither man nor beast for the country was undulating *harra*, a black waste … with no sign of life" (Horsfield 1943, 72). A more positive voice was that of Gertrude Bell, who in her account of her 1905 journey through Ottoman Syria noted: "…the desert knows many a story that has not yet been told, and at Salkhad it is difficult to keep your feet from turning south, so invitingly mysterious are those great plains." (Bell 1907, 84).

Significantly, the overall negative perceptions, coupled with the inherently uninviting appearance of the Black Desert, seem

at odds with the region's exceptional archaeological wealth, which includes an abundant assortment of stone-walled structures, ranging from enclosures and huts to hunting installations and burial cairns. In addition to these, there are tens of thousands of pieces of rock art and North Arabian inscriptions on stone, roughly dated between the first century BCE and third/fourth century CE (with a few inscriptions possibly dating to the middle of the first millennium BCE). These finds serve as lasting records of those who, nearly 100 years ago, were referred to as 'The Old Men of Arabia' (Maitland 1927). Archaeological interest in the basalt expanse and surrounding areas has only recently increased, although the focus is predominantly on the region's prehistory (for a history of research, see Betts 2013; Müller-Neuhof 2014a). To mention just a few examples, all building on the groundbreaking work of Allison Betts in the basalt wasteland in the 1980s (e.g., Betts 1998, 2013 and references therein): surveys and excavations around Qa' Shubayqa, near the Syrian border, have produced substantial evidence of Epipalaeolithic and Early Neolithic settlement, including superimposed circular buildings, dense concentrations of chipped stone and ground-stone artefacts, as well as faunal and floral remains, among other finds (e.g., Richter 2014a, 2017; Richter *et al.* 2017; Otaegui *et al.* 2018*)*. The results of excavations at both Wisad Pools, on the south-eastern edge, and Maitland's Mesa, on the south-western fringes of the basalt plateau, are also spectacular. Substantial round dwellings, part of thriving Late Neolithic hamlets, ca. 7000–5000 BCE, were uncovered (Rollefson *et al.* 2017; Rowan *et al.* 2015, 2020; Wasse *et al.* 2024). Later prehistoric remains from the fourth and third millennia BCE, including hill forts and mines with evidence of the production of cortical scraper blanks, were identified in the Jawa hinterland and in the Wadi al-Ruwayshid (see, e.g., Müller-Neuhof 2014b, 2017, 2020). Equally relevant is the Western Harra Survey, which focuses on the numerous sites from the fifth to the third millennium BCE south of Jawa (Smith

2020; Smith and Chambrade 2018), as well as the pioneering, insightful remote-sensing work of David Kennedy (2011, 2012a).

While these field projects compellingly highlight the archaeological importance of the interior desert in prehistory, challenging established assumptions about the region's cultural insignificance, research on more recent historical periods continues to receive limited attention. The Jebel Qurma Archaeological Landscape Project, directed by the author, aims to address this gap through a *longue durée* perspective, utilizing extensive archaeological survey and excavation, complemented by remote sensing.[1] The pioneering project explores continuities and changes in local, predominantly nomadic ways of life and death over time. It seeks to reconstruct the nomadic landscape and understand the adaptive strategies and social structures that underpinned it. Survey and excavation facilitate detailed site assessments and contribute to the development of previously absent local chronologies and regional context.

JEBEL QURMA AS A CROSSROADS

The rocky, rough Black Desert, including Jebel Qurma, presents a formidable obstacle to cross, except along cleared camel tracks (e.g., Musil 1926, 190). It is unsurprising, therefore, that travelers in the region seek to bypass the basalt expanse by using routes through low-lying wadis and mud flats, one of the most significant of which is Wadi Sirhan, located to the west of Jebel Qurma (cf. Fig. 1). Wadi Sirhan ('Valley of the Wolf') holds strategic importance because of its scattered watering places, extend-

1 It is emphasized that the project also includes research into the region's prehistory; see, e.g., Akkermans *et al.* 2014; Huigens 2019.

ing north-south for around 500 kilometers from Azraq in Jordan to Al-Jawf in Saudi Arabia. Through Wadi Sirhan marched the Assyrian army in the eighth century BCE to conquer Adummatu (modern Dumat al-Jandal), the historic capital of Al-Jawf. It also served as Rome's gateway to eastern and central Arabia, as its caravan routes connected the Nabataean and Roman cities of Damascus and Bostra to the Persian Gulf. In 634, Khālid ibn al-Walīd led the Prophet Muhammad's forces along this route to Syria, outmaneuvering Byzantine defenses in the Balqa' and Hauran and hastening the fall of the Byzantine Empire in the Levant. Whenever trade or Hajj caravans on the more westerly Levantine roads into Arabia were disrupted, such as during the Crusader era, Wadi Sirhan provided a safer alternative path. In the nineteenth and twentieth centuries, the Sirhan route was still a vital corridor for the Rwala and other Bedouin tribes, who used it for their seasonal migrations from Arabia to the Levant and central Syria and *vice versa* (e.g., Musil 1927; Glueck 1944; Speidel 1987; King 1987; Al-Sudairī 1995).

An important natural east-west corridor through the basalt barrier was located near Jebel Qurma (the 'Qurma Gap'), where tracks branched eastward from Wadi Sirhan. This route bypassed the lava fields and continued either further east into the Syrian desert or northward toward Qasr Burqu' and Qasr Jebel Usays, before turning west toward Damascus. Strong evidence exists of frequent use of this outlying desert route by traders, pilgrims and Bedouin tribes to and from Syria.

The use of Jebel Qurma as a natural, remote, desert crossroads through the ages is evident in the region's archaeological record. For instance, third-millennium BCE ceramics, identical to those found near the Dead Sea, have been discovered in graves at Jebel Qurma. Silver and bronze coins from the late first millennium BCE originated in north-west Syria, while jewellery was import-

ed from the Levant and Egypt. Marine shell beads came from the Mediterranean, Red Sea and Indian Ocean. In addition to the many thousands of native Safaitic inscriptions on basalt stones, there are also texts in Hismaic, produced by nomads from southern Jordan, and in Thamudic, probably created by people originally from north-west Arabia. Certain tomb types, although rare at Jebel Qurma, have parallels as far south as Tayma and Khaybar in Saudi Arabia. These and other examples demonstrate that Jebel Qurma, along with the rest of the Black Desert, was far from the isolated backwater it has often been claimed to be.[2] Along with the influx of material-culture items, the Jebel Qurma region was probably also home to nomadic, pastoralist groups from all directions, who either stayed temporarily or passed through the area in search of refuge and grazing grounds.[3]

THE LIVING AND THE DEAD: FUNERARY LANDSCAPES

Survey and excavation in Jebel Qurma revealed numerous installations for dwelling and domestic use, including stone-walled enclosures, huts, and clearings for camping (Huigens 2019, 2020). These are primarily situated in relatively accessible, open areas such as low-lying valley floors, gravel plains, and near mud

2 See Wasse *et al.* (2024) for a similar conclusion regarding prehistoric sites like Wisad Pools in the Black Desert, which show connections to distant settlements in the Levant and Mesopotamia.

3 An example of this is an inscription found in Wadi Salmā, north of Jebel Qurma, whose author identifies himself as "the Dumaean," i.e., a citizen of the distant (ca. 500 km) town of Dumat at the southern end of Wadi Sirhan.The text reads: "By 'bn son of 'nhlh the Dumaean and he kept watch so, O Slm, god of Dumat, let there be ease" (Al-Jallad 2015, 20). Several inscriptions from Jebel Qurma were produced by men who also left their inscriptions 35 to 70 km away in other parts of the Black Desert (Della Puppa 2022, 133ff.).

flats. Potential water sources usually occur within a few hundred metres of the sites, although they would have provided water only seasonally. The intermittent presence of water, as well as shallow interior deposits and limited artefact assemblages in the domestic sites, suggests that they were short-lived and used temporarily. Several larger, grouped enclosures show evidence of repeated use over an extended period, resulting in palimpsests of material culture. The small size of most domestic sites, ranging from 40 to 100 m across, suggests that they were each occupied by small groups, likely numbering no more than a few dozen people.

The desert communities are regarded as nomadic pastoralists who relied primarily on raising camels, sheep, goats, and horses. Evidence supporting this perspective does not come from faunal remains – these are still largely missing from archaeological surveys and excavations in the region, due to preservation challenges – but instead from the transient architectural features and, most notably, the roughly 2000-year-old Safaitic inscriptions found in the area, referring to camping, pasturing activities and seasonal, migratory travels (e.g., Macdonald 1992a, 1993; Della Puppa 2022). Additionally, hunting wild animals may have been equally important to their way of life, as indicated by the many hunting scenes depicted in the local rock art (Brusgaard 2019; Akkermans 2019).

It is natural to assume that wherever people once gathered in reasonable numbers over time, a corresponding number of deaths would have occurred. Unlike the places for living in low-lying areas, the sites for the disposal of the dead were preferentially situated on elevated terrain, such as high, difficult-to-access, basalt-strewn plateaus and hilltops (Fig. 4). Strategically positioning the burial cairns on eye-catching elevations with panoramic views ensured maximum prominence and visibility for the tombs and, by extension, the deceased (Fig. 5). The commemoration of the

Fig. 4 A high, steep basalt mound with the remains of a conical ring cairn on top (arrow). Our field team is on its way.

dead was public, enduring, and engaging, achieved through the tombs' captivating presence in the landscape. The high plateaus and hilltops, with their dark, sombre basalt cover, were quintessential funerary landscapes. Deliberately devoid of domestic features, these landscapes served both to bury and honour the dead, in addition to being occasionally used as strategic vantage points or visited by herdsmen for leisure.[4]

The burial sites predominantly consisted of single, isolated tombs or at most small groups of three or four, with concentrations of graves in cemeteries being rare. There is evidence for the presence of a small graveyard from the third millennium BCE along Wadi Rajil (Akkermans and Brüning 2017), as well as a larger cemetery dated to the early first millennium BCE near Qaf and Ithra', located at the onset of the Wadi Sirhan, close to the Saudi–Jordanian border (Adams *et al.* 1977, 36). These cemeteries appear to have been relevant to groups who, over long periods,

4 The latter activities can be inferred from the many local inscriptions in Safaitic and Arabic (see below).

Fig. 5 A small tumulus sits atop a basalt-strewn hill, offering a wide vista of the surrounding gravel plains.

intentionally brought their dead to shared grounds imbued with ritual, social memory, and a sense of community. In contrast, the numerous solitary tombs suggest a significant degree of individuality and *ad hoc* grave construction, occurring whenever death struck. While existing graves were sometimes reused, many new tombs were added, causing the number of tombs on the hilltops to steadily increase, with the funerary landscape evolving continuously as each new interment took place.

Several hundred cairns for burial are found in the Jebel Qurma region, with many thousands more scattered across the broader basalt landscape of Jordan and Syria. The tombs, as they appear today, are typically in a highly dilapidated state due to weathering, reuse, or looting. As a result, dating them is notoriously difficult without excavation. Currently, several dozen burial cairns have been systematically excavated in the Jebel Qurma region, in stark contrast to the very few tombs investigated in other parts of the Black Desert (see Harding 1953, 1978; Clark 1981; Kennedy 2012b; Richter 2014b; Rowan *et al.* 2015). The earliest securely dated tumuli in Jebel Qurma are from the fifth millennium BCE,

and their construction continued for several millennia thereafter.[5] A significant rise in both the number and variety of burial cairns occurred between approximately 1000 BCE and 500 CE. The tombs of this era – spanning from the Iron Age into the Roman-Byzantine period – are the primary focus of current research in Jebel Qurma. They provide exceptional, up-to-date insights into the mortuary practices of local nomadic communities.

DIVERSITY OF TOMB TYPES

All cairns for burial in the Jebel Qurma region are above-ground structures composed of undressed basalt blocks sourced locally. An exception to this, are the relatively recent Islamic tombs, most of which are subterranean. Based on our excavations of several dozen tombs in Jebel Qurma, supported by local survey evidence, a variety of cairns of different shapes and sizes can be distinguished.

A common burial type is the ring cairn, comprising a tumulus with an outer ring of large basalt boulders and an oval or sometimes rectangular burial chamber in the centre. The area between the burial chamber and the outer ring is filled with stones of varying sizes, imparting to these cairns their characteristic conical shape (Fig. 6). These cairns typically range from 5 to 7 m in diameter at their base and are about 1–1.5 m in height. Occasionally, larger ring cairns occur, measuring up to 10–12 m in diameter and up to 2 m in height. However, these appear to consist of two cairns stacked one on top of the other, with the horizontal extent of the lower cairn expanded to serve as a foundation for the upper tomb.

5 The chronology of the tombs at Jebel Qurma is primarily based on radiocarbon dates, Optically Stimulated Luminescence (OSL) dates, and comparative studies of the tomb types and their grave inventories.

Fig. 6 A large ring cairn in Jebel Qurma, featuring its characteristic conical cover made of basalt blocks.

The central burial chambers, measuring approximately 0.7–1 m in diameter and 0.4–0.7 m in height, are either fully corbelled or have relatively straight walls capped with large, flat stones. The floors in the chambers are either paved with flat, unworked stones or simply left unpaved. Skeletal evidence suggests that individuals were interred in a crouched position on their side, a pattern also indicated by the compact dimensions of the burial chambers. The ring cairns appear to be a rather generic type of cairn in the Jebel Qurma uplands, with the earliest securely dated tombs dating from the fifth to the late third millennium BCE (Chalcolithic to Early Bronze Age; (Akkermans and Brüning 2017, 2020a; Huigens 2019). The ring cairns continued to be constructed in later periods, up until the early centuries CE.

Another very common type of cairn is the tower tomb, found in the dozens throughout the Jebel Qurma area. They come in two shapes: round and apsidal. The round cairns can measure from 2 to 6 m in diameter and up to 1.5 m in height (Figs. 7-8).

Fig. 7 Two tower tombs stand high atop a basalt-strewn hill, before excavation. The tombs, as they appear today, are partly collapsed and in a state of disrepair.

Fig. 8 These are the same two tower tombs as in Figure 7, but after excavation. The characteristic tower-like shape of both tombs is now clearly recognizable.

They have a distinctive tower-like appearance, with a slightly tapering façade constructed from large unworked basalt slabs. Some of these basalt blocks weigh over 300 to 400 kg, indicating that multiple people must have been involved in handling them during construction. As is the case with the tumuli, each tower tomb has an oval or square burial chamber at its centre, up to 1.7 m across, often with a flat stone pavement. The space between the central burial chamber and the outer wall is entirely filled with basalt boulders. One tower tomb featured a small doorway in its wall, giving access to the burial chamber, but this was a later modification and not part of the original structure. Notably, another tower tomb with a passage was reported in the 1920s in Wadi al-Qattafi, about 15 km to the north-east of Jebel Qurma (Rees 1929, 392). All other cairns, however, were accessible only through the roof by removing their stone cover. Typically, the tower tombs are single, isolated occurrences in high locations, although they can sometimes be found in groups of two to four. A single burial field is known so far, consisting of around 30 small and low cairns, up to 3 m across and 1 m in height, dated to 2300–2000 BCE (Akkermans and Brüning 2017, 2020a). Several tombs yielded pottery vessels closely reminiscent of the *amphoriskoi* found in the Early Bronze Age IV cemeteries at Bab edh-Dhra and Fifa near the Dead Sea, and Tiwal esh-Sharqi in the central Jordan Valley (e.g., Schaub and Rast 1989; Chesson and Schaub 2007; Tubb *et al.* 1990; Kennedy 2015). The round tower tombs began to appear in Jebel Qurma slightly later than the ring cairns. So far, the earliest tower tomb dates to the fourth millennium, ca. 3980–3140 BCE (based on an OSL date). The tower tombs continued alongside the ring cairns into later periods, until they disappeared in the early first millennium CE. A very small type of tower tomb, barely 2 m across, became common toward the end of the first millennium BCE and into the early centuries CE.

The apsidal tower tombs are a relatively rare variant of tower tomb, with only eight examples found thus far, all located at five sites in the eastern half of the Jebel Qurma region. They are hemispherical to squarish in plan, typically featuring one straight façade, which is usually oriented towards the east. These cairns measure approximately 4 m across and stand about 1.2 m high. The interior burial chamber is oval or, more frequently, square in shape, with a flat stone-paved floor. Remarkably, the chamber is sometimes entirely filled with small pebbles, intermingled with human bone fragments and jewellery (beads, pendants, etc.), a characteristic not observed in any other type of cairn. There is good reason to date the first appearance of the apsidal tower tombs to the very end of the second millennium or the beginning of the first millennium BCE (early Iron Age). One tomb yielded an Egyptianizing scarab dated to between the eleventh and ninth centuries BCE, while another tomb contained a carnelian axe-shaped pendant, which has parallels at many early Iron Age sites as far apart as Wadi Fidan in Jordan and Saruq al-Hadid in Dubai (Boschloos and Akkermans 2019; Beherec 2011; Weeks *et al.* 2017). The apsidal tombs continued to be used throughout the first millennium BCE.

A fourth type of burial is the cist grave, which exclusively occurs in association with the circular tower tombs. The rectangular cist graves are positioned with one of their short sides attached to the tower tombs. They are all oriented east–west and found either singly or in pairs on either side of the tower tombs (Fig. 9). The graves are built with dry-stone walls and straight outer façades, usually capped with large flat stones. They measure up to 2.7 m in length, 1.5 m in width, and 1 m in height. Notably, the interior is partly filled with basalt stones of various sizes, with a sand deposit underneath, comprising one or two deceased individuals placed in a crouched position. The stone infill is interlocked with the tombs' outer walls, suggesting that once the deceased was laid

down and covered with sand, both the walls and the fill were constructed simultaneously. Cist graves are commonly found in the Jebel Qurma region, as well as in other parts of the basalt-strewn landscape, such as at Wisad Pools, approximately 80 km east of Jebel Qurma (see Rollefson 2013, 222, who mistakenly interpreted the cists as 'entrance chambers' to tower tombs). They represent a late type of cairn, dating from the second century BCE to the mid-third century CE. One cist grave contained four Hellenistic (Seleucid) bronze coins, one of which could be securely dated to the reign of Antiochus IX Cyzicenus (114–95 BCE).

Remarkable is the *secondary* burial found next to one of the cist graves of the late first millennium BCE. Most likely, the skeletal remains in this secondary deposit were originally placed in the cist grave but were removed to make space for a new burial.

Fig. 9 Aerial photograph of a tower tomb and associated cist graves. A: tower tomb with a looted interior. B and C: two east-west oriented rectangular cist graves flanking the tower tomb.

The deposit consisted of the wholly disarticulated long bones and crania (without their mandibles) of two adult individuals, a male and a female, with the bones of the latter stacked on top of those of the male. The remains were found in a natural hollow in a basalt outcrop, measuring approximately 1 by 0.6 m. Some rocks were used to seal the hollow. Since the secondary grave was entirely unmarked, its discovery was purely by chance. More secondary burials of this kind may be found in the Jebel Qurma.

Yet another type of cairn is a tumulus associated with the reuse of tower tombs: when the towers were abandoned and in a dilapidated state but still considered suitable for burial, they were, after the new burial, sometimes covered with an extensive layer of stones. This gave the cairns a distinct conical shape, making them indistinguishable at first glance from the ring tumuli. Only excavation revealed the tower tomb buried inside the tumulus, as well as the absence of the peripheral stone wall typically found in ring cairns. This type of tumulus dates roughly from the first to the third centuries CE.

Drum-shaped cairns are large and low, flat tombs, ranging from 8.5 to 10 m in diameter. They feature a stacked, vertically constructed outer façade made of (very) large basalt boulders and, occasionally, large upstanding stones. The outer façade resembles that of a tower tomb at first glance; however, the cairns are too large and too low to be classified as true towers. The tombs' façade is about 0.8 m high, with the height gradually increasing to about 1.2 m at the centre of the cairn. The burial chamber (highly off-centre in one case) is oval or rectangular in shape, measuring approximately 0.8 by 1.2 m and preserved to a height of about 1 m. Found only twice (possibly three times) so far, drum-shaped cairns are a rare type of tomb in the Jebel Qurma region. They provided proof of burial in the late first millennium BCE, with no evidence of earlier use.

Finally, attention is drawn to the platform cairns (or infilled ringed cairns), another rare type in Jebel Qurma that was likely brought to the region by herdsmen from the Hijaz in Saudi Arabia, several hundred kilometers to the south, where this type is common (cf. M. Kennedy *et al.* 2021). These large cairns consist of a round platform made of basalt boulders, up to 14 m in diameter and 0.8 m high, with a continuous, raised ring of irregularly piled heaps of stones along its edge and a typical tower tomb at the centre (Fig. 10). At one platform cairn, the tomb was clearly a later addition, positioned not in the centre but on the outer ring. Instead, a set of upright cult stones stood next to each other in the centre. Each of the platform cairns at Jebel Qurma shows evidence of use from the late first millennium BCE and beyond.

Fig. 10 A large platform cairn in Jebel Qurma, with a tower tomb at its centre. The platform, approximately 14 m in diameter and 0.8 m high, consists of large, irregularly piled basalt boulders.

ISLAMIC CAIRNS

Remarkably, the above-mentioned Iron Age burial cairns often have one or two other tombs adjacent to them, which appear to be of a much more recent, Islamic date. It seems that these earlier structures attracted the newer Islamic graves, possibly due to their high visibility and prominent locations. A typical Islamic tomb form is the low, square cairn, measuring approximately 4 by 4 m and 0.6 m in height (Fig. 11). These cairns feature tapering, straight façades, constructed from piled basalt stones that interlock with the rest of the tomb cover. Inside the cairn is a roughly rectangular burial pit, measuring up to about 1.8 m in length and 0.5 m in width, dug into the bedrock to a depth of approximately 1 m. In accordance with Islamic custom in Jordan, the grave is invariably oriented east-west and is capped with large flat basalt stones. Significantly, nearly all of these Islamic cairns in Jebel Qurma appear to have had their stone covers and capstones removed, with the burials opened and any human skeletal remains missing. While looting and vandalism may seem to be the obvious explanation[6], the complete absence of human bones in or around the opened burial pit suggests an alternative possibility: the tombs may have been intentionally emptied by the deceased's relatives, with any remaining bones taken and reburied elsewhere. However, it should be noted that exhumation is permitted under Islamic *sharia* law only in very limited circumstances, one of which is death in battle (e.g., Al-Dawoody *et al.* 2021). In this context, it is noteworthy that Harding (1953, 8) reports, based on a local informant, that building cairns over graves was still practiced by Bedouin in the early twentieth century, but exclusively for "those who are killed, never over those who die a natural death".

6 Tomb robbing, including of Islamic graves, was – and still is – an unfortunate practice in the Jebel Qurma area and beyond. It often results in significant scattering and fragmentation of the buried human remains.

Fig. 11 A low, rectangular Islamic cairn during excavation. The tomb appears to have been reopened some time ago and emptied of all skeletal remains for reasons unknown.

Islamic tombs were constructed not only adjacent to ancient pre-Islamic cairns but were also often sunk into these earlier cairns, thereby frequently disturbing previous interments. The east-west oriented graves consist of rectangular cists made from upright slabs, topped with flat stones. Recent looting of the cairns has typically also disturbed the Islamic graves. When skeletal remains were left intact, they indicated that the deceased were buried on their right side, with their feet to the east, head to the west, and facing south towards Mecca (as customary in Jordan; see, e.g., Lash and Haron 2018). These cists in cairns began to appear in the Jebel Qurma region in the thirteenth century and continued to be built until the early twentieth century (Akkermans *et al.*, in press).

Other clearly Islamic graves in the Jebel Qurma area consist of simple oval or rectangular burial pits, the size of which corresponds to the age and length of the deceased. The pits are about

1-1.5 m deep and are all oriented east-west, either lined with stones or completely covered with them. Occasionally, vertical basalt slabs are placed at the head and/or the foot of the graves. While these graves may occur singly, they are usually found in groups, ranging from several dozen to, occasionally, several hundred graves. The earliest examples in the Jebel Qurma area, known so far, date to the tenth century (Akkermans *et al.*, in press); however, the majority are probably much younger, dating to the nineteenth and twentieth centuries.

HOUSES FOR THE DEAD

The many highly visible burials granted the dead a sense of permanence in the landscape. They preserved memories and continuities across generations and served as landmarks that not only commemorated those who came before but also reflected on identities, histories, values, and other social narratives. From a more mundane perspective, the tombs may also have been used to mark tribal territories or trace migration routes.

The permanence of a burial site could also reinforce ideas about life after death, although the evidence for this remains sparse. The numerous nomadic inscriptions on desert stones, dating from the first century BCE to the third or fourth century CE, do not explicitly elaborate on an afterlife. However, the texts often express a concern for ensuring that the burials remain intact (i.e., undisturbed by looting). Al-Jallad (2022, 78) notes that this could simply reflect a matter of respect for the dead but adds that it "may also suggest that there were consequences in the afterlife if a grave were disturbed." Another indication of a belief in an afterlife may be the so-called *balīya* – the sacrifice of a camel for the deceased to use as a mount in the next life (King 2009). The

balīya may be represented by the dromedary remains found in a significant number of cairns at Jebel Qurma (see below).

There is another hint for belief in a life in the hereafter, in the form of the tomb-as-a-house metaphor which was so widespread around the Mediterranean and West Asia in antiquity (see, e.g., Wallace-Hadrill 2008 on the Roman world). Links between the dead and houses are apparent in Mesopotamian hymns, incantations, and other texts. For example, the epic of Gilgamesh elaborates that the dead are on their way "to the house of darkness, seat of Irkalla, to the house which none who enters ever leaves" (George 1999, 61; see also Katz 2005). Bravmann (1972) draws attention to early Arab poetry which emphasizes the radical change that death imposed on the wandering nomad, who, through death, became permanently sedentary, with the grave serving as his house for good. He quotes, among others, the sixth-century poet Alqama bin 'Ubada, who made a direct reference to the tomb as a house: "…when fate will send death to me, when a house on a hill will harbor me…" (ibid., 294). Also Ibn Hishām in the ninth century was explicit about the house for the dead in his praise of the warrior Zayd al-Hayl: "…and when he arrived at one of the waterplaces of the land of Nagd named Fardah, the fever befell him there and he died; and when Zayd felt death approaching, he said: 'Will my people travel in the morning towards the East, while I shall be abandoned in a house on a hill at Fardah?'" (ibid., 295). Significantly, the 'houses for the dead' in these and other examples all appear to be situated on hilltops, as is the enduring, preferred location of not only the Islamic but also the earlier (Iron Age) tombs in Jebel Qurma. The connection between tombs and houses is also evident in the small, roofed burial chambers where the dead were laid, some of which even featured a low doorway. Whenever the position of the corpse could be reconstructed, it appears that the deceased rested in a highly flexed position on their side, as if they were sleeping. The latter recalls the Babylonian myth of Erra and

Ishum: "These are my living quarters: I have personally made them and will have my peace within them; and when fate has carried me off, I will sleep therein." (Van der Toorn 2000, 145). It is for good reason that burials have regularly been found in excavation underneath house floors in second-millennium BCE Babylonia. The conceptual distinction between a house and a grave appears to have been minimal in urban, settled Babylonia, where the dead were given a permanent home in which they were reunited with their living relatives. In contrast, the nomads of Arabia, including those at Jebel Qurma, viewed the house-as-grave both as the sedentary end point, marking the loss of their pastoral lifestyle, and as a place of abandonment, left behind as their companions continued their wanderings.

TAILED TOMBS

The burial cairns in Jebel Qurma, as we see them today, often have low, dry-stone shelters on them, crescent-shaped enclosures beside them, or single walls extending from them. Nearly all of these simple installations appear to be relatively modern features, constructed by Bedouin herdsmen during brief, intermittent stays. While it is easy to mistake these structures for funerary monuments, none of them served a burial purpose or had any association with the nearby graves. At the time of their construction, the Iron Age tombs appear to have been prominent stand-alone monuments, devoid of any additional features. However, there are a few exceptions, the most notable of which are the so-called 'pendants' or chains of small cairns extending from the head of a main burial cairn (Fig. 12).[7] With the exclusion of the

7 The term 'pendant' to describe these tombs and their associated chain of cairns was coined about 15 years ago by David Kennedy (2011).

Fig. 12 An aerial photo of a 'pendant tomb' in the Jebel Qurma range. The straight chain, consisting of several dozen small, individual cairns, leads to the large platform cairn at the head (centre).
(Photo: courtesy of Aerial Photographic Archive for Archaeology in the Middle East, APAAME_20081102_DLK-0146).

Fig. 13 A typical 'pendant tomb' high atop a basalt mound in Jebel Qurma, with a large cairn on the right and a tail of smaller cairns extending to the left.

Islamic graves, each of the above-mentioned types of cairns may or may not have such a prominent tail of small cairns.

The chains are all linear, straight features, which range in length from approximately 10 to 135 m, with most measuring between 30 and 80 m. Each chain consisted between 4 and 48 oval or roughly rectangular cairns, varying from low, inconspicuous piles of rocks to more prominent installations, the largest reaching up to 2 m in length, 1 m in width, and 1 m in height (Fig. 13). The small tail heaps are not merely randomly piled stones; each typically features a dry-stacked outer wall of two or three layers of basalt boulders, with the interior filled with smaller stones in a conical shape. Based on biblical and other sources, it has been suggested that these tombs and their associated tail heaps were gradually enlarged by passers-by who honoured the dead by adding stones to their graves (Conder 1883; Harding 1953, 8; Al-Jallad 2015, 206-7; Kennedy 2011, 3190). However, contrary to this interpretation, our fieldwork demonstrated that nearly all tails were constructed in a single phase, with only a small number being altered or expanded in later periods.

The tailed tombs are often assumed to date to the third millennium BCE or even earlier (e.g., Parr *et al.* 1978, 40; Hashim 1997, 108-10; Hausleiter and Zur 2016, 165; Rollefson *et al.* 2016, 941; D. Kennedy 2011, 3195; M. Kennedy *et al.* 2021) but this assumption is inaccurate.[8] Optically stimulated lumi-

8 The evidence supporting a third-millennium BCE or earlier date for the tailed tombs remains sparse and largely speculative. A single date obtained from human bone in a looted tomb at Khaybar, Saudi Arabia, suggested a time around 2500 BCE, interpreted as a terminus post quem for the tails (M. Kennedy *et al.* 2021, 184, 189-190). However, the precise context of this sample is highly uncertain, as it was recovered from a surveyed rather than excavated cairn, which had evidently been looted earlier. While the date itself is undoubtedly accurate, the sample may well correspond to a third-millennium BCE burial within the cairn, but it does not conclusively demonstrate that the tail was a contemporary feature. After all, reuse of tombs was a very common practice in antiquity, also in Khaybar.

nescence (OSL) dates from seven cairn chains at Jebel Qurma, supported by radiocarbon dates and artefact assemblages from the associated main tombs, indicate that these features were constructed in the first millennium BCE and afterwards, probably up to around 300 CE (see Akkermans and Brüning 2020, Tables 1–2, for a list of radiocarbon and OSL dates). Some tails appear to be constructed from stones bearing Safaitic inscriptions, which likewise suggest a date around the beginning of the Common Era. Further evidence supporting the dating of the tailed tombs to the first millennium BCE and later comes from surveyed tombs in Saudi Arabia (M. Kennedy *et al.* 2021) and excavated burials in Yemen (De Maigret and Antonini 2005). While further confirmation is highly desirable, I have little doubt that the tailed tombs in the desert interiors are typically Iron Age features.

However, much less clear is the meaning of the tails. Given their strong association with cairns, their funerary role is unmistakable, although there are several solitary tails that seem unrelated to tombs – an observation also noted elsewhere, such as in north-west Saudi Arabia (Dalton *et al.* 2022, 186). Our excavations of cairns from twelve different chains at various sites revealed no evidence of human remains or artefacts within or beneath them, thus ruling out their function as tombs (see Rowan *et al.* 2015, 180 for a similar conclusion regarding a tailed tomb in Wadi al-Qattafi, some 15 km north-east of Jebel Qurma). The chains extend from site to site in all directions, with no preferential orientation. However, it seems that visibility was a crucial factor in the construction of these tails. The chains often run parallel to the slopes of the hills on which they are located, making them stand out against the horizon when viewed from the surrounding lowlands. While it seems reasonable to assume that these cairn chains served to commemorate the dead (e.g., Kennedy 2011, 3190; Rowan *et al.* 2015, 180; Dalton *et al.* 2022, 186), their exact significance remains unknown.

The tailed tombs have an enormous geographical distribution, spanning from Syria in the north, across Jordan and Saudi Arabia, to Yemen, over 2500 km to the south. Despite considerable regional variation in pendant typology, the similarities suggest a shared understanding of the tails' role among numerous groups across an exceptionally vast geographical area (a common understanding that, unfortunately, eludes the modern-day archaeologist…). The prominent visibility of the tombs and their tails in the landscape was undoubtedly a key element in conveying this shared perspective. The desert communities were far from isolated; they were bound together by diverse cultural practices, including funerary rites, in addition to, for example, temporary settlement, mobility, and pastoral subsistence.

Other funerary installations that occasionally occur together with burial cairns are the upright cult stones (Fig. 14). They stood on, in, or next to cairns, sometimes in groups of three.

Fig. 14 A set of three upright cult stones in Jebel Qurma, with a cleared area in front of them. The large stone on the left is broken into two parts, one of which has fallen.

Associated inscriptions are sometimes found beside the standing stones and state, for example, 'By Ls[1]d son of {'bht} son of 'tk… of the {people} of…and he erected a cult stone and he made a sacrifice and may w'l and 'rms[1] and…be remembered…' (Della Puppa 2022, 22). Standing stones are found throughout the Jebel Qurma area, although in small numbers. In contrast, they appear by the hundreds in the Sinai and Negev, where they are often interpreted as aniconic representations of deities or as their residences (e.g., Avner 1999-2000, 2001). A variant of the standing stones is the explicitly funerary *nefesh*, with an inscription typically stating: 'For Bkr son of S[2]hr is this funerary monument' (ibid., 24; Macdonald 2006; Al-Jallad 2022; Hayajneh 2017). The act of erecting cult stones and making sacrifices implies ritual practices associated with burials and the memorialization of the dead. The *nefesh* explicitly preserves the deceased's identity for posterity.

FOR DUST THOU ART, AND UNTO DUST SHALT THOU RETURN

It must be emphasized that analysis of tomb construction and the composition of burial assemblages at Jebel Qurma is often complicated, primarily due to preservation issues, which vary significantly between tombs. Skeletal remains in medieval to premodern Islamic graves are often remarkably well-preserved, due to their careful inhumation and protective sand cover. In contrast, remains in earlier, pre-Islamic tombs are invariably poorly preserved, friable, and highly fragmented. This deterioration is due to interments in above-ground sepulchers, which are vulnerable to extreme, fluctuating climate conditions, rodent gnawing, and insect infestation. In many cases, little to no human bone remains. Indeed, the biblical passage "for dust thou art, and unto

dust shalt thou return" (Genesis 3:19) takes on a literal significance in the basalt desert.

Other factors contributed to the inadequate preservation of tomb remains. Earlier types of tombs may have been completely concealed beneath later forms of graves. For example, tower tombs were regularly constructed on top of ring cairns, and cist graves were sometimes covered by much later Islamic tombs. Therefore, typological classification must remain highly tentative and, in many cases, relies entirely on excavation. Nearly every cairn in Jebel Qurma shows evidence of repeated reuse over the centuries, often involving a disturbance or even obliteration of older burials. Reopening and reusing tombs were common practices between approximately 1000 BCE and 500 CE, but it also regularly occurred in more recent periods. The reuse may imply simply adding another burial to the original one, with the latter usually remaining intact. This form of entanglement, through connecting bodies, suggests an intimate relationship between the deceased, supported by the fact that hardly any structural changes were made to the tomb architecture itself.[9] However, reuse may also involve the complete emptying of the burial chamber, with the remains of the original interment removed and scattered on and around the cairn.[10] This practice of incorporating another burial shows little regard for the integrity of the previous burial, which is perhaps unsurprising given evidence that these graves often differed by centuries in time. Memorialization of the long-

9 In the words of Liana Brent (2017, 47): "Various interpretations of the relationship between these individuals are possible. They may have been related biologically as siblings, cousins, or as a parent and child; they could have been associated as kin, peers, age-mates, or by marriage, so the act of interring them together and creating corporeal connections was intended to signify the continuity of relationships in death (…)."

10 This practice should not be confused with looting, as not only the bones but also any remaining grave goods (jewellery and other personal belongings) were discarded.

Fig. 15 A large, recently looted ring cairn in Jebel Qurma. The interior burial chamber of the cairn has been entirely destroyed by a deep robber's pit, with sand and stones scattered around it.

deceased, unrelated individual seems to have held little significance for Iron Age communities in the desert.[11] Undoubtedly, this also applies to the fairly recent (medieval and pre-modern) Islamic graves sunk into the much earlier cairns, where any social link to previous interments is absent, and where the reuse may simply have been easier and more pragmatic than creating a new tomb (see, e.g., Brent 2017; Hoernes *et al.* 2018; Döpper 2023).

Another highly destructive factor is the widespread looting of tombs, which involves opening and plundering them, leaving the graves' surfaces marked by pits, commingled spoil heaps, and displaced human remains (Fig. 15). The illicit undertakings

11 However, this may be different in the case of relatives, as contemporaneous inscriptions from Jebel Qurma and the wider basalt desert emphasize extended genealogies, tracing up to sixteen generations and reaching back to the eponymous ancestor of the scribe's social group (Al-Jallad 2015, 57, 201; Della Puppa 2022, 15).

usually aim to collect artefacts for the antiquities market or to uncover gold treasures hidden in the graves, which, according to local lore, were left behind when the Ottoman Empire retreated from the Levant in 1918 (e.g., Kersel and Chesson 2013; Kersel and Hill 2019; Al-Mansir and Al-Till 2020). Tomb pillaging at Jebel Qurma has a long history, with many graves disturbed in antiquity, sometimes shortly after their construction. The walls of tower tombs were often breached, granting plunderers access to the interior burial chambers, although the tombs were sometimes soon restored and reused for burials. In one cist grave dating to approximately the first century CE, the partially intact skeletal remains of a young adult male were found, with the arrangement of the bones proving that the corpse had been significantly tampered with while still decomposing.[12] It is not without reason that Safaitic and other inscriptions on stone from around 100 BCE to 300 CE often included curses to discourage vandalism, calling upon the deities to blind or otherwise harm those who plunder or disturb the tombs (Maraqten 1998; Al-Jallad 2015).[13]

12 The looting targeted body parts that might have carried valuables, such as the cranium and pelvis, both of which were missing. The upper part of the corpse had been turned upside down, with ligaments still intact at the time. Skeletal remains belonging to the young male were also discovered on natural soil outside the cist.

13 Curses against the desecration of tombs occur throughout the Middle East and across all ages. A notable example is the spell written on the grave of a woman buried in 267 CE at the Nabataean city of Hegra (modern Mada'in Saleh in Saudi Arabia): "And may the Lord of the World curse anyone who desecrates this grave and anyone who opens it, … and may he curse anyone who buries [a body] or removes [a body] from it." (Fiema *et al*. 2015, 403).

TOMB TREASURES

While it is obvious that preservation challenges and the often-alarming amount of damage frequently impede efforts to gain detailed insights into tomb use, it is worth emphasizing that well-conceived and systematic salvage work can still yield significant scientific insight and value. Jebel Qurma is one such example, with numerous others in the Levant and beyond (see, e.g., Webb and Frankel 2008; Gerdau-Radonic and Herrera 2010; Al-Houdalieh *et al.* 2017; McCreery 1996).[14]

Our excavations revealed that the Iron Age tombs contained individuals of both sexes and a range of ages, from as young as 1 year to over 50 years old, suggesting that burials within the cairns were not restricted by sex or age but were inclusive of all members of the local community. Each cairn was primarily intended for a single interment, with the deceased in a crouched, side-lying position. Supine burials appear to be limited to more recent Islamic tombs. In cases where multiple individuals are found in a single grave, they typically consist of an adult over 20 years old and a child less than 5 years old. One apsidal tower tomb dating to the late first millennium BCE contained three individuals positioned together: an adult, an adolescent, and a child aged approximately 10 years.

Due to the deteriorated condition of most bones, detailed osteological description, such as pathologies and metric analysis, was only possible to a limited extent. Some common ailments observed included inflammatory joint disorders such as osteochon-

14 Webb and Frankel (2008, 67) correctly point out that: "The recognition that damage to sites does not mean the total loss of value, combined with the development and further refinement of appropriate research strategies, is critical if we are to exploit the remaining potential of diminishing archaeological resources."

dritis dissecans, osteoarthritis, osteophytosis, Schmorl's nodes (a type of hernia), and dental issues such as tooth loss and caries.

In addition to the skeletal remains, grave inventories primarily consist of jewellery, with beads and pendants being particularly abundant, manufactured in various shapes and materials (Fig. 16). Some items were produced locally, while others were transported to Jebel Qurma from distant regions. The exotic products may have been acquired through exchange networks or brought directly by people from those distant regions. The crossroads that was Jebel Qurma attracted highly mobile people from all directions, many of whom died and were interred locally, along with their personal belongings from far away.

Glass and, to a lesser extent, faience beads of Levantine provenance are very common. Colourful eye beads may have been used to ward off the evil eye, a fear also mentioned in contemporaneous inscriptions on basalt rocks (cf. Al-Jallad 2022, 71-72). A notable find is a faience *Pataikos* amulet of Egyptian origin, which may have been worn to protect from snakebites or during childbirth (see Boschloos and Akkermans 2021 for details). Small disc beads crafted from locally sourced ostrich eggshell are plentiful, as are beads made from a variety of marine gastropod shells from the Red Sea, Mediterranean, and Indian Ocean, which likely reached Jebel Qurma through trade.

Also prevalent are beads fashioned from a variety of stone, including chalcedony and local calcites, limestone, and sandstone in an array of colours. Carnelian is the most frequently used stone for bead production, displaying wide variation in shapes and craftsmanship quality. One carnelian axe-shaped pendant closely parallels finds from Early Iron Age sites as distant as Wadi Fidan in Jordan and Saruq al-Hadid in Dubai (Beherec 2011; Weeks *et al.* 2017). The majority of important carnelian sources are lo-

Fig. 16 Selection of beads and pendants made from shell, coral and pearl (nos. 1-14), ostrich eggshell (no. 15), variety of different stone types (nos. 16-48), vitreous materials (nos. 49-68), metal (nos. 69-72), carnelian and (unidentified) black stone pendants (nos. 73-74), faience Pataikos pendant and blue-glazed, steatite scarab pendant (nos. 75-76).

cated in India, with lesser deposits found in the Arabian Peninsula, Egypt, and the Negev (Then-Obłuska 2013; Milevski 2011; Bloxman 2006). Significantly, evidence of local carnelian bead production in the Jebel Qurma region includes two bead blanks and several unworked pieces found at two sites for temporary settlement.[15] Other stone types include a range of metamorphic and igneous stones such as marble, quartzite, banded agate, gabbro, and peridotite, alongside rare examples of amethyst, jasper, and malachite from Egypt or Arabia.

Bronze and iron items were relatively common in the graves. While the bronze items likely were imports, local ironworking is documented in the basalt desert during the third century CE, with earlier production possible (Akkermans and Brüning 2020b). The finds consisted primarily of personal ornaments like (ear)rings, pins, and bracelets, while rarer items include buckles, nails, and what appear to be clasps and fittings. Metal beads are scarce, with only a few small, granulated gold beads and some bronze examples recorded. At least two tombs each had a bronze bowl. Several tombs yielded weaponry in the form of iron arrowheads, along with an iron javelin and a possible spearhead (Fig. 17, nos. 1-8). A unique find in the debris of a small tower tomb was the socketed, trilobate, 'Scythian' arrowhead made of bronze, securely dated to the beginning of the sixth century BCE. Other graves contained small bronze armour scales, with the rivets used to attach these scales to corselets often still intact (Fig. 17, nos. 9-12). These scales were consistently found either as single pieces or in small groups of two or three, likely indicating their apotropaic role, where each scale, as a *pars pro toto*, symbolized the protective essence of an entire armour corselet (Maran 2004, 23).

15 Evidence of local bead working has been reported previously at the nearby prehistoric sites of Jebel Naja, Azraq, and Wadi Jilat (Wright and Garrard 2003; Betts *et al.* 2013).

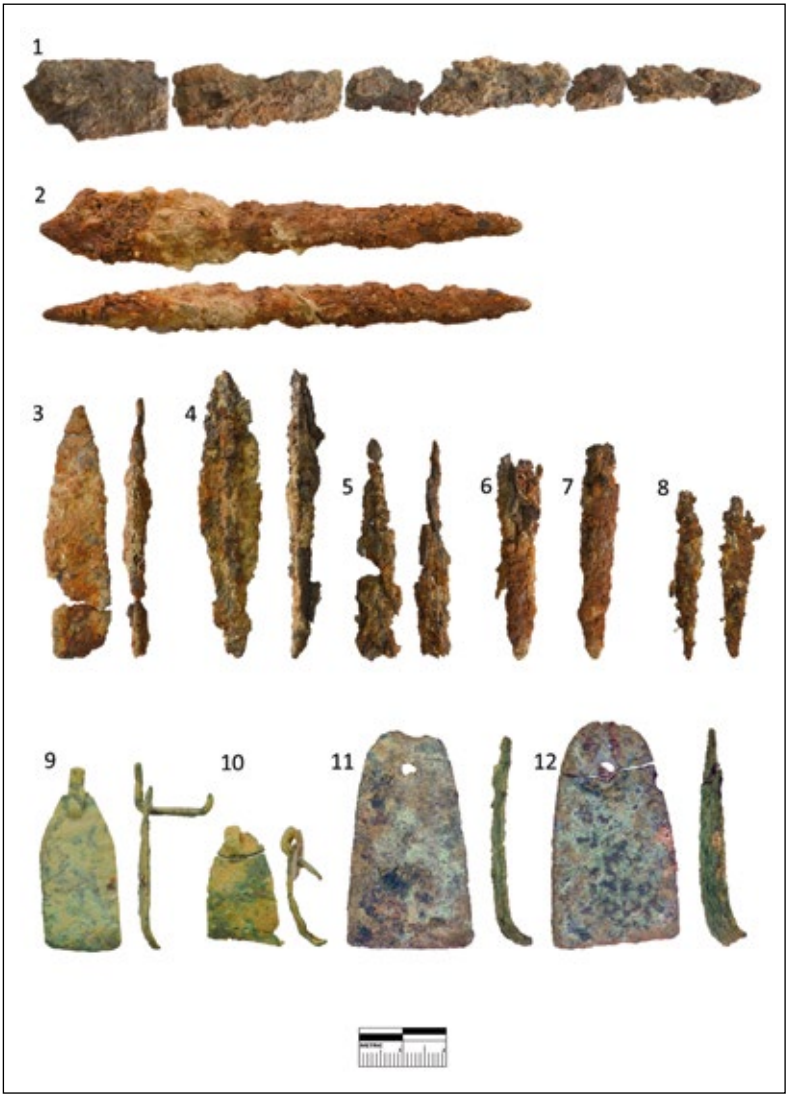

Fig. 17 Selective weaponry from the Jebel Qurma tombs. Spearhead (no. 1), javelin (no. 2) and arrowheads (nos. 3-8), all made of iron. Bronze armour scales (nos. 9-12).

Apotropaic significance should probably also be attributed to the feet and legs of griffon vultures (*Gyps fulvus*) in two, possible three, Iron Age tower tombs – the first known examples of vulture body parts in mortuary contexts in the Middle East. François Viré (2012) highlights the many medicinal properties ascribed to vulture parts in the Eastern Mediterranean and Arabia during Classical Antiquity, as well as the bird's reputed ability to ward off evil. The presence of the bird of prey in the tombs at Jebel Qurma evokes the *hāmah* from pre-Islamic lore: the owl (not the vulture) as the bird of death, thought to embody the soul of the dead man, crying out over the grave in lamentation for its separation from the body (see Homerin 1985).

There are other animal parts that may have had ritual meaning in a funerary setting: dromedary (*Camelus dromedarius*) teeth and bones were found on the floor of at least ten Iron Age burial chambers, alongside human remains. These camel parts may have represented food for the deceased, or the remnants of funerary meals consumed by the mourners. Alternatively, the dromedary parts might have served as a *pars pro toto* representation of the whole animal accompanying the deceased in the grave. If so, they could signify a *balīya* sacrifice – an offering of an animal (usually a camel) for the deceased to use in the afterlife (King 2009). Excavations across the Arabian Peninsula have shown that the practice of *balīya* was widespread in pre-Islamic Arabia and persisted into the early Islamic period, continuing as late as the tenth century (King 2009, 83; Nehmé 2020; Macdonald 1992, 304; Hayajneh 2006; Akkermans and Brüning 2020b, 217-219).

Although the tombs and their inventories vary from site to site, there is an overwhelming sense of uniformity in both the quality and quantity of the grave assemblages. No tomb stands out in this respect. This may suggest that the deceased were regarded as equals in death, but it could also reflect a strong egali-

tarian ethos during life, with no individuals explicitly ranked above others. Any form of leadership among the small desert groups may have been temporary, situational, and entrusted in individuals who adapted routinely to different roles as circumstances demanded (Akkermans 2019, 425).

PUZZLING POTTERY

One category of material conspicuously absent from the Iron Age tombs in Jebel Qurma is pottery. The earliest known ceramics from Jebel Qurma date to the late third and early second millennium, ca. 2300–1900 BCE.[16] After this period, pottery entirely disappears from the region, only to reemerge 2000 years later during the late Roman period. The absence of pottery for several thousand years remains an intriguing and unexplained phenomenon, especially given the lengthy, complex ceramic sequences and the widespread use of pots by contemporaneous, settled communities in Palestine and Transjordan, extending as far east as the foothills of Jebel al-ʿArab, only a few dozen kilometers from the basalt expanse. Pottery in these Levantine regions is found in great abundance not only in domestic contexts but also in burials, making its lack in the relatively nearby tombs at Jebel Qurma all the more remarkable.

Pottery was likely familiar to the nomadic population of Jebel Qurma, given its geographical proximity to regions with widespread ceramic use and the existence of exchange networks.

16 However, work elsewhere in the basalt desert in Jordan has revealed the presence of much earlier ceramics, such as at Wisad Pools, dated to the sixth millennium (Rollefson *et al.* 2013, 18-19)), and at Tell al-Hibr and Tulul al-Ghusayn, both dated to the fourth millennium BCE (Betts 2013; Müller-Neuhof and Abu-Azizeh 2016).

Although pottery is often deemed incompatible with nomadic lifestyles, this view is overly simplistic, as many mobile groups have historically produced or traded ceramics for their own use (e.g., Cribb 1991; Beck 2009; Jordan and Zvelebil 2010; Gibbs 2012; Grillo 2014; Heitz and Stapfer 2017). Therefore, the long-term absence of ceramics in the Black Desert reflects cultural constraints rather than functional necessity. The stark contrast between the lack of pottery in one area and its widespread use in neighbouring regions probably was intentional and meaningful – a deliberate choice to abstain from the manufacture, exchange, or use of pottery in Jebel Qurma (Akkermans and Brüning 2020a). Desert groups in the second and first millennia BCE appear to have strongly valued autonomy and intentionally distanced themselves from the urban polities of the Levant and Syria. This perspective recalls the frequently cited 'desert-versus-the-sown' dichotomy, which, despite being rightly criticized for its often-weak, oversimplified evidence, may have held significant relevance during this period (Akkermans 2019). Pottery is just one of many contrasts; another is the tomb types of Jebel Qurma and the broader basalt desert, which have little to no parallels in the neighbouring settled regions to the west.

PETROGLYPHS, INSCRIPTIONS, AND TOMBS

Across the Jebel Qurma highlands, there are numerous places with substantial numbers of both petroglyphs and short inscriptions in Safaitic, generally dated between the first century BCE and the third/fourth century CE. To date, more than 12,000 pieces of rock art have been documented in Jebel Qurma, with each fieldwork season adding to the total. The inscriptions typically contain names of individuals, list their genealogies and tribal affiliations, or refer to their activities, such as pasturing, hunting,

Fig. 18 A beautiful carving of a male dromedary camel. The Safaitic inscription reads: "By Bs' son of Sddt is the camel".

raiding, or simply waiting for the winter rains during droughts. The texts sometimes commemorate offerings, sacrifices, or the erection of cult stones. They may invoke deities, such as Allāt and Rudaw, together with requests for spoil, security, justice, or protection against illness (Della Puppa 2022).

The inscriptions may also attribute authorship to accompanying representational carvings (Fig. 18). The local rock art revolves around three main themes that seem to form the core of desert life: pastoralism, wildlife and hunting, and warfare (Fig. 19). About three-quarters of the images include animals, such as the gazelle, ibex, oryx, lion, and ostrich. While most of the shown animals are wild, domestic animals, mainly the dromedary and the horse, are also represented. Anthropomorphic figures also appear, although they constitute less than ten percent of all figures. They are usually depicted as small stick figures with little or no

Fig. 19 A hunting scene, featuring three archers (on the left) and two dogs (on the right) hunting a herd of what appear to be ibexes. The inscription above the animals reads: "By Fhrn son of B'sh son of 'My are the animals".

Fig. 20 Rock art detail: a horseman with a spear in his raised right hand.

bodily detail (Fig. 20). The more elaborate human images may display clothing, armour, and weaponry, such as swords, shields, spears, and bows-and-arrows (Brusgaard 2019; K. Akkermans 2020). Special attention is drawn to the carvings of naked women with wide, curved hips, raised hands, and wild hairstyles, which, according to the associated inscriptions, appear to represent slave girls for singing and dancing (Macdonald 2012; Brusgaard 2019, 42) (Fig. 21).

Fig. 21 A battle scene with a horseman and bowmen attacking each other. Most prominent, however, is the large female figure who dominates the scene and is referred to as 'the musician' in the accompanying Safaitic inscription. The latter reads: "[By] … son of 'Bd is the image of …n-h the musician from the raiding party. And, O Rdw, blind whosoever would efface." The author calls upon the deity Rdw (Rudaw) to punish those who might harm the panel.

The find spots with rock art are widely diverse, from high hilltops and basalt-strewn plains to man-made shelters and burial cairns. In the case of the latter, a relationship of explicitly funerary significance between the tombs and the rock art is often readily assumed (e.g., Oxtoby 1968; Winnett 1978; Lipinski 1997; Eksell 2002). However, concrete evidence supporting this association remains sparse, though it is not entirely absent (see Macdonald 1992b for a lengthy discussion). Among the thousands of inscriptions discovered at Jebel Qurma, only a handful refer to a burial, such as: "By Mhlm son of Thr and he grieved for Nkr … and this cairn was made by him" (Della Puppa 2022, 22).

Significantly, our excavations in Jebel Qurma have unambiguously demonstrated that many tombs were constructed using basalt blocks previously carved with Safaitic petroglyphs and inscriptions, proving that these tombs were built after the creation of the rock art. Locales already rich in rock art may very well have attracted tomb building, while the latter, in a reciprocal relationship, may have amplified the social significance of these existing rock-art sites for the local population (cf. Brusgaard 2019, 244). However, the reuse of inscribed stones for construction also suggests that the social value of many inscriptions and representations might have been relatively short-lived or relevant only to specific individuals – perhaps unsurprising given the high mobility of people that shaped the desert lifestyle.

THE END

There is strong evidence to suggest that the indigenous, nomadic, pastoralist way of life (and death) typical of the basalt belt during the Iron Age came to an end by the third century CE or, at the latest, the fourth century CE. The change at this

time included the dissolution of local rock-art production and the Safaitic writing tradition, both of which had been in use for some 500 years. The change also disrupted traditional cairn construction for burial. Ring cairns, tower tombs, cist graves, etc., ceased to be built, as did the characteristic tails of small cairns attached to these tombs. What types of burials emerged in their place remains uncertain. Although there is abundant evidence of human presence in Jebel Qurma throughout the first millennium CE (Huigens 2019), associated graves have yet to be discovered, except for some inhumations in much older, still extant tombs that were reused during the fifth and sixth centuries CE. Another change in the third to fourth century CE was the reintroduction of pottery in Jebel Qurma, following its absence for several thousand years. The new wares found at domestic campsites in the region were not locally manufactured but were clearly imports from Roman-Byzantine and, later, Umayyad (Early Islamic) centres to the west of the basalt fields.

It is significant that the radical change in Jebel Qurma coincided with the construction of a line of Roman fortresses for garrisons, as well as roads for supplies and intervention along the fringes of the lava belt. There is a widespread opinion, not only that there was a significant Roman military buildup on the Arabian frontier during the third and early fourth centuries, but also that the fortifications primarily served to confront the so-called 'nomadic threat of the east' of that period. It has been argued that there was an urgent need to restrain the desert tribes to prevent widespread raiding and pillaging of the urbanized territories of the Levant and Syria (see, e.g., Graf 1978; Parker 1986, 2006; Kennedy 2008). This notion of endemic conflict with local nomads along the eastern frontier has been rightly challenged due to its lack of solid evidence and its oversimplified 'desert-versus-the-sown' dichotomy (Banning 1986, 1987; Graf 1989; Macdonald 1993). In the case of Jebel Qurma, the evidence of small, scat-

tered, local desert populations – and the minimal threat they may have posed, if any – stands in sharp contrast to the significant expenditure of labour and resources invested in Roman military installations in the region. It is more probable, I believe, that the military works were part of a broader colonization effort aimed at settling the Transjordan interior steppe and safeguarding its resources (cf. Kennedy 2007). The steppe region had plenty of water reserves and enormous potential for livestock raising and grazing, along with a substantial supply of high-quality salt at Azraq and, further to the south, at Kaf and Ithra' (Akkermans 2019). We should also remember that the fortifications likely played a key role in controlling the crucial trade routes to and from Arabia, passing through Wadi Sirhan. Recent research on Rome's eastern frontier has indeed questioned the use of the forts as a border wall for defense, suggesting instead that these structures primarily facilitated safe caravan-based trade across the steppe (Casane *et al.* 2023).

The opening up of the desert on an unprecedented scale from the third century onward seems to have attracted newcomers to the region, who, in the wake of the Roman military, sought to exploit its grazing grounds and other resources. Colonist settlements emerged at strategic locations along the edges of the basalt expanse, such as at Azraq, Hallabat and 'Umari, and new implements – such as pottery – made their debut. Unsurprisingly, competition and conflict with the native nomads over local resources may have escalated unchecked. Given the inherently uneven balance of power – between the Roman Empire on one hand and desert tribes on the other – the outcome of this struggle was predictable, with the desert communities becoming increasingly socially marginalized and their culture on the verge of disintegration (Akkermans 2019).

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BIBLIOGRAPHY

Adams, R.M., Parr, P.J., Ibrahim, M. & Al-Mughannum, A.S. 1977. Saudi Arabian Archaeological Reconnaissance 1976. *Atlal* 1, 21-40.

Akkermans, K.A.N. 2020. Bows on Basalt Boulders: Weaponry in Safaitic Rock Art from Jebel Qurma, Black Desert, Jordan. In P.M.M.G. Akkermans (ed.), *Landscapes of Survival – The Archaeology and Epigraphy of Jordan's North-Eastern Desert and Beyond.* Leiden: Sidestone Press, 305-316.

Akkermans, P.M.M.G. 2019. Living on the Edge or Forced into the Margins? Hunter-Herders in Jordan's Northeastern Badlands in the Hellenistic and Roman Periods. *Journal of Eastern Mediterranean Archaeology and Heritage Studies* 7, 412-431.

Akkermans, P.M.M.G. & Brüning, M.L. 2017. Nothing But Cold Ashes? The Cairn Burials of Jebel Qurma, Northeastern Jordan. *Near Eastern Archaeology* 80, 132–139.

Akkermans, P.M.M.G. & Brüning, M.L. 2020a. 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. In P.M.M.G. Akkermans (ed.), *Landscapes of Survival – The Archaeology and Epigraphy of Jordan's North-Eastern Desert and Beyond.* Leiden: Sidestone Press, 185-216.

Akkermans, P.M.M.G. & Brüning, M.L. 2020b. A Late Roman Pastoralist Ironworking Site in the North-Eastern Black Desert, Jordan. In A. Ahrens, D. Rokitta-Krumnow, F. Bloch and C. Bührig (eds), *Pulling the Threads Together: Studies in Honour of Karin Bartl*. Münster: Zaphon Publishers, 103–119.

Akkermans, P.M.M.G., Brüning, M.L. & Alghizawat, A. In press. The Grazing Ground Beyond the Sown: Mamluk Pastoralist Settlement in Jebel Qurma, Black Desert, North-East Jordan. In J. Vroom and H. Nol (eds.), *Explorations in Islamic Archaeology: Material Culture, Settlements and Landscapes from the Mediterranean to Western Asia*. Turnhout: Brepols.

Akkermans, P.M.M.G., Huigens, H.O. & Brüning, M.L. 2014. A Landscape of Preservation: Late Prehistoric Settlement and Sequence in the Jebel Qurma Region, North-Eastern Jordan. *Levant* 46, 186-205.

Akkermans, P.M.M.G., Brüning, M.L., Arntz, M., Sarah A. Inskip, S.A & Akkermans K.A.N. 2020. Desert Tombs: Recent Research into the Bronze Age and Iron Age Cairn Burials of Jebel Qurma, North-East Jordan. *Proceedings of the Seminar for Arabian Studies* 50, 1–17.

Al-Dawoody, A., Winter, K.A & Finegan O. 2021. International Committee of the Red Cross (ICRC): Management of the Dead under Islamic Law. *Forensic Science International: Reports* 3, https://doi.org/10.1016/j.fsir.2021.100196.

Al-Houdalieh, S., Bernbeck, R. & Pollock, S. 2017. Palestinian Looted Tombs and their Archaeological Investigation. *Journal of Eastern Mediterranean Archaeology & Heritage Studies* 5, 198-239.

Al-Jallad, A. 2015. *An Outline of the Grammar of the Safaitic Inscriptions*. Leiden: Brill.

Al-Jallad, A. 2022. *The Religion and Rituals of the Nomads of Pre-Islamic Arabia*. Leiden: Brill.

Al-Mansir, A. & Al-Till, Y. 2020. Looting of Antiquities in Jordan: A General Overview. *Adumatu* 42, 7-32.

Al-Sudairī, A. 1995. *The Desert Frontier of Arabia: Al-Jawf through the Ages*. London: Stacey International.

Avner, U. 1999-2000. Nabataean Standing Stones and Their Interpretation. *Aram* 11-12, 97-122.

Avner, U. 2001. Sacred Stones in the Desert. *Biblical Archaeology Review* 27, 30-41.

Banning, E.B. 1986. Peasants, Pastoralists and "Pax Romana": Mutualism in the Southern Highlands of Jordan. *Bulletin of the American Schools of Oriental Research* 261, 25–50.

Banning, E.B. 1987. *De Bello Paceque:* A Reply to Parker. *Bulletin of the American Schools of Oriental Research* 265, 52–54.

Beherec, M.A. 2011. *Nomads in Transition: Mortuary Archaeology in the Lowlands of Edom (Jordan).* San Diego: University of California.

Bell, G. 1907. *The Desert and the Sown*. London: William Heinemann.

Betts, A.V.G. 1998. *The Harra and the Hamad: Excavations and Surveys in Eastern Jordan* (Volume 1). Sheffield: Sheffield Academic Press.

Betts, A.V.G. 2013. *The Later Prehistory of the Badia: Excavations and Surveys in Eastern Jordan* (Volume 2). Oxford: Oxbow Books.

Betts, A., Cooke, L., Garrard, A., McCartney, C. & Reese, D. 2013. Late Neolithic Sites in the Harra. In A.V.G. Betts, *The Later Prehistory of the Badia: Excavations and Surveys in Eastern Jordan.* Oxford: Oxbow Books, 13–51.

Bloxman, E. 2006. Miners and Mistresses: Middle Kingdom Mining on the Margins. *Journal of Social Archaeology* 6, 277–303.

Boschloos, V. & Akkermans, P.M.M.G. 2021. From a Land Far Away: Egyptian(izing) Amulets from Jebel Qurma, Black Desert, Jordan. *Journal of Ancient Egyptian Interconnections* 29, 1-22.

Braemer, F., Échallier, J.-C. & Taraqji, A. 2004. *Khirbet Al-Umbashi: Villages et campements de pasteurs dans le "désert noir" (Syrie) à l'âge du Bronze.* Beirut: Institut Français du Proche-Orient.

Bravmann, M.M. 1972. *The Spiritual Background of Early Islam. Studies in Ancient Arab Concepts*. Leiden: E.J. Brill.

Brent, L. 2017. Disturbed, Damaged and Disarticulated: Grave Reuse in Roman Italy. In R. Cascino, F. De Stefano, L. Lepone and C.M. Marchetti (eds.), *TRAC 2016 – Proceedings of the Twenty-Sixth Theoretical Roman Archaeology Conference*. Rome: Edizioni Quasar, 37-50.

Brusgaard, N. 2019. *Carving Interactions – Rock Art in the Nomadic Landscape of the Black Desert, North-Eastern Jordan*. Oxford: Archaeopress.

Casane, J., Goodman, D.D. & Ferwerda, C. 2023. A Wall or a Road? A Remote Sensing-Based Investigation of Fortifications on Rome's Eastern Frontier. *Antiquity* 97, 1516-1533.

Chesson, M.S. & Schaub, R.T. 2007. Death and Dying on the Dead Sea Plain: Fifa, al-Khanazir and Bab adh-Dhra' Cemeteries. In T.E. Levy, P.M.M. Daviau, R.W. Younker and M. Shaer (eds.), *Crossing Jordan: North American Contributions to the Archaeology of Jordan*. London: Equinox, 253–260.

Clark, A. 1981. Archaeological Excavations at Two Burial Cairns in the Harra Region of Jordan. *Annual of the Department of Antiquities of Jordan* 25, 235-265.

Conder, C.R. 1883. *Heth and Moab. Explorations in Syria in 1881 and 1882*. London: Richard Bentley & Son.

Dalton, M., McMahon, J., Kennedy, M.A., Repper, R., Al-Shilali, S.E., Al-Balawi, Y., Boyer, D.D. & Thomas, H. 2022. The Middle Holocene 'Funerary Avenues' of North-West Arabia. *The Holocene* 32, 183-199.

De Maigret, A. & Antonini, S. 2005. *South Arabian Necropolises. Italian Excavations at Al-Makhdarah and Kharibat al-Ahjur (Republic of Yemen)*. Rome: IsIAO.

Della Puppa, C. 2022. *The Safaitic Scripts. Palaeography of an Ancient Nomadic Writing Culture*. Leiden: Leiden University Scholarly Publications. (https://scholarlypublications.universiteitleiden.nl/handle/1887/3283744)

Döpper, S. 2023. *The Reuse of Tombs in Eastern Arabia*. Oxford: Archaeopress Publishing.

Eksell, K. 2002. *Meaning in Ancient North Arabian Carvings*. Stockholm: Almqvist & Wiksell International.

Fiema, Z.T., Al-Jallad, A., Macdonald, M.C.A. & Nehmé, L. 2015. Provincia Arabia: Nabataea, the Emergence of Arabic as a Written Language, and Graeco-Arabia. In G. Fisher (ed.), *Arabs and Empires before Islam*. Oxford: Oxford University Press, 373-433.

George, A. 1999. *The Epic of Gilgamesh. The Babylonian Epic Poem and Other Texts in Akkadian and Sumerian*. London: Allan Lane, The Penguin Press.

Gerdau-Radonic, K. & Herrera, A. 2010. Why Dig Looted Tombs? Two Examples and Some Answers from Keushu (Ancash Highlands, Peru). *Bulletins et Mémoires de la Société d'Anthropologie de Paris* 22, 145-156.

Glueck, N. 1944. Wâdī Sirḥân in North Arabia. *Bulletin of the American Schools of Oriental Research* 96, 7-17.

Graf, D.F. 1978. The Saracens and the Defense of the Arabian Frontier. *Bulletin of the American Schools of Oriental Research* 229, 1–26.

Graf, D.F. 1989. Rome and the Saracens: Reassessing the Nomadic Menace. In T. Fahd (ed.), *L'Arabie préislamique et son environnement historique et culturel*. Leiden: Brill, 341–400.

Hayajneh, H. 2006. The Nabatean Camel Burial Inscription from Wādi Ram / Jordan. *Die Welt des Orients* 36, 104-115.

Hayajneh, H. 2017. An Ancient North Arabian Inscribed Nefesh Stele from the Vicinity of Jerash (Northwestern Jordan). *Syria* 94, 253-260.

Hasim, A.N. 1997. Typology, Evolutions, and Development of Funerary Structures in Saudi Arabia Antiquities. *Atlal* 14, 102-128.

Harding, G.L. 1953. The Cairn of Hani. *Annual of the Department of Antiquities of Jordan* 2, 8-56.

Harding, G.L. 1978. The Cairn of Sa'd. In R. Moorey and P. Parr (eds.), *Archaeology in the Levant*. Warminster: Aris and Phillips, 243-249.

Hausleiter, A. & Zur, A. 2016. Tayma' in the Bronze Age (c. 2,000 BCE): Settlement and Funerary Landscapes. In M. Luciani (ed.), *The Archaeology of North Arabia – Oases and Landscapes*. Vienna: Austrian Academy of Sciences Press, 135-173.

Hill, R. 1929. *The Baghdad Air Mail*. London: Arnold.

Hoerner, M., Heitz, C. & Laimer, M. 2018. Revisiting the Dead: Tomb Reuse and Post-Burial Practices at Ascoli Satriano (Pre-Roman Apulia, Seventh–Fourth Century BC). *Cambridge Archaeological Journal* 29, 261–285.

Homerin, Th.E., 1985. Echoes of a Thirsty Owl. *Journal of Near Eastern Studies* 44, 165-184.

Horsfield, A. 1943. Journey to Kilwa, Transjordan. *The Geographical Journal* 102, 71-77.

Huigens, H.O. 2019. *Mobile Peoples – Permanent Places. Nomadic Landscapes and Stone Architecture from the Hellenistic to Early Islamic Periods in North-Eastern Jordan*. Oxford: Archaeopress.

Huigens, H.O. 2020. Identifying Nomadic Camp Sites from the Classical and Late Antique Periods in the Jebel Qurma Region, North-Eastern Jordan. In P.M.M.G. Akkermans (ed.), *Landscapes of Survival – The Archaeology and Epigraphy of Jordan's North-Eastern Desert and Beyond.* Leiden: Sidestone Press, 217-233.

Jones, M.D., Richter, T., Rollefson, G., Rowan, Y., Roe, J., Toms, P., Wood, J., Wasse, A., Ikram, H., Williams, M., Al-Shdaifat, A., Nørskov Pedersen, P. & Esaid, W. 2022. The Palaeoenvironmental Potential of the Eastern Jordanian Desert Basins (Qe'an). *Quaternary International* 635, 73-82.

Jordan, P. & Zvelebil, M. (eds.). 2010. *Ceramics Before Farming – The Dispersal of Pottery Among Prehistoric Eurasian Hunter-Gatherers*. New York: Routledge.

Katz, D. 2005. Death They Dispensed to Mankind: The Funerary World of Ancient Mesopotamia. *Historiae* 2, 55-90.

Kennedy, D.L. 2007. *Gerasa and the Decapolis: A "Virtual Island" in Northwest Jordan*. London: Duckworth.

Kennedy, D.L. 2008. The Roman Army and Frontier East of the Dead Sea. *Journal of Roman Archaeology* 21, 669–686.

Kennedy, D.L. 2011. The "Works of the Old Men" in Arabia: Remote Sensing in Interior Arabia. *Journal of Archaeological Science* 38, 3185-3203.

Kennedy, D.L. 2012a. Pioneers Above Jordan: Revealing a Prehistoric Landscape. *Antiquity* 86, 474-491.

Kennedy, D.L. 2012b. The Cairn of Hani: Significance, Present Condition and Context. *Annual of the Department of Antiquities of Jordan* 56, 483-505.

Kennedy, M.A. 2015. Life and Death at Tell Umm Hamad, Jordan: A Village Landscape of the Southern Levantine Early Bronze Age IV/Intermediate Bronze Age. *Zeitschrift des Deutschen Palästina-Vereins* 131, 1–28.

Kennedy, M.A., McMahon, J., Thomas, H., Boyer, D.D., Repper, R., Dalton, M. & AlKhaldi, K. 2021. Dating the Pendant Burials of North-west Arabia: First Radiometric Results from the Khaybar Oasis, Saudi Arabia. *Arabian Archaeology and Epigraphy* 32, 183-197.

Kersel, M.M. & Chesson, M.S. 2013. Looting Matters: Early Bronze Age Cemeteries of Jordan's Southeast Dead Sea in the Past and Present. In S. Tarlow and L. Nilsson Stutz (eds.), *The Oxford Handbook of the Archaeology of Death and Burial*. Oxford: Oxford University Press, 677-694.

Kersel, M.M. & Hill, A. 2019. The (W)Hole Picture: Responses to a Looted Landscape. *International Journal of Cultural Property* 26, 305-329.

King, G. 2009. Camels and Arabian Balîya and Other Forms of Sacrifice: A Review of Archaeological and Literary Evidence. *Arabian Archaeology and Epigraphy* 20, 81–93.

King, G.R.D. 1987. The Distribution of Sites and Routes in the Jordanian and Syrian Deserts in the Early Islamic Period. *Proceedings of the Seminar for Arabian Studies* 17, 91-105.

Köhler, I. 1981. Animal Remains. In S.W. Helms (ed.), *Jawa: Lost City of the Black Desert*. London: Methuen, 249-252.

Lancaster, W. & Lancaster, F. 1999. *People, Land and Water in the Arab Middle East: Environment and Landscapes in the Bilâd ash-Shâm.* Amsterdam: Harwood Academic Publishers.

Lash, A. & Haron, J. 2018. Muslim Burial Customs in Modern Jordan. In C. Eger and M. Mackensen (eds.), *Death and Burial in the Near East from Roman to Islamic Times: Research in Syria, Lebanon, Jordan and Egypt*. Wiesbaden: Reichert Verlag, 251-257.

Lawrence, T. E. 1935. *Seven Pillars of Wisdom*. London: Cape.

Lipinski, E. 1997. *Semitic Languages: Outline of a Comparative Grammar*. Leuven: Peeters.

Macdonald, M.C.A. 1992a. The Seasons and Transhumance in the Safaitic Inscriptions. *Journal of the Royal Asiatic Society* 2, 1-11.

Macdonald, M.C.A. 1992b. The Distribution of Safaitic Inscriptions in Northern Jordan. *Studies in the History and Archaeology of Jordan* 4, 303-307.

Macdonald, M.C.A. 1993. Nomads and the Hawran in the Late Hellenistic and Roman Periods: A Reassessment of the Epigraphic Evidence. *Syria* 70, 303-403.

Macdonald, M.C.A. 2006. Burial Between the Desert and the Sown: Cave-tombs and Inscriptions near Dayr al-Kahf in Jordan. *Damaszener Mitteilungen* 15, 273-301.

Maitland, P. 1927. The 'Works of the Old Men' in Arabia. *Antiquity* 1, 196-203.

Maran, J. 2004. The Spreading of Objects and Ideas in the Late Bronze Age Eastern Mediterranean: Two Case Examples from the Argolid of the 13th and 12th Centuries B.C. *Bulletin of the American Schools of Oriental Research* 336, 11–30.

Maraqten, M. 1998. Curse Formulae in South Arabian Inscriptions and Some of Their Semitic Parallels. *Proceedings of the Seminar for Arabian Studies* 28, 189-200.

McCreery, D.W. 1996. A Salvage Operation at Bab adh-Dhra'. *Annual of the Department of Antiquities of Jordan* 40, 51-62.

Migowski, C., Stein, M., Prasad, S., Negendank, J.F.W. & Agnon, A. 2006. Holocene Climate Variability and Cultural Evolution in the Near East from the Dead Sea Sedimentary Record. *Quaternary Research* 66, 421–431.

Milevski, I. 2011. *Early Bronze Age Goods Exchange in the Southern Levant: A Marxist Perspective.* London: Routledge.

Müller-Neuhof, B. 2014a. Recent Research on the Late Prehistory of the Arid Regions in Jordan. *Levant* 46, 151-160.

Müller-Neuhof, B. 2014b. A 'Marginal Region' With Many Options: The Diversity of Chalcolithic / Early Bronze Age Socioeconomic Activities in the Hinterland of Jawa. *Levant* 46, 230-248.

Müller-Neuhof, B. 2017. The Chalcolithic/Early Bronze Age Hillfort Phenomenon in the Northern Badia. *Near Eastern Archaeology* 80, 124-131.

Müller-Neuhof, B. 2020. Defending the 'Land of the Devil': Prehistoric Hillforts in the Jawa Hinterland. In: P.M.M.G. Akkermans (ed.), *Landscapes of Survival – The Archaeology and Epigraphy of Jordan's North-Eastern Desert and Beyond.* Leiden: Sidestone Press, 145-163.

Müller-Neuhof, B. & Abu-Azizeh, W. 2016. Milestones for a Tentative Chronological Framework for the Late Prehistoric Colonization of the Basalt Desert (North-Eastern Jordan). *Levant* 48, 220-235.

Musil, A. 1926. *The Northern Hegaz: A Topographical Itinerary.* New York: American Geographical Society.

Musil, A. 1927. *Arabia Deserta: A Topographical Itinerary*. New York: American Geographical Society.

Nehmé, L. 2020. The Camel in the Nabatean Realm. In D. Agut-Labordère and B. Redon (eds.), *Les vaisseaux du desert et des steppes. Les camélides dans l'Antiquité*. Lyon: MOM Éditions, 207-226.

Otaegui, A.A., Gonzalez Carretero, L., N. Ramsey, M., Fuller, D.Q. & Richter, T. 2018. Archaeobotanical Evidence Reveals the Origins of Bread 14,400 Years Ago in Northeastern Jordan. *Proceedings of the National Academy of Sciences of the United States of America* 115, 7925-7930.

Oxtoby, W.G. 1968. *Some Inscriptions of the Safaitic Bedouin*. New Haven, CT: American Oriental Society.

Parker, S.T. 1986. *Romans and Saracens: A History of the Arabian Frontier*. Winona Lake, IN: Eisenbrauns.

Parker, S.T. 2006. *The Roman Frontier in Central Jordan: Final Report on the Limes Arabicus Project, 1980–1989*. Washington, DC: Harvard University Press.

Parr, P.J., Zarins, J., Ibrahim, M., Waechter, J., Garrard, A., Clarke, C., Bidmead, M. & Al-Badr, H., 1978. Preliminary Report on the Second Phase of the Northern Province Survey 1397/1977. *Atlal* 2, 29-50.

Rees, L.W.B. 1929. The Transjordan Desert. *Antiquity* 3, 389–407.

Richter, T. 2014a. Margin or Centre? The Epipalaeolithic in the Azraq Oasis and the Qa' Shubayqa. In B. Finlayson and C. Makarewicz (eds.), *Settlement, Survey and Stone. Essays on Near Eastern Prehistory in Honour of Gary Rollefson*. Berlin: Ex Oriente, 27-36.

Richter, T. 2014b. Rescue Excavations at a Late Neolithic Burial Cairn in the East Jordanian Badya. *Neo-Lithics* 1/14, 18-24.

Richter, T. 2017. The Late Epipalaeolithic and Early Neolithic in the Jordanian Badia: Recent Fieldwork around the Qa' Shubayqa. *Near Eastern Archaeology* 80, 30-37.

Richter, T., Otaegui, A.A., Boaretto, Bocaege, E., Estrup, E., Martinez-Gallardo, C., Pantos, G.A., Pedersen, P.N. & Yeomans, L.M. 2016. Shubayqa 6: A New Late Natufian and Pre-Pottery Neolithic A Settlement in North-East Jordan. *Antiquity* 90, 1-5.

Roe, A.G. 2000. *Pastoral Livelihoods: Changes in the Role and Function of Livestock in the Northern Jordan Badia*. Durham: Durham University.

Rollefson, G.O. 2013. Late Prehistoric Aggregation Patterns in Jordan's Eastern Badia. *Syria* 90, 211–230.

Rollefson, G.O, Athanassas, C.D., Rowan, Y.M. & Wasse, A.M.R. 2016. First Chronometric Results for 'Works of the Old Men': Late Prehistoric 'Wheels' near Wisad Pools, Black Desert, Jordan. *Antiquity* 90, 939-952.

Rollefson, G., Rowan, Y., Perry, M., Rowan, Y. and Wasse, A. 2013. Neolithic Settlement at Wisad Pools, Black Desert. *Neo-Lithics* 1/13, 11–23.

Rollefson, G.O., Wasse, A., Rowan, Y.M., Kersel, M.M., Jones, M., Loretzen, B., Hill, A.C. & Ramsay, J. 2017. The 2016 Excavation Season at the Late Neolithic Structure SS-1 on Mesa 7, Black Desert. *Neo-Lithics* 2/17, 19-29.

Rowan, Y.M., Rollefson, G.O., Wasse, A., Abu-Azizeh, W., Hill, A.C & Kersel, M.M. 2015. The "Land of Conjecture": New Late Prehistoric Discoveries at Maitland's Mesa and Wisad Pools, Jordan. *Journal of Field Archaeology* 40, 176-189.

Rowan, Y.M., Rollefson, G.O. & Wasse. A. 2020. Populating the Black Desert: The Late Neolithic Presence. In P.M.M.G. Akkermans (ed.), *Landscapes of Survival – The Archaeology and Epigraphy of Jordan's North-Eastern Desert and Beyond.* Leiden: Sidestone Press, 59-77.

Schaub, R.T. & Rast, W. 1989. *Bab edh-Dhra': Excavations in the Cemetery Directed by Paul W. Lapp (1965–1967)*. Winona Lake, IN: Eisenbrauns.

Smith, S.L. 2020. The Late Chalcolithic and Early Bronze Age of the Badia and Beyond: Implications of the Results of the First Season of the 'Western Harra Survey'. In P.M.M.G. Akkermans (ed.), *Landscapes of Survival – The Archaeology and Epigraphy of Jordan's North-Eastern Desert and Beyond.* Leiden: Sidestone Press, 165-184.

Smith, S.L. & Chambrade, M.-L. 2018. The Application of Freely Available Satellite Imagery for Informing and Complementing Archaeological Fieldwork in the "Black Desert" of North-Eastern Jordan. *Geosciences* 8/12, 491. DOI: 10.3390/geosciences8120491.

Speidel, M.P. 1987. The Roman Road to Dumata (Jawf in Saudi Arabia) and the Frontier Strategy of "Praetensione Colligare". *Historia: Zeitschrift für Alte Geschichte* 36, 213-221.

Then-Obluska, J. 2013. A Few Millimeters Via Thousands of Kilometers: An Asian 'Etched' Carnelian Bead in Early Makurian Nubia, Sudan. *Mitteilungen der Sudanarchäologischen Gesellschaft* 24, 117–123.

Tubb, J.N., Henderson, J.D. and Wright, M.M. 1990. *Excavations at the Early Bronze Age Cemetery of Tiwal esh-Sharqi.* London: British Museum Publications.

Van der Toorn, K. 2000. Magic at the Cradle: A Reassessment. In T. Abusch and K. van der Toorn (eds.), *Mesopotamian Magic: Textual, Historical and Interpretative Perspectives*. Leiden: Brill, 139-147.

Viré, F. 2012. Nasr. *Encyclopaedia of Islam New Edition Online*.

Wallace-Hadrill, A. 2008. Housing the Dead: The Tomb as House in Roman Italy. In L. Brink and D. Green (eds.), *Commemorating the Dead – Texts and Artifacts in Context. Studies of Roman, Jewish, and Christian Burials*. Berlin: Walter de Gruyter, 39-77.

Wasse, A., Rollefson, G., Rowan, Y., Heidkamp, B., Martin, L., Röttger-Morgan, T. & Sarıtaş, Ö. 2024. Not a Place for Respectable People, But the Ends of the Earth Converge There: Insights from Wisad Pools into the Nature and Context of Jordan's Black Desert Neolithic. *Levant* 56, 153-184, DOI: 10.1080/00758914.2024.2350316.

Webb, J.M. & Frankel, D. 2008. Exploiting a Damaged and Diminishing Resource: Survey, Sampling and Society at a Bronze Age Cemetery Complex in Cyprus. *Antiquity* 83, 54–68.

Weeks, L., Cable, C., Franke, K., Newton, C., Karacic, S., Roberts, J., Stepanov, I., David-Cuny, H., Price, D. Bukhash, R.M., Radwan, M.B. & Zein, H. 2017. Recent Archaeological Research at Saruq al-Hadid, Dubai, UAE. *Arabian Archaeology and Epigraphy* 28, 31–60.

Willcox, G. 1981. Plant Remains. In S.W. Helms (ed.), *Jawa: Lost City of the Black Desert*. London: Methuen, 247–248.

Willcox, G. 1999. Charcoal Analysis and Holocene Vegetation History in Southern Syria. *Quaternary Science Reviews* 18, 711–716.

Winnett, F.V. 1978. *Inscriptions from Fifty Safaitic Cairns*. Toronto: University of Toronto Press.

Woolfenden, W.B., and Ababneh. L. 2011. Late Holocene Vegetation in the Azraq Wetland Reserve, Jordan. *Quaternary Research* 76, 345–351.

Wright, K. & Garrard, A. 2003. Social Identities and the Expansion of Stone Bead-Making in Neolithic Western Asia: New Evidence from Jordan. *Antiquity* 77, 131–166.

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