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The EBA Colonization of the Northern Bādiyah: Fixing the Chronological Framework

Introduction

Since 2010, the northern Bādiyah in northeastern Jordan has been the focus of the extensive archaeological “Jawa Hinterland Project”¹, which aims to identify and characterize traces of socio-economic activities dating to the Late Chalcolithic/Early Bronze Age (LC/EBA), from the late 5th to the early 3rd millennium BC. This period is of special significance due to the fact that in this era the first urbanization processes occurred in southwest Asia, particularly in Mesopotamia and in the Southern Levant. The aim of this project is to investigate whether and to what extent these extensive socio-economic transformations, which characterized the urbanization process, had an effect on the neighbouring steppe deserts, such as the northern Bādiyah. The preliminary results of eight fieldwork seasons in the basalt desert (*ḥarra*) and the eastern adjacent limestone desert (*ḥamād*) in the northern Bādiyah, prove an extensive utilization of these present-day seemingly barren landscapes. The identified

evidence for LC/EBA socio-economic activities range from large-scale flint mining and export-oriented cortical scraper production (Müller-Neuhof 2012a, 2012c, 2013a, 2013c, 2013d, 2013e, 2013f, 2014a, 2014b), via intensive utilization of seasonal pastures in the basalt desert, documented by abundant remains of campsites close to wadi banks and mudpans (*qui'an*) (Müller-Neuhof 2012a, 2013b, 2013e, 2014b). Further identified evidence for LC/EBA socio-economic activities are extensive agricultural activities, facilitated by artificial irrigation with rainwater harvesting (run-off irrigation) (Meister *et al.* 2017, Müller-Neuhof 2012b, 2013e, 2014b, 2014c, 2015a, Müller-Neuhof – Abu-Azizeh 2018 a), as well as sedentary communities based in hillforts and their immediate vicinity (Müller-Neuhof 2013b, 2013e, 2014a, 2014b, 2015a, Müller-Neuhof – Abu-Azizeh 2016, in press).

While these results were not all expected from the beginning of this research project, and while each of these outcomes has its own

1. The Jawa Hinterland Project consists of two consecutive projects. “Arid habitats in the 5th to the early 3rd millennium BC: mobile subsistence, communication and key resource use in the northern Bādiyah (NE-Jordan)” from 2010 until 2014 and “The colonization of the Northern Bādiyah (NE-Jordan) in the Late Chalcolithic and

Early Bronze Age (4th to 3rd millennium BC): a contribution to archaeological settlement geography in the arid regions of Southwest Asia” since 2015. Both projects have been funded by the *Deutsche Forschungsgemeinschaft* (German Research Foundation) (DFG-MU3075/1-1, DFG-MU3075/1-2, DFG-MU3075/3-1).

specific significance, one result that needs to be highlighted here is the surprising discovery of several LC/EBA hillforts in the basalt desert. This discovery is of great importance, because, due to their fortifications, these sites can be regarded as permanent settlements and therefore prove the possibility of a year-round occupation in at least some areas of the basalt desert in the LC/EBA I.

This is particularly significant as the only EBA settlement in the region, which hitherto has been known to have been occupied year round, is Jāwā, located in the west of the basalt desert (Helms 1981). Jāwā’s first period of occupation, according to the pottery typology, dates to the EBA I (Helms 1991); a chronological assessment, which recently has been confirmed with new radiocarbon dates (Müller-Neuhof *et al.* 2015b).

The discovery of new, almost contemporary sites east of Jāwā has not only proven that settlements could exist in this region, but furthermore it has “relieved” Jāwā from its previous reputation of being an “odd site”, “lost” somewhere in the eastern desert. The existence of LC/EBA I fortified settlements in the basalt desert, such as Jāwā, are therefore not isolated cases, but instead seem to have been a frequent phenomenon, at least in the region east of Jāwā.

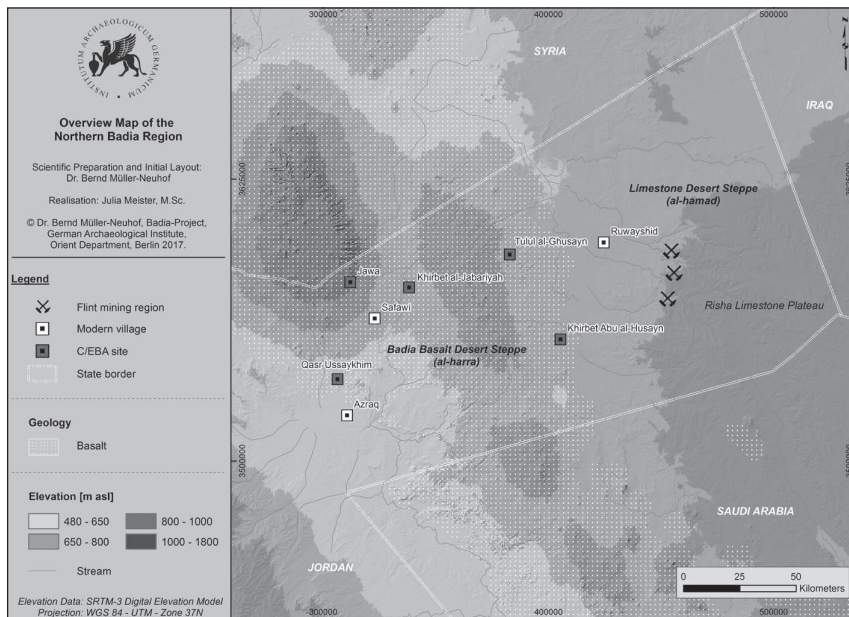
Four hillfort sites have been identified in the *ḥarra* (FIG. 1). Three of them (Khirbat Abū al-Ḥuṣayn, Tulūl al-Ghuṣayn and Khirbat al-Ja‘bariyya) are located east of Jāwā and have been at least partially investigated. A new “discovery” is the identification of a possible EBA I occupation at the site Qaṣr al-Uṣaykhim, which is located between Jāwā and al-Azraq and which is hitherto known only by the small Roman fortress on the summit of the volcano.

The identified hillfort sites, among which Jāwā can be counted due to its location on a basaltic hillock, vary considerably in their size, in the construction, layout and dimension of their fortifications, and in the number and location of dwelling structures at the sites. However, all hillfort sites show clear similarities and a homogenous pattern of specific characteristics, which will be summarized after a brief description of the major features of each site.

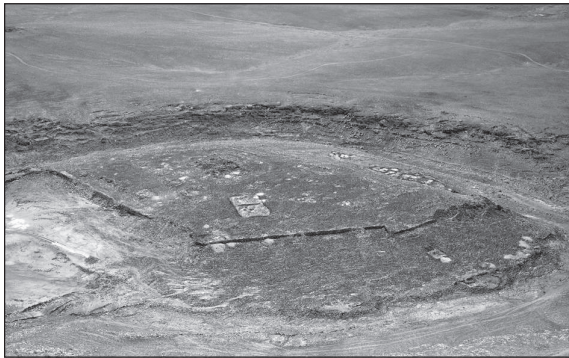
The Characteristics of the Northern Bādiyyah Hillfort Sites

Jāwā

Jāwā (FIG. 2) was discovered by French pilot A. Poidebard in 1931 on one of his flights over the basalt desert. Excavations were conducted under the direction of S. Helms from 1972 until 1976, followed by minor investigations



1. Map of the northern Bādiyyah with indication of Jāwā and the newly identified hillfort sites.



2. Aerial view of Jāwā (©APAAME, Matthew N. Dalton).

on the site by S. Helms until 1986. According to the discovered pottery, S. Helms identified two settlement phases. The first and major phase, which is characterized by the massive fortification wall with gates, several dwelling structures, and the extra-mural settlement outside of the main fortification on the foot of the hillock, which was fortified with a smaller fortification wall, date to the EBA IA (3,500 – 3,000 BC). This chronological assessment has since been confirmed by new radiocarbon dates (Müller-Neuhof *et al.* 2015, see also below). However, due to the revised chronology of the EBA I in recent years, which especially concerns the earlier portion of the EBA (Bourke *et al.* 2009), the early occupations at Jāwā need to be dated to the EBA IB rather than the EBA IA.

The second and minor reoccupation, which is characterized by the ‘citadel’, a massive multi-chambered structure with outbuildings in the centre, and on the highest point of the site, dates to the transition from from the EBA IV to the MB I (around 2000 BC). Furthermore, Jāwā is characterized by extensive waterworks. Most significant are a dam, which to date appears to be the most ancient dam in the world (*ca.* 3,600 cal. BC) (FIG. 3) (Müller-Neuhof *et al.* 2015; Vogel 1991), the extensive terraced gardens opposite Jāwā, which were irrigated by rainwater harvesting (run-off irrigation) (Müller-Neuhof 2012b, 2014b, 2014c) and date, according to OSL, to the mid and late 4th millennium cal. BC (Meister *et al.* 2017) (FIG. 4). Additionally the channels and pools in the Wādī Rājil beside

Jāwā have to be mentioned, which according to the excavator, were contemporaneous with the EBA occupation at Jāwā (Helms 1981) (FIG. 5).

Jāwā extends in total over an area of *ca.* 8.3 hectares, whereas the size of the area enclosed by the major fortifications is *ca.* 5.3 hectares. The remaining area is the “lower town” on the foot and the slopes of the hillock, which was also fortified by a wall. The major fortification wall is characterized by a double-faced construction with two outer faces, constructed with large basalt boulders and a filling, consisting of



3. View of the western face of the dam at Jāwā (©DAI-Orientabteilung, B. Müller-Neuhof).



4. Aerial view of a part of Terrace Garden System 1 at Jāwā (©APAAME, D.L. Kennedy).



5. View of one of the pools in the Wādī Rājil (©DAI-Orientabteilung, B. Müller-Neuhof).

smaller basalt boulders and stones (FIG. 6). The thickness of the wall reaches up to *ca.* 4 meters and the preserved height extends in some sections to more than 4 meters. Five major gates and several posterns have been identified (Helms 1977: 29); with at least one of them being a chambered gate. Gates, posterns and probably even traces of towers have also been identified in the fortification wall of the lower town (Helms 1977, Helms 1981). The domestic architecture at Jāwā is mostly characterized by small round houses (Helms 1977: 30, Figs. 4 and 5), about five meters in length (FIG. 7).

Khirbat Abū al-Ḥuṣayn

Khirbat Abū al-Ḥuṣayn (KAH) is located on the eastern edge of the *ḥarra* close to the easterly-adjacent large mudpan *Qā‘ Abū al-Ḥuṣayn*. The site lies on a volcano (FIG. 8), which belongs to a long chain of volcanos, forming the SE-NW oriented fissure eruption zone. This zone is furthermore characterized by a chain of large mudpans between and beside these volcanos. Due to the fact that large parts of the surface of the *ḥarra* are characterized by a densely-packed pavement of basalt boulders, which limit access, such mudpans and additionally, wadis, serve as natural and easily accessible routes. KAH was discovered on the first of the two transect surveys in the Jawa Hinterland Project in the autumn of 2010 (Müller-Neuhof 2013b; 2014a)².

In the spring of 2013, one week was spent at KAH in order to document the visible structures and to survey the surface of the site and its vicinity. Hitherto, no soundings or excavations have been carried out at the site. Therefore, the assumed date of the settlement in the 4th millennium BC is solely based on the few lithic and pottery remains, which have been found on the surface.

KAH is characterized by several jointly connected and enclosed flat areas on different levels on top of the volcano, extending over an

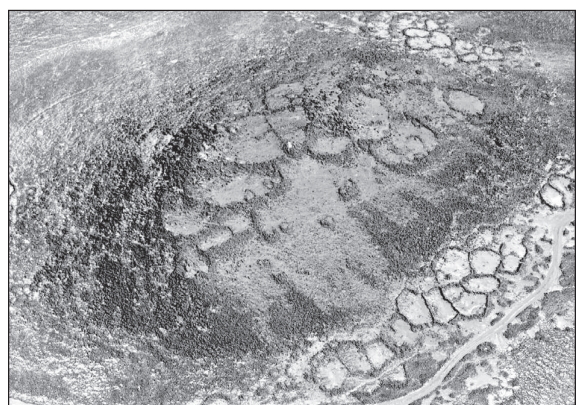
area of *ca.* 0.9ha (FIG. 9). Large and closely-spaced basalt outcrops delimit the site to the west, northwest, north and northeast and constitute a natural fortification. The remaining edges of the summit are fortified by massive mostly collapsed enclosure walls. Despite the collapsed condition of the walls, their original



6. View of a section of the fortification wall at Jāwā with the eastern half of Gate 1 in the foreground (©DAI-Orientabteilung, B. Müller-Neuhof).



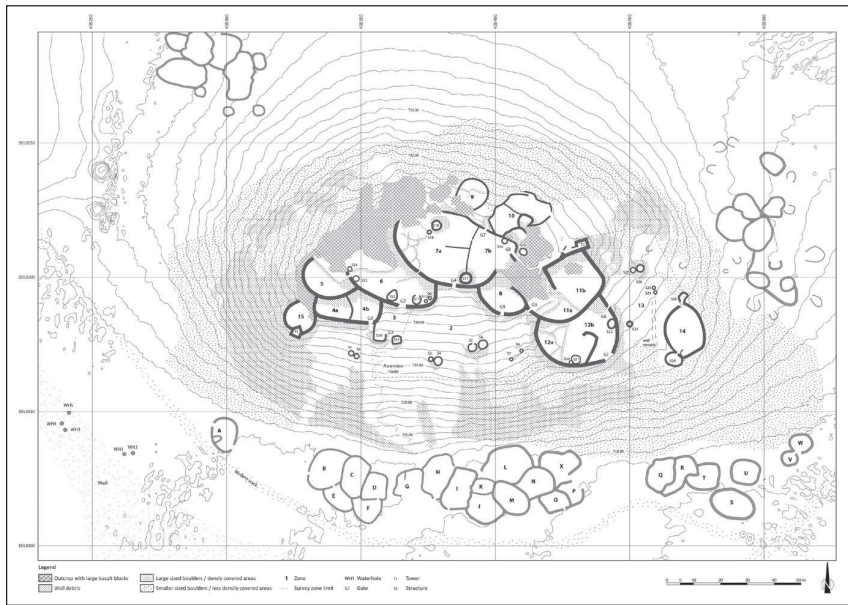
7. View of an excavated single-room dwelling structure at Jāwā (©University of Sydney, D. Fleming).



8. Aerial view of Khirbat Abū al-Ḥuṣayn (©APAAME, Matthew N. Dalton).

2. A more detailed description of the identified features of KAH can

be consulted in Müller-Neuhof 2013b.



9. Plan of Khirbat Abū al-Ḥuṣayn (©DAI-Orientabteilung, L. Abu-Azizeh).

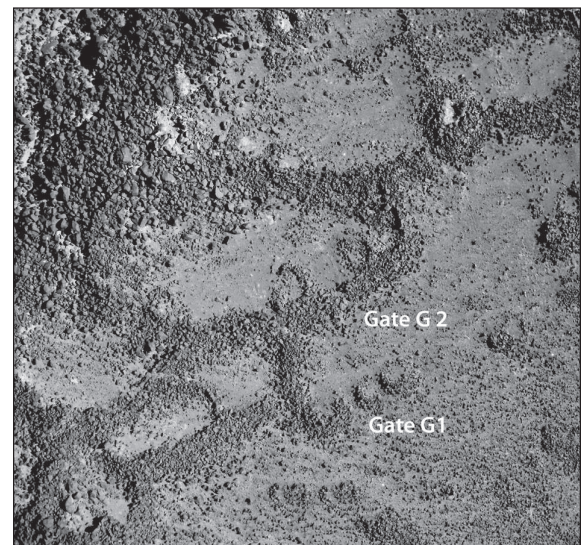
double-faced masonry and their width of *ca.* 1.30m in most cases is still discernible (FIG. 10). The remaining height of the walls is *ca.* 1.00m. Many of the basalt boulders that were used were very large, with diameters of up to 0.5 m. additionally, smaller walls inside the enclosed areas on the summit divide these

areas into different units. Remains of two tower structures, located on strategic positions on the site, supplemented the defence system, and could have been entered via at least nine entryways, of which some show gate features. A serpentine path on the southern flank of the volcano leads to gate G1 (FIG. 11). About 31 small circular structures have been identified on the site.



10. View of one of the massive double-faced walls (scale 0.5 m) (©DAI-Orientabteilung, B. Müller-Neuhof).

In the first published report on KAH (Müller-Neuhof 2013b) these structures were interpreted as silos, however, on the basis of the observa-



11. Aerial view of an area of Khirbat Abū al-Ḥuṣayn with the gate structures G1 and G2 (©DAI-Orientabteilung, W. Abu-Azizeh).

tions at other hillfort sites in the *ḥarra*, it cannot be excluded that these are the remains of dwelling structures. Additionally, it seems that the structures on the southern foot of the volcano, hitherto identified merely as animal pens, might originally have been gardens, irrigated by runoff from the volcano. This would also explain the clearing of basalt boulders from the surface on the southern flank. This seems to have been undertaken in order to enable a controlled and direct influx of water into these gardens. However, this remains to be confirmed in the coming field season in October 2017. Further possible dwelling structures, characterized by circular single-room buildings, have been identified from aerial photos. These are located at the foot of the volcano, outside of the fortifications. Also, investigating this issue the coming field season will hopefully confirm this assumption. Possible evidence for the provisioning of fresh water was identified in a small *wādī* just south of the site, where several waterholes have been identified, and which are outlined and enforced by stone settings and characterized by shallow depressions. Additionally, considering the most likely contemporaneous structures on the foot of the volcano and its immediate vicinity, the entire site would cover *ca.* 7ha.

Tulūl al-Ghuṣayn

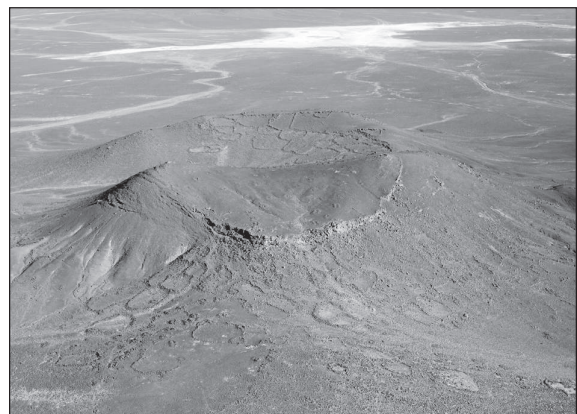
Tulūl al-Ghuṣayn (TaG) is located north of the ‘Ammān – Baghdad road in the eastern half of the *ḥarra ca.* 25 km west of the eastern edge of the *ḥarra*.

This volcano is characterized by a blown-out crater, a rim on the preserved edges of the crater and an elongated terrace-like elevation beginning on the foot of the southeastern outer flank of the volcano that expands in a southeastern direction (FIG. 12).

The site was discovered by David Kennedy and Robert Bewley in 2011 during one of the aerial reconnaissance flights of the APAAME

project. Both colleagues kindly provided the project with photos and coordinates. A first on-ground inspection of the site, which included a preliminary documentation, was carried out in 2013 (Müller-Neuhof 2013b, 2014b). In 2015, a full, two-week fieldwork season was spent on TaG for a detailed documentation of the settlement and garden structures, and for several soundings and small-scale excavations³.

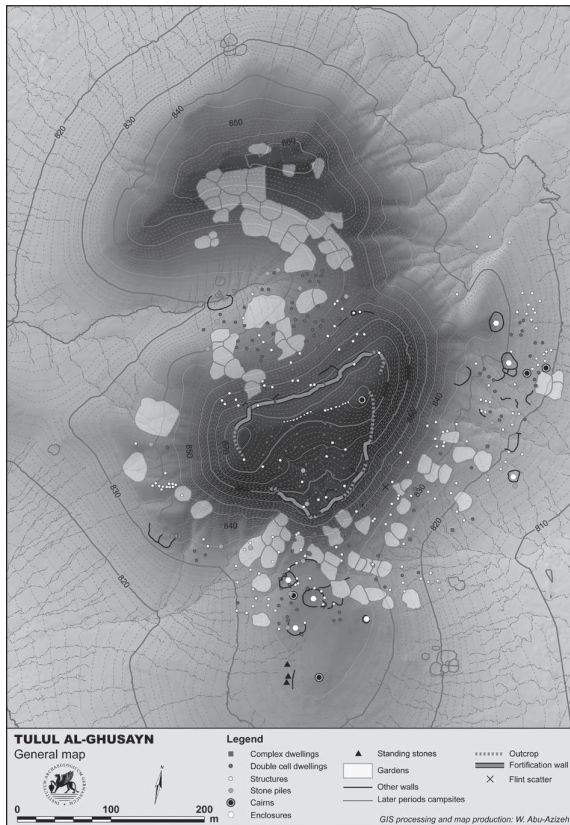
The site consists of four residential areas that are located inside the crater, on top of the southern ridge, on the southern outer slope and the adjacent southern terrace, and on the eastern outer slope of the volcano (FIG. 13). Of special interest is the enclosure of the residential area on the crater rim, which covers an area of *ca.* 1.5ha, while the extension of the entire settlement including the terraced gardens is 9.4 ha. The fortification wall of the upper settlement of the rim consists of a *ca.* 0.75-1.00m wide double-faced masonry wall, erected on a basalt outcrop and in some areas preserved to a height of almost 1.0 meter (FIG. 14). In some sections large basalt outcrops were included in the fortifications; here, further masonry was probably not necessary. Additionally, sections with very steep slopes were not further strengthened by walls since they offered a natural fortification. Access to this part of the settlement is provided by five to six gates or posterns. Two of them



12. Aerial view of Tulūl al-Ghuṣayn (©APAAME, R.H. Bewley).

3. A detailed report on the results of this survey and the excavations at TaG was delivered to the Department of Antiquities of Jordan, to

be published in one of the coming ADAJ volumes (Müller-Neuhof – Abu-Azizeh 2018 a). See also Müller-Neuhof – Abu Azizeh 2016.



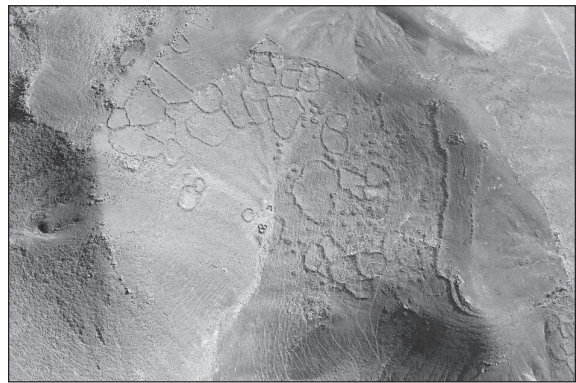
13. General map of Tulul al-Ghusayn (©DAI-Orientabteilung, W. Abu-Azizeh).



14. Section of the fortification wall at Tulul al-Ghusayn (scale 0.5 m) (©DAI-Orientabteilung, B. Müller-Neuhof).

could be reached by clearly identifiable access routes, with a partly serpentine course on the southern outer slope of the volcano.

Altogether 85 terraced gardens have been identified, mainly incorporated in garden clusters, which are located inside the crater (FIG. 15), on the southern, and on the eastern outer slopes. The terraced garden clusters



15. Aerial view of the terraced gardens in the crater of Tulul al-Ghusayn and of the fortified southern rim (right side) (©APAAME, B. Müller-Neuhof).

cover an overall area of almost 5.8 ha. Garden walls are still preserved to a height of *ca.* 1m. Horizontal terrace walls are interrupted by overflows and inlets, which enabled the distribution of water from the higher gardens into the lower gardens according to the cascade principle. An interesting observation is the size of the catchment area of the run-off water (rain water), which is limited solely to the summit of the volcano itself, and covers an area of 0.15 km². This is very small compared to the terraced gardens at Jāwā, which cover 36 ha and has a run-off catchment area extending over an area of *ca.* 5.5km². Altogether, *ca.* 303 dwelling structures have been identified. These include double-cell dwellings (also known as ‘Ghura huts’ or ‘double-apsed’ dwellings), single-room structures, and more complex dwellings that consist of more than one room as well as attached and enclosed activity areas (courts). Two dwelling structures have been excavated entirely. One is a double-cell structure (TAG 209) (FIG 16), and the other a larger single room dwelling structure (TAG 181) (FIG. 17), which is attached to a court and further buildings.

Both structures were almost empty. However, in TAG 209 two large grinding slabs made of basalt were discovered, whereas in TAG 181 a nearly complete jar (FIG. 18), containing one fresh water clam and two worked pieces of limestones, was discovered. The form of the jar does not appear to be local, nor does it have any



16. View of the double-cell dwelling structure TAG 209 with two grinding slabs *in situ* (©DAI-Orientabteilung, B. Müller-Neuhof).



17. View of the single-room dwelling structure TAG 181 (©DAI-Orientabteilung, B. Müller-Neuhof).



18. Jar from TAG 181 in Tulūl al-Ghuṣayn (restored by Naif Zaban, with support from the ACOR Conservation Cooperative) (©DAI-Orientabteilung, B. Müller-Neuhof).

affinities to EBA I ceramics from the nearby Jordan Valley. Furthermore, petrographic analyses, which recently have been carried out by Schneider and Diaszkiewicz refer to the Euphrates or Habur region as a possible origin

4. A detailed report on the results of this survey and the excavations at KaJ was delivered to the Department of Antiquities of Jordan, to

of the clay. Beyond the aforementioned finds, both buildings revealed remains of a fireplace with charcoal remains that were used for C¹⁴ dating.

Khirbat al-Ja‘bariyya

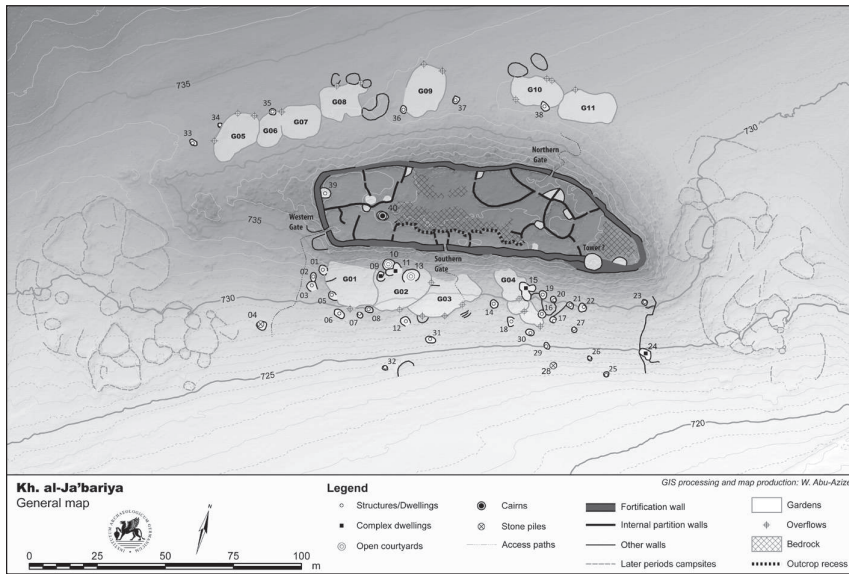
Khirbat al-Ja‘bariyya (KaJ) was “discovered” by the author from satellite images in the spring of 2015. In October of 2015 the author accompanied the APAAME team on a reconnaissance flight to the site (FIG. 19). In the spring of 2016 the planned fieldwork activities at KAH were relocated to KaJ, because of the flooded mudpans at KAH, which prevented access to KAH, the primary fieldwork destination. KaJ is located north of the Amman – Baghdad road *ca.* 25km aerial distance east southeast from Jāwā and is located on a basaltic ridge on the bank of the Wādī Marrab al-Ja‘bariyya, which is a tributary of the Wādī Rājil.

KaJ consists of an area on top of the ridge that is enclosed by a fortification wall, and dwelling structures as well as garden structures on its northern and especially southern slopes of the ridge (FIG. 20)⁴. The enclosed area is characterized by basalt outcrops and several partition walls. Dwelling structures have not yet been encountered here during the survey, however several larger piles of stones indicate several buildings, whose function and layout have not yet been determined. The fortification



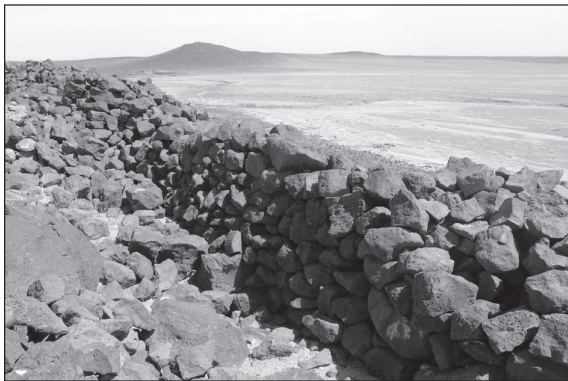
19. Aerial view of Khirbat al-Ja‘bariyya (view towards the northeast) (©APAAME, R.H. Bewley).

be published in one of the coming ADAJ volumes (Müller-Neuhof – Abu-Azizeh 2018 b). See also Müller-Neuhof – Abu Azizeh 2016.



20. Plan of Khirbat al-Ja'bariyya with gardens (©DAI-Orientabteilung, W. Abu-Azizeh).

wall consists of a double-faced wall with widths between 1.10 and 1.80 m and preserved heights up to 2 m (FIG. 21). Three gates provide access to the fortified area (FIG. 22), and access routes link these gates to the foot of the ridge.



21. View of a section of the south wall of Khirbat al-Ja'bariyya (©DAI-Orientabteilung, B. Müller-Neuhof).



22. View through the west gate (©DAI-Orientabteilung, B. Müller-Neuhof).

Four terraced gardens are located in a row on the southern slope (FIG. 23). All these gardens have low, simply-made (single course) garden walls and outlets in the lower walls. Partly connected with these garden walls, but also more distant to the gardens, are the 28 dwelling structures, which have been identified here. These are in most cases sub-circular single cell structures (FIGS. 24 and 25). Two of them have been partially excavated and revealed grinding slabs as well as fireplaces with charcoal remains that have been used for C₁₄ dating. On the northern slope only six such dwelling structures have been encountered. Additionally, five gardens have been identified at the foot of the slope, and are aligned in a row.



23. View of the terraced gardens on the south slope (arrows indicating the individual gardens) (©DAI-Orientabteilung, B. Müller-Neuhof).



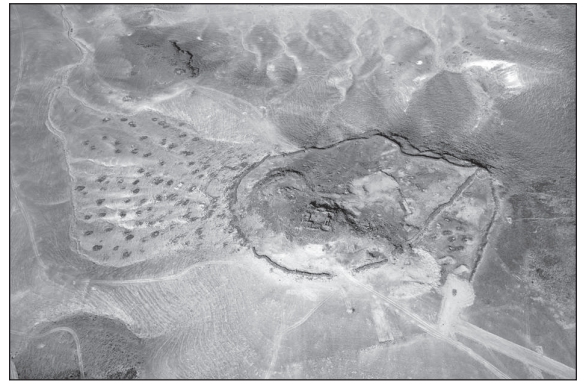
24. View of the partly excavated dwelling structure KAJ_01 at Khirbat al-Ja'bariyya with a stone-packed fireplace in the centre (©DAI-Orientabteilung, B. Müller-Neuhof).



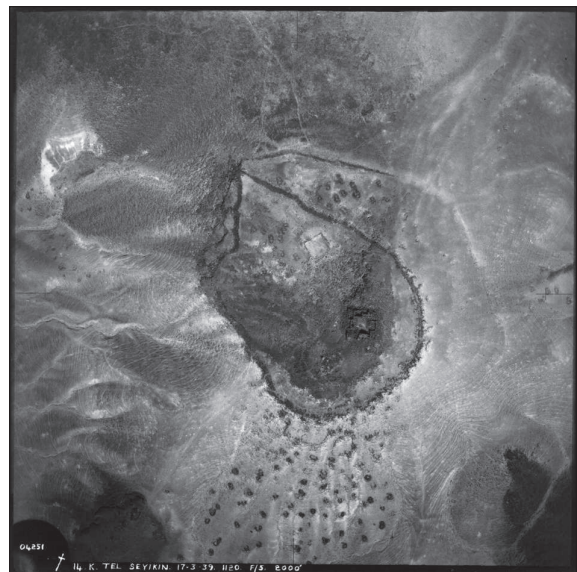
25. View of the partially excavated dwelling structure KAJ_03 at Khirbat al-Ja'bariyya with charcoal remains in the trench near to the section and with grinding slabs embedded in the surface (former mudplaster of the roof) on the right side of the image (©DAI-Orientabteilung, B. Müller-Neuhof).

Qaṣr al-Uṣaykhim

Qaṣr al-Uṣaykhim (QU), located *ca.* 14km northeast of Azraq, has long been known for its small Roman fort on top of a basaltic mountain (FIG. 26). One of the first visitors was Gertrude Bell in 1913. In 1938 Sir Aurel Stein took several aerial photos of the site (FIGS. 27 and 28). The function of this Roman outpost, which probably had a preceding building dating into the Nabatean period, was probably to guard the al-Azraq oasis and the nearby Roman road, as well as a track linking al-Azraq with Qaṣr Burqu' to the east (Kennedy 2004: 65f.). However, the fort is constructed inside an earlier circuit wall, which was restored in the early 2000s by a Jordanian – Italian team of archaeologists

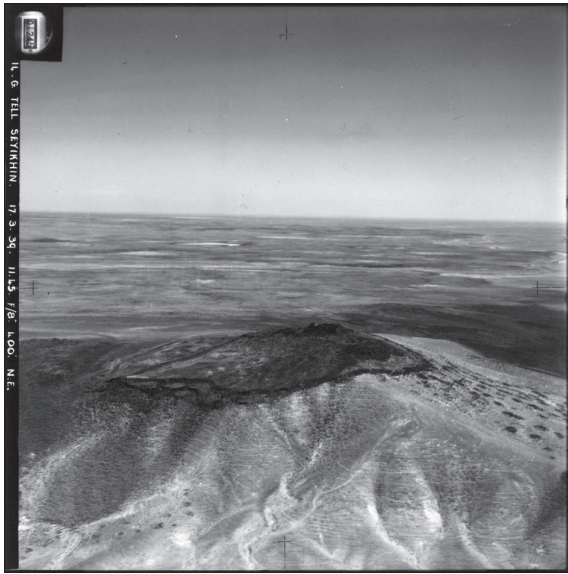


26. Aerial view of Qaṣr al-Uṣaykhim (©APAAME, Robert H. Bewley).



27. Aerial view of Qaṣr al-Uṣaykhim taken by Sir Aurel Stein in the 1930s (©British Academy_Sir Aurel Stein Archive_ASA/3/466).

and restoration specialists under the direction of G.C. Infranca (Al-Khoury – Infranca 2005?). The wall is a double-faced wall with a width of *ca.* 2m. The preserved (restored) height is *ca.* 1m. Several openings in the wall indicate gates. A pre-Roman date for the wall was acknowledged by Kennedy (Kennedy 2004: 65) and al-Khoury and Infranca (Al-Khoury – Infranca 2005), however, proper investigation and dating was not conducted. While reviewing satellite images of the *ḥarra* in 2015, the author had a closer look on the site and its enclosure. Additionally, he observed several structures within the fortifications and on the southern slope outside of the enclosure that do not belong to



28. Aerial view of Qaṣr al-Uṣaykhim taken by Sir Aurel Stein in the 1930s (©British Academy_Sir Aurel Stein Archive_ASA/3/468).

the Roman fort. It became clear that these structures are double-cell dwellings comparable to the dwellings at Tulūl al-Ghuṣayn and are not planting pits, as was suggested by Infranca and al-Khoury (Al-Khoury – Infranca 2005). A short visit to the site in the same year confirmed this observation. Moreover, it became clear that the enclosure wall, which fortified the summit, most likely dates to the same period as the dwellings. It can therefore be assumed, that QU dates to the 4th millennium (EBA I) and would represent the westernmost EBA I hillfort site in the region to date. The fortified area extends over 2.21 ha, while the entire site, defined by the fortification and the extramural extension of dwelling structures, covers an area of *ca.* 7ha.

A detailed documentation of the fortifications, the dwelling structure and possible contemporaneous structures in the close vicinity, such as a dam, as well as soundings in the dwellings structures are planned for the coming seasons and will probably reveal more information about the date of this occupation phase at QU.

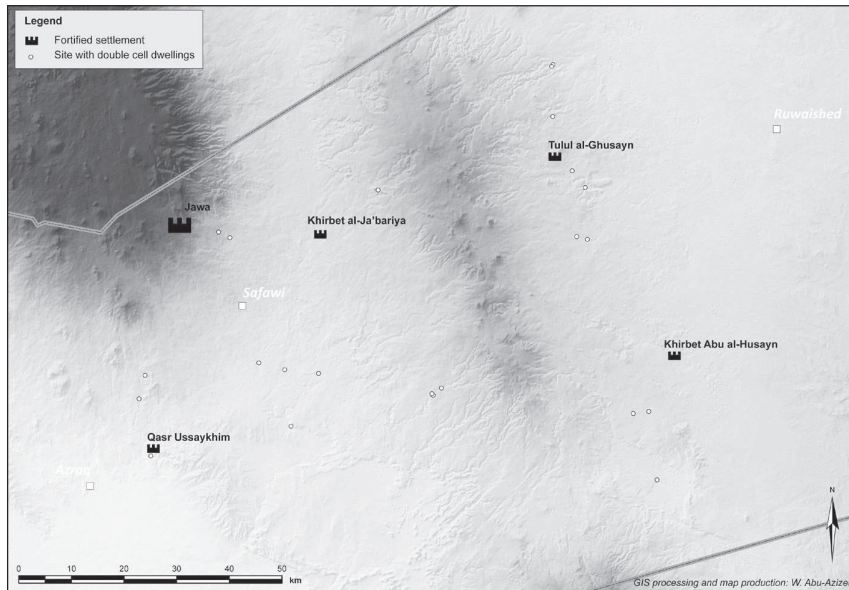
Unfortified Sites

The satellite image survey, which was carried

out in 2015 revealed, besides the fortified sites of KaJ and QU, several other anthropogenic structures and clusters of structures in different parts of the *ḥarra*. Due to the fact that double-cell structures can, according to the results of the survey and the excavations at TaG, most probably be synchronized with the EBA IA/B, a special attention was paid to dwelling clusters with such double-cell dwellings. It was determined that at least 22 sites possessing between 50 and 100 such double-cell dwellings, exist in the *ḥarra* (FIG. 29). It is interesting to note that these sites do not appear to have any fortifications. However, these are very preliminary observations, which need in-depth investigations and especially C¹⁴ dates. Therefore, it is too early at this time to speculate about possible relations and enmities between these settlement clusters and the hillfort sites of the *ḥarra*.

Dating

While radiocarbon dates from KAH and QU are not yet available, the C¹⁴ dates from Jāwā (Müller-Neuhof *et al.* 2015) as well as from Tulūl al-Ghuṣayn and Khirbat al-Ja‘bariyya (Müller-Neuhof – Abu-Azizeh 2016) provide the first steps for a chronological framework for the late prehistory of the *ḥarra*. The dates range from the second half of the 5th millennium (KaJ) to the second half of the 4th millennium (early occupation phase at Jāwā) and thus cover a chronological sequence from the LC via EBA IA to EBA IB (Müller-Neuhof – Abu-Azizeh 2016). The KaJ dates range from 4,449 until 3,715 cal. BC, with a cluster between 4,229 and 3,997 cal. BC. The TaG dates range from 3,761 until 3,352 cal. BC with a cluster between 3,642 and 3,385 cal. BC. The dates from the early occupation phase at Jāwā, as well as the dam, range from 3,630 and 3,090 cal. BC, with a concentration of data from dwelling horizons dating roughly between 3,500 and 3,400 cal. BC (Müller-Neuhof *et al.* 2015). The dates from KAH and UQ are awaited in order to



29. Map of the *ḥarra* showing the LC/EBA hillfort sites and the unfortified sites with double-cell dwellings, which are presumably of the same age (©DAI-Orientabteilung, W. Abu-Azizeh).

complete the chronological sequence of the LC/EBA hillfort site phenomenon. Additionally, C14 dates from at least some of the unfortified villages are needed for such a sequence. Of high importance will be the generation of additional C14 dates from the already examined hillfort sites in order to establish local chronological sequences of the respective occupations.

Conclusion

The surveys of the Jawa hinterland project revealed several hitherto unknown sites east of Jāwā in the *ḥarra*. Even though not all sites seem to be contemporaneous with Jāwā, which especially seems to be the case with KaJ, they all belong to a characteristic settlement type, which was even able to evolve in the *ḥarra*. At the least, a time span for the evolution of these hillfort sites can be identified in the *ḥarra*. All sites have several characteristics in common. Among these characteristics are the fortifications of areas on top of a basaltic elevation, which in most cases is a volcano. Additionally, the enclosures are characterized by double-faced fortification walls and access to this fortified summit was provided by a restricted number of gates or posterns. At some sites (KAH and KaJ) the enclosed summit is either differentiated into several areas by

internal walls, or sparsely covered by dwelling structures (TaG). The situation at Jāwā is yet unclear due to the fact that the extension of dwelling structures is not easy to identify on the surface of the site in the unexcavated areas. However, the fortified summit of all hillfort sites seemed to have provided enough space to accommodate several more people (and livestock?) from settlements in the vicinity and probably even from villages further away in times of needed defence. Another similarity is the existence of an extra mural or “lower settlement,” which could be observed at all of the aforementioned hillfort sites. However, this characterization is not really true for Jāwā, due to the fact that its lower settlement is fortified with a secondary fortification wall rather than the main fortification wall. In QU, TaG and KaJ the buildings outside of the fortifications are clearly discernible and even represent the majority of dwelling structures. It seems also that there is an extramural “lower settlement” at KAH, however, this needs to be confirmed.

Another characteristic feature is that at almost every site evidence for agriculture was identified. Indirect evidence includes grinding slabs and handstones. Direct evidence includes terraced gardens, which were artificially irrigated by using runoff irrigation⁵. It is one

5. Due to the fact that the EBA structures at QU and in its surroundings have not yet been closely investigated and documented, it is

too early to conclude whether agriculture was conducted here or not.

of the greatest surprises that in such an arid environment agriculture was possible and especially that local precipitation could have been used for such a task. The terraced gardens are either located close to, or within the dwelling areas, such as at TaG, KaJ and probably also KAH, or in close proximity to the settlement, as can be observed at Jāwā. While the gardens at Jāwā and TaG extend over large areas on slopes and are arranged according to the cascade principle, the gardens at KaJ and probably at KAH are located at the foot of the elevation and are arranged in single rows, respectively. It may be that we can observe a kind of evolution of the construction of the terraced gardens in the *ḥarra*, which started with single rows of gardens on the foot of the slope and later turned into clusters of garden terraces. However, due to the fact that we have no C₁₄ dates of KAH yet, this is a very hypothetical assumption.

Finally, it can be stated that the discovery of the hillfort sites challenges the hitherto common reputation of Jāwā as an odd site in a secluded location somewhere in the eastern desert. It became clear that Jāwā had a hinterland, at least in the east and south, and it seems that it can even be suggested that at least a specific time span of an evolution of hillfort sites in the *ḥarra* is observable. These preliminary results will enable us in the near future to develop a more detailed and chronologically differentiated map of the colonization of the *ḥarra* in the LC/EBA I.

With the discovery of these hillfort sites, their dating into the LC/EBA, the evidence for artificially irrigated agriculture at most of the hillfort sites, and also the discovery of the eastern adjacent mines, it is clear that the northern Bādiyah became an intriguing landscape for the 5th and 4th millennium civilizations. It is a landscape that still holds a large number of secrets, particularly of its LC/EBA colonization that needs to be explored in the coming future.

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