

NEO-LITHICS 20 *Special Issue*
Ba`ja 2019 Season, Interim Report

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Editorial

This special issue of Neo-Lithics on the 13th season of the Ba`ja Neolithic Project, or the 3rd season of the *Household and Dead in Ba`ja* - Project (www.bajahouseholdanddeath.de), serves as an example for a new Neo-Lithics format of online interim reports offered by the board of Neo-Lithics and ex oriente (authors will get a high-resolution pdf, if they wish to print it and are free to redistribute these reports without any restrictions).

This new format aims to fill a need and an existing gap for extensive preliminary reports, in the form of interim reports. At their best, interim reports should summarise more than one excavation season. Three reasons appear important to fill this gap: first, it is difficult for review journals to evaluate and thus accept reports with preliminary or interim results. Second, final publications are often massively delayed, while brevity requirements of previous ordinary preliminary reports did not provide enough space for detailed presentations. In such cases, when years have gone by, the non-availability of more detailed preliminary information may damage ongoing research (however, we can assure you that for the current *Household and Dead in Ba`ja*- Project this reason doesn't count, since we are already working on the final publication with a tight schedule). And lastly, there exists a "soft" aim to publish interim reports – they are an early internal and transdisciplinarily active means in a team's evaluation work to guide and set common lines of interpretation, to find a shared language and epistemic standards, and to fix incorporation policies and the corporate spirit of a project.

This issue's interim report is a good example for that: it presents interpretation at a higher level compared to preliminary reports, it assists the transdisciplinarity and corporateness of ongoing research for a final publication, and it presents an early and more detailed understanding of findings to the Neolithic research family. Since 2020, the cover of Neo-Lithics has received a „facelifting“ designed by M. Renger, based on the traditional background once mounted 1994 by H.G.K. Gebel and A. Gopher.

We invite all colleagues to consider these arguments by which we encourage more interim reports.

Hans Georg K. Gebel and Marion Benz

Household and Death, 3: Preliminary Results of the 13th Season (Spring 2019) at Late PPNB Ba`ja, Southern Jordan (Interim Report)

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Season's Progress and Research Questions (H.G.K.G., M.B., C.P.)

The 13th season of the Ba`ja Neolithic Project (BJ19a) took place from April 1-28, 2019. The project and its current special research on *Household and Death in Ba`ja* (<https://ba-jahouseholdanddeath.de>) is embedded in a long-term research on the Greater Petra Area's Early Neolithic (since 1981; see Gebel *et al.* 2017). This season was the third field campaign of the *Household and Death in Ba`ja*- Project (see Endnote 1 on the study season BJ19b) hosted by the Institute for Near Eastern Archaeology at Free University of Berlin and funded by the German Research Foundation; it is jointly directed by Hans Georg K. Gebel, Marion Benz and Christoph Purschwitz. For basic information on Ba`ja, located in a secluded setting of the rugged sandstone mountains north of Petra and Beidha, its pre-2016 excavation results as well as the harsh work conditions and site access see Gebel *et al.* 2017. This report on the 13th season of excavation aims to be an interim report.

The season's main aims again were to enrich further the corpus of findings and data for the *Household and Death* subjects from excavations in the deeper strata of the site's Areas C and D (Fig. 1). In detail, excavations continued in Area C's (Gebel *et al.* 2019: Fig. 2) Rooms CR5, CR6, CR17, CR22.1, CR22.2 and CR28 (Fig. 3); in Area D, excavations continued in Rooms DR19, DR22, DR25, DR26 and DR30 (Fig. 4). In addition, Test Unit 9 (TU9a-c) was opened in Area G (Fig. 15) to understand the architecture in the highest part of the site, aiming to prepare future field work for etic research agendas. The current project on *Household and Death* follows an

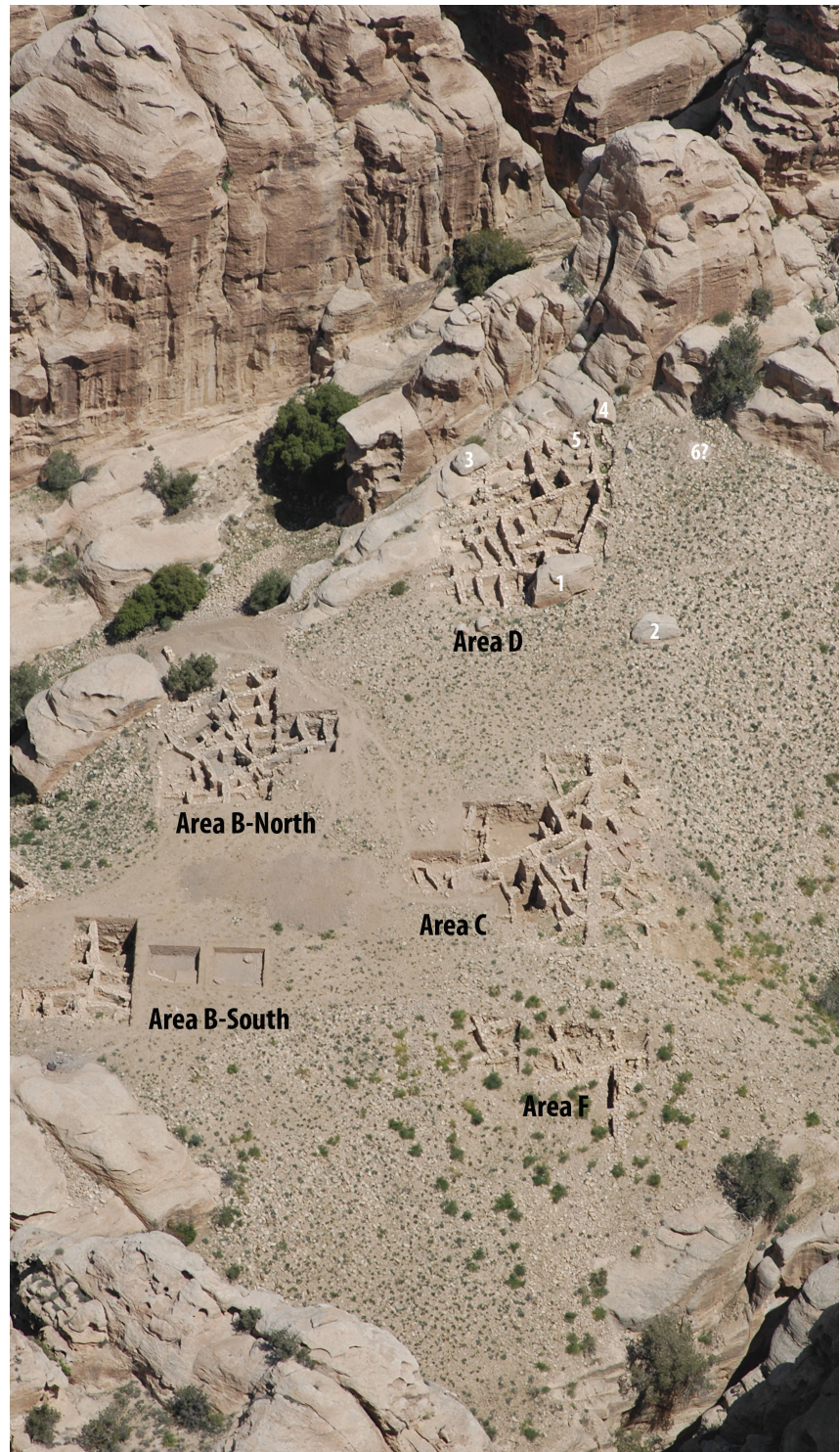


Fig. 1 Locations of Ba`ja's Areas B-South, B-North, C, D and F, and of Area D's Rockfalls 1-2, 4 and 5. For boulder/ spots 3 and 6? See text. Helicopter view from south in Spring 2007. (Rockfall information: B. Khrisat; Photo: D. Kennedy)

emic research agenda, focusing on the village's internal lifeways and ritual spheres attested with the spatial and ontological relationships between households and burials. While we did not find more evidence for active households in the basement levels of the buildings, striking and abundant new evidence accumulated for formal sub-floor burials, especially for burials of babies and young children, as well as of transformed households and a burial – magic/ ritual – domestic context from Area C basements. A small operation re-investigated the extension of Mural Loc. DR26:32, found in 2001 related to the collective burial in Room DR26.2 (Gebel and Hermansen 2001; Gebel 2002: Figs. 7-8D). The enigma of 1984's Sounding 1 in Area A (Gebel and Bienert *et al.* 1997: Fig. 4), a LPPNB dump in the site's access area, wasn't solved by this season's resumed excavation (Fig. 11).

Special on-site documentations and surveys were carried out for the seismic and tectonic evidence of impacts on the architectural remains and their reflection in building stone technologies, including surveys in the environs for testimonies of quake features and OSL sampling at a major rockfall. Mineral and pigment sampling took place in Ba`ja's catchment areas for the study of plastic vessels and ornament industries. Back-filling of excavated rooms was limited by the availability of sifted sediment. Various works on previous seasons' finds and samples were carried out at the dig house in Beidha, including preparing samples for export.

The joint project for restoration and presentation of the Jamila-of-Ba`ja grave (see section on the Extraction of Jamila's Grave C1:46) started with the support of the President of Yarmouk University, H.E. Prof. Dr. Zeidan Kafafi, and the Dean of the Faculty of Archaeology and Anthropology at Yarmouk University, Prof. Dr. Hani Hayajneh, by the extraction and storage of the grave cist.

Our standard prehistoric excavation methods were again supported by dry sediment sieving (mainly 4mm), soil sampling for all sorts of special analysis, palaeoanthropological excavation, *in situ* conservation of finds, *etc.* Documentation continues to use the Ba`ja Locus Sheet System and registration system by find/sample categories, all introduced since 1997.

Wall Damage Reports and Earthquake Evidence (H.G.K.G., B.Khr., S.K., C.P.)

Life in Ba`ja certainly was affected by the awareness of earthquakes, and without doubt villagers experienced occasional minor tremors along the Rift Valley. The security of built space was part of the village ontology, and builders adapted to quake danger and Ba`ja's paleosols instability (Endnote 2) by wall technologies (results by B. Khrisat on Ba`ja's paleosol and the area's bedrock fragmentation connected to the active fault system; see also the following section on building in Ba`ja). Even without a quake event, the permanent tectonic/ seismic activity in the region – together with

other factors (see below) – must have affected the stability of the multi-storeyed/ split-level architecture on the site's extreme intramontane topography.

Several short geomorphological explorations at Ba`ja, respectively al-Mehmad as the intramontane basin of Ba`ja is called locally, were undertaken by/ with Hans-Joachim Pachur (in 1987), Christian Hannß (in 2007) and Bilal Khrisat (in 2018), as well as an OSL-sampling in 2007 of the paleosol below Ba`ja's wall foundations by Bernhard Lucke that provided two dates (unpublished). These surveys show positively the likelihood that

- 1) Ba`ja once was a closed intramontane basin filled with erosional deposits from Ba`ja's eastern and immediate lime- and sandstone catchments, and
- 2) that the basin's blockage gradually lowered during the Late Pleistocene, creating the *siq* along an elongated bedrock fissure,
- 3) through which the fill of al-Mehmad basin eroded and
- 4) created the site's dramatic Early Holocene topography.

Bilal Khrisat added to this idea in 2014 the understanding that this draining was characteristic for many basins in the Greater Petra Area, and that these drainings were the consequence of an increased tectonic activity related to the Jordan Rift System respectively the Dead Sea Transform (DST) from a certain time onwards (an understanding also presented in a lecture at ICHAJ 2016 in Amman). Such remnants of basins fills were observed in the Greater-Petra Area by one of the authors' (H.G.K.G.) surveys since 1981, including the Lower Wadi Sabra, the Siq Umm al-Alda upper drainage catchment, in Petra, near Umm Zeihoun, and others.

This contribution for the first time presents a rockfall (Fig. 1) and wall damage mapping (Figs. 2-4), carried out by archaeological means for excavation Areas B-South, C, and D (on Areas B-South and F see below). It records evidences of high-energy impacts (directions and degrees of leaning and twisted walls, air chambers between wall collapse), representing the interacting forces and events responsible for many of the wall damages. Preliminary interpretation identified as interacting forces of wall deformation and building instability: The gravitational force of the steep slope topography and its pressure on walls; the two types of the sterile wall foundation surfaces: fragmented bedrock and the paleosol remnants of the al-Mehmad Basin, and especially their instable junction areas; the weight or mass of the multi-storeyed/ split-level buildings on the steep slopes; and the frequent tremors generated by the Rift Valley. At least one earthquake was identified for the LPPNB occupation of Ba`ja, causing damage and requiring the rebuilding of parts of the village.

Parallel to this record, one of the authors (B. Khr.) carried out a quake-related geoarchaeological survey on Ba`ja's walls and in the geological environment, taking into consideration more parameters. These

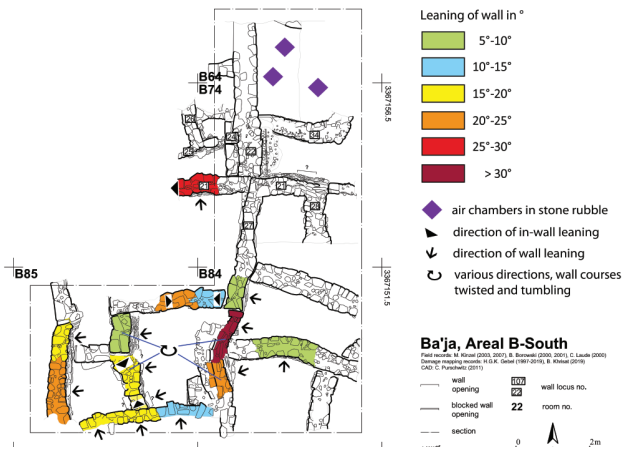


Fig. 2 Area B-South. Archaeological wall damage record: Major findings of leaning and twisted/ tumbling walls resulting from combined structural, topographic, and supposedly seismic impacts. (Field records and graph: H.G.K. Gebel)

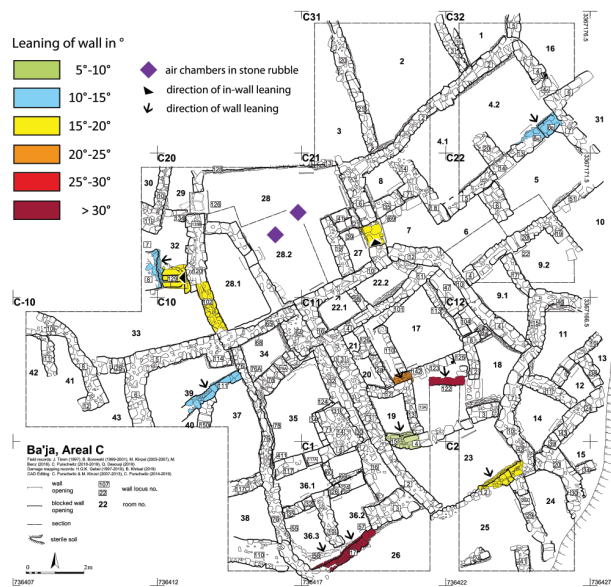


Fig. 3 Area C. Archaeological wall damage record: Major findings of leaning and twisted walls resulting from combined structural, topographic, and supposedly seismic impacts. (Field records and graph: H.G.K. Gebel)

include leaning characteristics, wall technological “signals” supporting damage prevention, tectonic and seismic features in the *siq*, and related geological map information, which will be published separately.

It is very difficult to distinguish architectural quake-related damage from damage related to building techniques and the topographical conditions of Ba`ja’s setting. Leaning walls may result from their topographical location, especially if they show leaning/ breakage or a general downslope orientation of walls along their longitudinal axis as in Areas D (Fig. 4) and F. In addition, this can be caused by structural vulnerabilities such as the bulkhead-type of building and groundplans, wall weaknesses by inserted or blocked wall openings or weak lintels. Thick and long downslope walls are char-

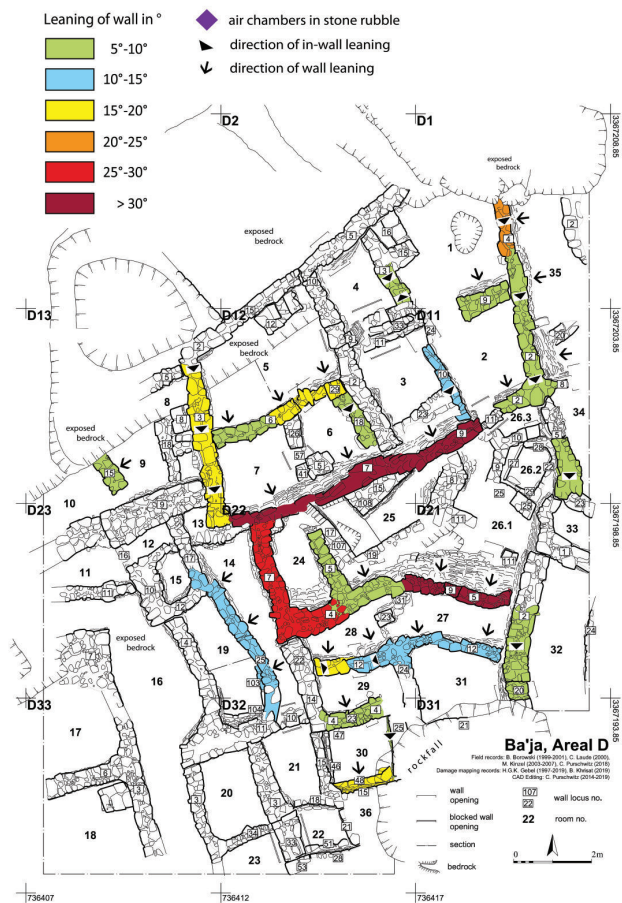


Fig. 4 Area D. Archaeological wall damage record: Major findings of leaning and twisted walls resulting from combined structural, topographic, and supposedly seismic impacts. (Field records and graph: H.G.K. Gebel)

acteristic for the settlement layout of Ba`ja (e.g. Area B-North, D, C and F), apparently a means to provide strength and stability to buildings on the slopes. Other features of the masonry (absence of real wall foundations and/ or little wall bonding) and the evidence of frequent wall dismantling and repair not due to planned spatial reorganisation, are additional evidence for high wall instability at Ba`ja. To determine if architectural damage was caused by an earthquake, only additional evidence – such as chambers in large piles of irregularly deposited wall stones or tumbled wall fragments without a general orientation (Fig. 5) – can be taken as indicative for quake impacts. However, as a general rule we expect that structural damage related to earthquake shows a general orientation while damage without a certain orientation rather relates to faulty building techniques; most likely we deal in Ba`ja in many cases with both causes interfering with each other. Our mapping in Figs. 2-4 did not present evidence of tumbled wall fragments in room fills since they mostly were removed by ongoing excavations. However, damage mapping proved that the various topographical locations in Ba`ja caused specific damage characteristics, especially depending on the type of walls’ contact with bedrock or the sterile paleosol.

Rockfalls

The rockfalls attested in and around Area D (Fig. 1: Rockfalls 1-2, 4 and 5) are expected to be a direct result of seismic activities. Our (B.Khr.) results preliminarily identified Rockfalls 1 and 2 as post-occupational and Rockfall 5 as pre-occupational. Rockfall 4 appears to be a combination of a rockfall followed by a rockslide; Rock Surface 6? most likely represents exposed bedrock close to the cliff, and is less likely an embedded rockfall; large remnant Rock Boulder 3 is not a rockfall but an *in situ* weathering residue of the formation.

In the following we discuss evidence for high-energy forces and events separately for the individual areas, as recorded by archaeological means.

Area B-South (Figs. 2 and 5)

The quake damage of Area B-South is most significant but is concentrated in Squares B85 and western B84. These parts of the architecture rest between the two outcrops of the sandstone formation (Fig. 1) where walls of B85 have a closer or direct contact to the structurally fragmented bedrock of the southern outcrop. Here, vertical shockwaves directly affected the exposed upper parts of the architecture, leaving wall damage showing all directions of leaning, twisting and tumbling, including in-wall fractures (Figs. 5); this is typical of the vertical movement of the actively fragmented bedrock blocks on which al-Mehmad's paleosol rests and on which the early Neolithic architecture was founded. The deeper stratigraphy's space north of Wall 34 in B74 is characterised by a huge pile of irregularly deposited wall stones with preserved air chambers in-between, representing a strong signal for a quick deposition after clearing an area from quake rubble (see Gebel and Kinzel 2007: 29-31).

Area C (Fig. 3)

Excavation Area C exposes the architecture directly resting on a spur-like remnant of the basin's fill/ paleosol. According to its geomorphic location we expect this area to have the thickest paleosol deposits and the most fragmented bedrock. Due to the absorbing capacity of its sediments, tremors and quakes would theoretically affect architecture less than in Area B-South and D, where architecture has a direct contact to bedrock. Accordingly, exposed walls of Area C show little evidence of leaning or twisting from combined structural, topographic and seismic impacts. Nevertheless, we have major primary and secondary quake evidence from Squares C-10, C10 and C20, including the massive wall stone and rubble piles with air chambers in Room CR28, the tumbled Wall/ Staircase C20:129 between CR32 and CR33, and the rebuilding in this area have to be mentioned. CR28's impressive air chambers between irregularly deposited wall stone piles are especially good evidence for a rapid filling and sealing of the quake rubble. This rubble accumulated here almost

void of other cultural debris, together with the post-quake depositions of dismantled unstable walls and other stone rubble by the survivors of Ba`ja. Following such a disaster, it is difficult to imagine that an immediate storage and recycling of all displaced wall stones is possible.

In eastern Area C, a huge and substantial part of the architecture slid down the slope, cutting through Rooms CR16, CR31, CR10, CR13, CR15 and CR24 (Fig. 3). Still, it is not clear whether this dramatic event took place during the site's occupation or occurred in post-occupational times, and whether it is the result of an earthquake or not. The good preservation of this sharp "erosional" line may indicate a disaster during a later occupation, or when the site was a ruin without a closed surface. Currently we favour the explanation that the (heavy) architecture on top of the thick paleosol layers slid down the very steep topography due to sediment liquefaction after heavy rainfall; this spot represents one of the site's steepest areas.

Area D (Fig. 4)

Affected walls in Area D, whether oriented E-W or N-S, show a general downslope leaning: In the western part this means towards west, in the central part it is towards south. The preserved lower courses of the northernmost walls in Squares D13, D2 and D1 show little or no signs of impacts by high-energy forces or events, although they are in direct or close contact to bedrock. On a preliminary basis, these findings lack any good arguments for quake impacts. Rather, the leanings hint to post-occupational slope movement, possibly facilitated by constant tremors. Two cases of larger wall fragments tumbled inside rooms can result from structural or quake damage; Rockfall 1 (Figs. 6 and 21) is a post-occupational feature, for example.

Areas B-North and F

The walls of Area B-North and Area F seem to show no quake impacts, and testify little other damage apart the extreme leaning of walls towards south in Area F. The latter appears to be the result of a gradual downslope movement of all the cultural layers on this steepest slope of the site. Here, groundplans are most difficult to excavate as all walls are leaning downslope (20-30°) reducing the excavation space in the deeper room stratigraphy.

OSL-Dating for Ba`ja's Earthquake

We (S.K.) started a programme to explore chances to date earthquake events by OSL: The new approach in luminescence dating using rock surface has been useful to date rocks and mass movements that have experienced a series of burial and daylight exposure events (Freiesleben *et al.* 2015; Rahdes *et al.* 2018). Rock-surface dating using optically stimulated luminescence is based on the observation that when rock surfaces are



Fig. 5 Area B-South, Squares B84-85: Leaning, tumbling and twisted walls resulting most likely from a quake impact. View from south in 2003. (Photo: H.G.K. Gebel)



Fig. 6 Area D, Rockfall 1: S. al-Khasawneh supervises drilling for OSL sampling at partly buried part of rockfall. (Photo: S. al-Shoubaki)

exposed to light, any charge trapped in light-sensitive meta-stable sites in the minerals in the rock (especially quartz and feldspar) is released. After burial, this charge begins to build up again because of exposure to natural ionizing radiation. The stored charge is measured in the laboratory using luminescence and divided by the rate of storing charge (resulting from exposure to natural ionizing radiation) to give the period of burial. The release of the trapped charge in minerals by daylight exposure, whether fully or incompletely reset, is recorded in the profile of the luminescence signal in rock surfaces (to a depth of several mm). Using the reset surface, it can define the length of time of the subsequent burial (al-Khasawneh *et al.* 2019a, 2019b).

At Ba`ja we applied the technique for two surfaces of a big rockfall located on top of southern Area D's excavated architecture (Fig. 1: Rockfall 1; Figs. 4 and 6). The luminescence-depth profiles of the surfaces show a sequence of burial and exposure events at different depths. The profiles suggest that the two surfaces were exposed to daylight twice in the past, each exposure followed by a burial event. The exposure is expected

to have resulted from a tectonic or seismic activity sufficient to have the big boulder tumbling from the northern rocks, followed by a downslope sliding and colluvial burial. The preliminary measurements show that the first burial event for one of the surfaces might have taken place during the site occupation. However, the recent burial from both surfaces are in agreement, which indicates that the two surfaces were buried at the same time, which might be after site abandonment.

After reassessing the high-energy forces and events in LPPNB Ba`ja during the previous seasons' work (Gebel *et al.* 2017), it became clearer that they must have been of a more severe impact on the village life, architectural and spatial planning, and wall technologies than previously thought, and that some of their depositional and structural signals and contexts had been insufficiently considered in past research. The LPPNB villagers' "magic" wall reinforcement by the insertion of celt "nests" into wall courses (Gebel 2002; which possibly explains also the many and often unused celts at the site) reflects other efforts to counteract the forces affecting their walls.

Building Stone Manufacturing and Building in Ba`ja (H.G.K.G)

The procurement of building stones, fabrication, and recycling is a rather neglected chapter in LPPNB household production, even though the craft represents essential parts of Neolithic life (the built space, embeddedness in the various stone crafts, cognition, and territoriality). Not only were raw materials extracted for wall stones, split and pre-shaped at near-site quarrying areas or taken from the *siq's* gravels: quarrying specialists also harvested and prepared in Ba`ja's rock environments material for flagstones and lintels; pavement stones including the thin cover slabs for burials; ground stone blanks; raw materials for mortar and plaster; blanks for sandstone whetstones and discs transformed into sandstone rings; and raw materials for all the small stone artefacts. Building stone extraction and manufacturing is just one part of stone commodification at Ba`ja. It has to be asked to what extent stone procurement was specialised according to quality needs of the various stone product classes (Gebel 2013), or if also multi-task "stone harvesters" were operating at sources, *e.g.* if wall builders weren't also selecting and preparing raw forms of grinding tools.

From this season, earthquake resilience of building in Ba`ja is discussed beyond the general understanding (*e.g.* Kinzel 2013: 102), focusing on its evidence attested with wall technologies.

Building stone procurement and acquisition is characterised by:

- 1) on-source selection of stone qualities and primary production of nearest favoured banked/ layered sandstone qualities;
- 2) dimensional considerations regarding later wall lay-

er thicknesses or special functions of raw forms (lintels, pavement and stepping stones, ground stone tools, small stone objects like whetstones or sandstone discs and other) attested;

3) intentional extraction breakage using suitable natural clefts and fissures for intended sizes and shapes (“cleavage opportunism”);

4) initial breakage, flaking, and trimming of intended stone sizes (boulders and all sorts of slab preforms, most likely including ground stone and sandstone objects pre-forms);

5) unidirectional rectification of non-linear edges and protruding parts and edges attested for primary on-source and secondary on-site production of building stones (bipolar techniques are not attested).

Sources of building stones were predominantly the varieties of nearby banked and non-banked Disi sandstone formations, occasionally from nearby banked Umm Ishrin sandstone formations, and from the limestone wadi gravels transported through Siq al-Ba`ja. At least two onsite spots of stone quarrying are attested in Ba`ja: In one case it also created foundation platforms for house walls (northern Area D), and the other is a quarrying area south of Area A leaving a “step” in the bedrock just above the *siq*. Wadi cobbles may have been commodified in *ad hoc* building/ unskilled repairs; recycling of wall stones is assumed but not clearly evident. Intentional “burying of building stones” with “terminated” walls/ rooms is likely, not only following an earthquake (e.g. the fills in Room CR28). “Recycling” of intentionally broken grinding tools as “wall stones” is common.

Building stone manufacturing shows significant opportunistic/ minimum effort strategies on all levels of building stone production and masonry, including not carrying potentially disposable waste onto the site. Depending on tabular stone sources, the existence of a rough dimensionally sized building stone mental template is evident for Ba`ja and the Greater Petra Area’s



Fig. 7 BNR42-44, Wall Loc. B11:2b: Example of an eroded horizontal section through a standard double-faced wall in Ba`ja. (Photo: H.G.K. Gebel)

LPPNB; in Ba`ja this concerns two main stone shapes (Figs. 9-10). On-site final – or secondary – rectification of the raw building stones’ faces and edges by hard-



Fig. 8 CR17: Example of a standard double-faced wall (C11:4=C21:11) in Ba`ja. (Photo: H.G.K. Gebel)

hammer percussion is attested with flaking angles of 70-90°. The reduced visibility of rectification flaking has to do with the general avoidance of flaking and trimming, as far as preservation allows this statement due to “use erosion” and in-soil weathering of wall stones (especially true for the soft Disi sandstone qualities).

Two wall stone types are attested in Ba`ja: 1) the common and quite irregular cuboid-ashlar type (Fig. 9) with average dimensions of 15x35x5-15cm (width x length x height), and 2) the rare (<5%) trapezoid and crescent-shaped stones (Fig. 10) with trapezoid-plano-convex horizontal sections and average dimensions of 15x30x10cm. The odd shape of the latter has been understood for long as forms to reduce wobbling in their bed. Veit Templin, a specialist for traditional double-faced walls made from split rock boulders in the German *Oderbruch*, cannot see a technological reason for this shape and rather suggests a symbolic meaning for this shape.

Two types of technological behaviour are related to the pragmatic placing of wall stones into the walls’ courses during building: 1) Intuitive selection of suitable stone sizes with minor trimming before inserting them in the existing bed, and 2) the various shaping technologies by flaking with angles of 70-90° which are present with the primary (source) and secondary (site) wall stone production and result in roughly dimensionally standard stones (Figs. 8-10). Shaping is mostly executed for the stones’ faces and occasionally for their in-wall contact zones with other stones. Both technologies are casually mixed in wall courses, indicating high degrees of skilled improvisation to ensure slope- and quake-safe wall stability. The final rectification of the wall stones took place during wall building when the actual placing of the individual stone required more flaking to avoid wobbling and tilting or a face finish for the place at which it was set finally. The debitage of secondary production (final flaking and trimming) is not clearly attested in the site’s layers: Most likely the flakes were used for wedge stones between the wall faces’ stone courses (Fig. 8) as well as to fix stones from inside the wall, and to fill the spaces between two wall faces. However, Veit Templin remarks that an efficient building of such walls cannot proceed with a good supply of prepared wedges, that builders cannot wait to prepare wedge stones when needed.

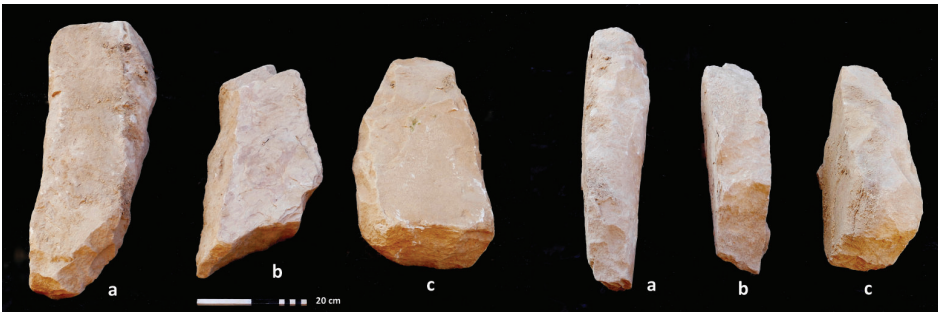


Fig. 9 Common building stone standard at Ba`ja: (Sub-) rectangular shapes (mostly from tabular Disi sandstone) with partial straightening of natural edges/ fractured sides by hard-hammer percussion. (Oblique views; Photo: H.G.K. Gebel)



Fig. 10 A unique building stone standard at Ba`ja: Crescent and trapezoid shapes of building stones (mostly from tabular Disi sandstone), shaped by dressing the sides and edges by hard-hammer percussion. (Oblique views; Photo: H.G.K. Gebel)

The characteristic LPPNB linear styles of stone courses (Fig. 8) show:

- 1) similar heights of horizontally neighbouring stones;
- 2) vertically neighbouring courses very often show alternating heights (probably more “quake-safe”);
- 3) long sides of the cuboid/ ashlar-shaped wall stones can extend into a wall’s centre (with the narrow side representing the face, see Fig. 7), providing a headers’ type of stability for the wall;
- 4) heavy use of flat stone wedges between wall stones/ courses, to avoid that stones rock in their bed/ wobble or tilt;
- 5) economical use of mortar (not really representing a dry-stone masonry).

The double-faced stone setting techniques of Ba`ja and other LPPNB villages on slopes appear to be a “translation” of experiences with slope-, paleosol- and quake-related impacts and instability. As for the header-stretcher issue: While headers (binders) in the strict sense of brick wall technologies (direct or indirect connection of the two wall faces by binders) do not exist in Ba`ja’s (and Basta’s) architecture, headers were often set parallel with each other and extend into the walls’ central parts (Fig. 7). Header-dominated wall/ course parts alternate with stretcher-dominated wall/ course parts. This feature made walls behaving more flexible in case of quakes and downslope pressure while providing “header”-effects for walls. However, we often found the two faces of the double-faced walls just made by stretchers and not connected by binders. Vertical wall segments (which are common for Ba`ja and may result from a “segmented” work progress, see also Kinzel 2013), limited binding into attached walls (Fig. 7) and predominantly missing wall foundations might not be – as previously thought – an expression of a naïve understanding of building statics in Ba`ja, but rather re-

flect adaptations to expected quake and slope impacts: The site’s characteristic bulkhead-type of architecture with its downslope long walls may have resulted from these adaptations, too.

It is likely that there were aesthetic standards for wall faces (Fig. 8); however, quite a number of walls, buttresses, and other architectural features including their repairs and vertical extensions show *ad hoc* or less skilled stone selection and wall construction. Walls with considerable amounts of field stones were constructed, too.

The cognitive dimensions of Ba`ja’s building stones and built space comprise (selected examples) the

- 1) Technological knowledge spheres: geological and petrographic competences; stone sources’ territoriality; quarrying and hard hammer competence; familiarity and skill transfer in stone crafts as related to stone qualities, operating raw materials (especially by identifying and using fissures, cracks and other features of the bedrock and raw material) and craft specialisation; accident prevention; adaptive technological experiences and awareness of slope instability/ earthquake danger.
- 2) Social spheres and spaces: social organisation and logistics of stone quarrying including (heavy-duty) stone tool pre-form crafting; stone craftsmanship and building possibly as a supra-household collective and/ or a household matter; spatial planning and rules in domestic housing and village/ land property (village territoriality), both horizontal and vertical; intra-village territoriality involving community traffic (*e.g.* across roofs), and other shared use patterns and use changes; intra-house territoriality; social implications attested by wall biographies.
- 3) Economic spheres: commodification milieus in heavy-duty stone production; possible recycling of building stones; potential property issues with stone sources; general economic stone craft management.

4) Ritual and magic spheres: latent ritual and magic meaning/ potentials of walls and stone products (e.g. inserting celts in walls, crescent-shaped wall stones had symbolic meaning?, intentional fractured grinding stones inserted in walls); stone artefacts including building stones as part of terminated households/ occupations: conceivable termination of walls, wall stones and ground stone items; possible banned recycling of wall stones; caches in walls and floors.

5) Ethological spheres: man's move into confined spaces; intra-village territoriality; hiding things in walls and other structural parts.

6) Ontological spheres: productive pragmatism and improvisation with building stones and walls; accident protection; neighbourhood and reciprocity with building and built spaces; living in built spaces ("Neolithic containers" *sensu* Olivier Nieuwenhuys).

Enigma Sounding 1 of Area A. Resumed Excavations (F.H.)

The extension of 1984 Sounding 1 (S1) (Gebel and Starck 1985; Gebel 1988) was decided to gain more insights into garbage and ex-commodification behaviour at Ba`ja, but also to reassess the understanding of its sedimentary environments. Sounding 1 is located at the lower end of Area A ("The Towel") from Siq al-Ba`ja that gives access to the site (Fig. 11; for a site plan see Gebel and Bienert *et al.* 1997: Fig. 4). The findings of S1 and its numerous finds (bidirectional primary and secondary flint artefacts, sandstone ring waste, animal bones with an astonishing share of hyrax, and others) from the 1984 excavation suggested a marginal, substantial, and rapid garbage deposition moved by slope erosion with little or no effect, although the location in the site access is an enigma. During the 2019 season, the north section of Sounding 1 was extended by 1m towards east; unlike the 1984 excavation by artificial 10cm layers, this season we tried to follow the real layers to understand better the depositional and erosional processes.

After cleaning the surface of the topsoil and the old sections, 20 loci were identified in the eastern and another six in the north sections (Fig. 12). While the colours of most section layers were more or less similar (very hard greyish – dark greyish sandy-silty deposits), a rough and sometimes ambiguous identification of layer borders was possible by different layer inclusions. The extension of Sounding 1 was placed in the eastern part of the former northern long section (Gebel and Starck 1985: Fig. 6) and during the exposure of each locus, another nine loci were identified. Only loci located in the extension were excavated (S1:1,11-12,19,21,24,28,31-32,37-45; Fig. 13).

The extension's loci were generally rich in chipped stones and bones, and some loci revealed sandstone ring products (Loci S1:19,32); bone tools (Loci S1:32,37); a stone vessel (Loc. S1:32); and a fragment of a mother-of-pearl bivalve in Loc. S1:42; beads were

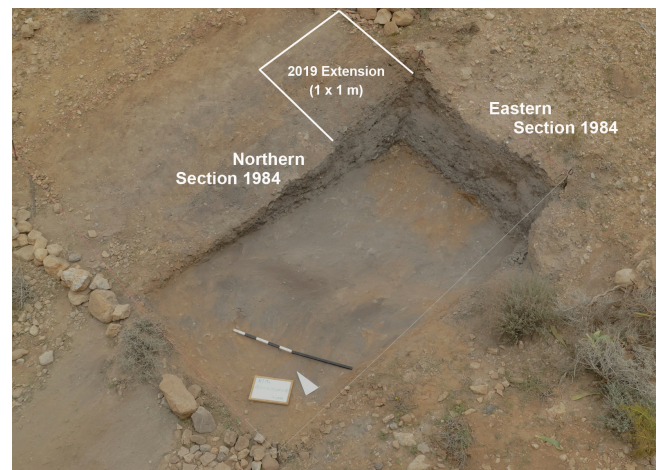


Fig. 11 Sounding 1 (S1) in westernmost Area A: LPPNB dump zone in the site's access area from Siq al-Ba`ja. Cleaned northern and eastern sections of 1984 with location of this season's sounding extension. Oblique view from above southwest. (Photo: H.G.K. Gebel)

not encountered. Loc. S1:43 revealed only a small number of artefacts. No artefacts were found in Loci S1:44 and S1:45, both of which represent the "original" site surface (either natural or an area affected by a nearby plaster production). As was suggested by the 1984 sounding, the primary contexts of the Sounding 1 finds appear to be specialised flint and sandstone ring workshops, graves, and general dump contexts. Finds from all loci bear calcareous crusts.

Whereas lowest Loci S1:28,43,44 and S1:45 are of different colour (yellow to orange), all the garbage layers are of greyish-blackish colour and of a very hard consistence. In 1984 it was assumed that this colour of



Fig. 12 Sounding 1 (S1) in westernmost Area A: Northern section of the 2019 extension in the LPPNB dump zone, with lower layers resting on the location's original surface (yellow sediments). Carrying blackish matrix with finds and animal bones of yet unknown origin. View of final stage of excavation from south. (Photo: H.G.K. Gebel)

the carrying matrix results from high ash contents while charcoal pieces are almost absent. Among other questions, the needed analysis of the layers' soil samples has to check whether we deal here with wind-borne silt deposits arriving from the eastern deserts as identified

by U. Kamp for Basta's Area C (Kamp 2004); at least these layers and their hardness look very similar. For Ba`ja, this matrix is unique and not found elsewhere on the site. How is it imaginable that this material was deposited here in an isolated way, together with the very homogenous LPPNB garbage assemblages, if not the whole garbage area at Sounding 1 – rather unlikely – results from a redeposition from elsewhere?

Quintero 2010; Purschwitz 2019). This attests for a complete on-site bidirectional core reduction. The near absence of chips and the smaller number of flakelets compared to flakes may suggest a spatial separation between production and discard area.

In terms of composition and deposition contexts, the dump is very similar to workshop dumps found at MPPNB Shkārāt Msaied or LPPNB Basta for which a specialized production is suggested (Gebel 1996; Purschwitz 2019). However, considering quantity and

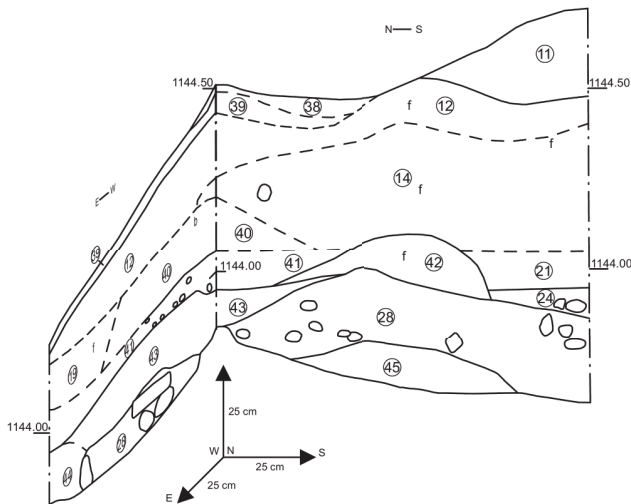


Fig. 13 Sounding 1 (S1) in westernmost Area A: Eastern and northern sections. (Field record: F. Hájek)

Sounding 1 of Area A: The Chipped Lithics (C.P.)

A total of 1.561 chipped lithic artefacts were found in this season's Sounding 1 operation, underlining again the extreme artefact density in this peripheral dump area of the site. The 1m² extension of Sounding 1 revealed 565 artefacts while the majority (n=996, Loc. S1:10) was found during cleaning and trimming of the N- and E-sections of the former 1984 sounding. All sediments were sifted.

The primary products are very homogeneous in composition and comprised almost exclusively debitage and production waste from bidirectional blade core production (Table 1). Other technological elements (including non-bidirectional blade core reduction, celt/adze production or tool maintenance) are represented in very low numbers. The bidirectional blade production waste is homogeneous in raw materials and includes predominantly fine- to extra-fine-grained high-quality flints. Most frequent is raw material FRMG 3 (<70% by count), but a broad spectrum of other fine to extra fine-grained flint groups is attested as well (each <2%). Core trimming elements are abundant (CTE, n=201) and include the complete spectrum of bidirectional blade core technology such as initial blades I (n=9) and II (n=4), initial platform spalls (IPS, n=8), consecutive platform spalls (CPS, n=5), platform trimming flakes (n=12), core tablets (n=12), epsilon blades (n=44), and platform isolation elements (n=82; for terminology see

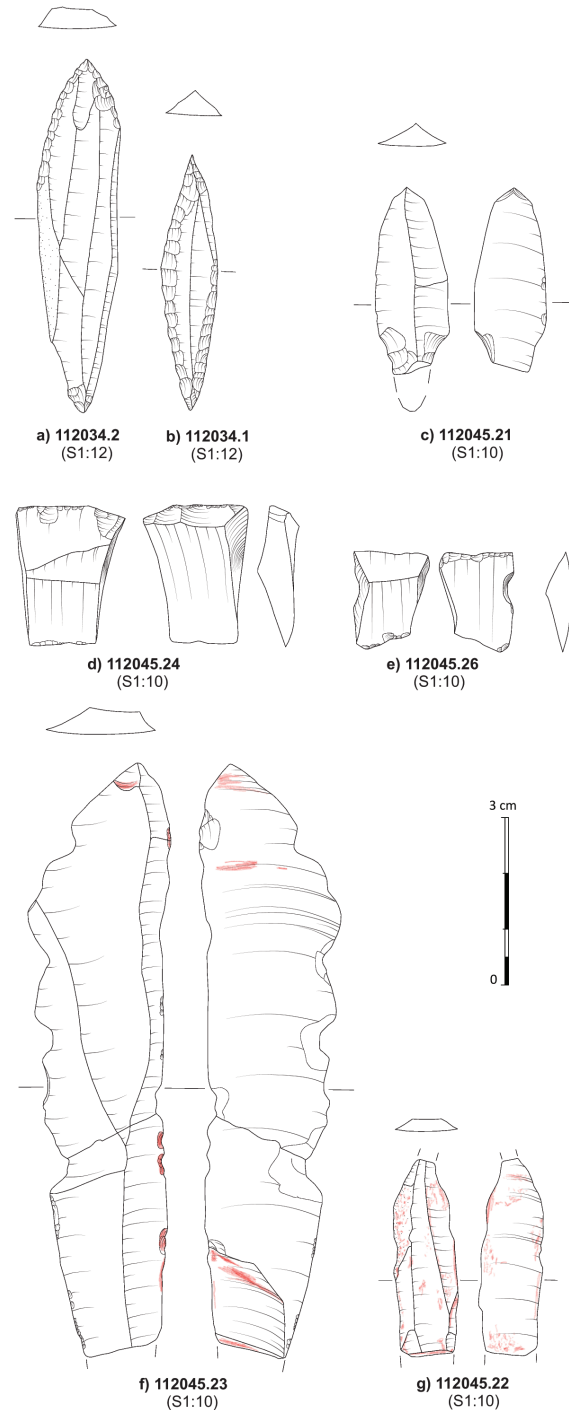


Fig. 14 Sounding 1 (S1) in westernmost Area A: Chipped stone tools. a-c projectile points; d-e splintered pieces on snapped blade segments; f-g blades with residues of red pigment. (Drawings: C. Purschwitz)

quality of the Ba`ja S1 dump, it is obvious that the Ba`ja workshop(s) must have been operated far below the production scales witnessed at LPPNB Basta.

The lithic artefacts include 104 tools (6.7%), many of which refer to sets of very special activities (Table 2). Most frequent are arrowheads, which comprise more than 33% of the formal tools. The majority of them are characterised by broken tangs and/ or tips, among which are several impact fractures (Fig. 14:c). Only seven projectile points are complete (Fig. 14:a-b), of which one or two are unfinished points. These arrowheads may represent retooling events within hunting activities, as this is also indicated by an extraordinary high percentage of wild animals (incl. hyrax, gazelle, fox, and birds) among the associated faunal

Primary Product C.	Loc. S1:10*	L.S1:11-S1:44	Total
Chunks	0 0%	0 0%	0 0%
Debris	363 36.4%	135 23.9%	498 31.9%
Indetermined	0 0%	0 0%	0 0%
Cores	2 0.2%	1 0.2%	3 0.2%
Prim. Elements	26 2.6%	8 1.4%	34 2.2%
CTE	102 10.2%	99 17.5%	201 12.9%
BTF	21 2.1%	40 7.1%	61 3.9%
Chips	2 0.2%	1 0.2%	3 0.2%
Flakelets	112 11.2%	42 7.4%	154 9.9%
Flakes	184 18.5%	91 16.1%	275 17.6%
Non-bidir. Blades	10 1.0%	8 1.4%	18 1.2%
Bidir. Blades	94 9.4%	102 18.5%	196 12.6%
Indet. blades	78 7.8%	36 6.4%	114 7.3%
Burin spalls	1 0.1%	0 0%	1 0.1%
Transversal spalls	1 0.1%	2 0.4%	3 0.2%
Total	996 100%	565 100%	1561 100%
Tools	60 6.0%	44 7.8%	104 6.7%

* Locus S1:10 includes the cleaning of the 1984 sounding area (e.g., the removal of washed in sediments, cleaning and trimming of the established N- and E-sections) and the surface cleaning of the 2019 extension.

Table 1 Sounding 1 (S1): Breakdown of primary product classes.

Tool Classes	Loc. S1:10*	L.S1:11-S1:44	Total
Projectiles	16 45.7%	5 17.6%	21 33.3%
Foliated / Daggers	0 0%	0 0%	0 0%
Drilling tools	6 17.1%	3 10.7%	9 14.3%
Burins	0 0%	2 7.1%	2 3.2%
Scraping tools	1 2.9%	3 10.7%	4 6.3%
Denticulated tools	0 0%	2 7.1%	2 3.2%
Notched tools	3 8.6%	2 7.1%	5 7.9%
Sickles	0 0%	0 0%	0 0%
Multiple tools	0 0%	0 0%	0 0%
Cutting tools	2 5.7%	4 14.3%	6 9.5%
Microlithic tools	1 2.9%	0 0%	1 1.6%
Heavy-Duty-Tools	0 0%	2 7.1%	2 3.2%
Splintered pieces	6 17.1%	5 17.6%	11 17.1%
Total Formal Tools	35 100%	28 100%	63 100%
Formal Tools	35 58.3%	28 63.6%	63 60.6%
Non-Formal-Tools	24 40.0%	11 25.0%	35 33.7%
Hammer stones	0 0%	0 0%	0 0%
Indetermined	1 1.7%	5 11.4%	6 5.8%
Total	60 100%	44 100%	104 100%

* Locus S1:10 includes the cleaning of the 1984 sounding area (e.g., the removal of washed in sediments, cleaning of the established N- and E-sections) and the surface cleaning of the 2019 extension.

Table 2 Sounding 1 (S1): Breakdown of tool classes.

remains of Sounding 1; they count for more than 66% of the identified animal bones (Söffner 1996). Retooling or production of arrows might also be indicated by the presence of notches (n=5), while hunting and related butchering activities might be supported by the abundance of cutting tools and utilized/ use-retouched blades (referred to as NFT in Table 2), scraping tools, and splintered pieces (Fig. 14:d-e). Of interest is also the presence of two blades that show overall residues of red pigment (Fig. 14:f-g) and which have not yet been

observed within the domestic settlement dumps. It is likely that they arrived in the dump with other non-lithic artefacts (Gebel 1988) from removed graves, since red-stained arrowheads also occurred in S1 layers of 1984 (Gebel, pers. comm.).

Test Unit 9a-c in Area G: Capturing the FPPNB/PPNC Occupation (M.R., S.Sho., F.H.)

With Area G (see the settlement plan in Gebel and Bienert *et al.* 1997: Fig. 4), the small and hitherto unexplored topographical site unit was brought into focus. Located in its northern part (c. 1175-1185m a.s.l.), it is the highest area of the site (Fig. 15). The area opens to the southeast, descends in this direction by 45%, and is surrounded on three sides by vertical rock formations. The location is quite secluded, protected from wind, receives less sun than other parts of the site, and has a direct access – through climbing – to the northern intra-mountainous plateaus; the location cannot be called prominent as is the case for neighbouring Area D, which controls the site by an unobstructed view (Fig. 1). The new investigations aimed to examine whether this location was used for communal buildings, or whether the area is occupied by architecture similar to the other areas of the site.

During surface cleaning, numerous stray finds and dislocated wall stones were found. Their former architectural contexts must have originally been associated with eroded structures higher up the slope.

Three excavation sections (TU9a-c) measuring approx. 50m² were opened (Figs.16-17). The uppermost layers (among them the topsoil layer) contained much eroded material. The extensive lithic collection found therein contains FPPNB/ PPNC/ pre-Yarmoukian arrowheads (e.g. Fig. 19:a-c) (Endnote 3). Under these layers, four main structures were identified: 1) a large building in the west (with GR3-4); 2) a small room in the northeast (GR2); 3) an adjacent irregular curvilinear cobble Wall Loc. TU9b:6 (partly encloses GR1); and 4) a potential outdoor area between the large building and Rooms GR1-2.

Building with Room GR3-4

So far, the northern and northeastern parts of the double-faced Wall TU9a-c:4 (approx. 6.5m and 4.5m long, with widths ranging between 40-90cm) have been excavated. Although exact extensions of this wall are not known yet, it seems that dimensions reach those of other long walls known from the excavation Areas B-South, B-North, D and C. The internal groundplan in the west (TU9a) hosted small rooms (GR3 and GR4); they appeared beneath a debris (TU9a:5) containing arrowheads of the type shown in Fig. 39 bottom belonging to the LPPNB - FPPNB/ PPNC horizons. Room GR3 has a pavement made of sandstone slabs (TU9a:9) with *in situ* finds (Fig. 18). These five objects, two of them broken, were associated with the pavement.



Fig. 15 Location of Ba`ja's Area G at the site's highest point, as related to Areas C and D. Helicopter view from east-southeast. (Photo: D. Kennedy, Spring 2007)

The findings could perhaps belong to the category of in-floor deposits known from Basta and Ba`ja that have been related to magic practices or ritual meaning (Gebel 2002). Steps possibly led to Rooms GR3 and GR4 from the southeast and along the northeastern wall (TU9b:4). Wall TU9b:23 may indicate an older phase of the building, but future excavations need to clarify the biography of the building and its function. So far, we cannot exclude a communal function (a supra-household-unit?).

Room GR2

This room is delimited by two double-faced walls (TU9b:8, 1.2m long, width: 50cm; TU9b:9, 1.7m long, width: 50cm) meeting at an almost right angle. The room's fill consisted of upper stone debris layers (TU9b:10/15) resting on collapsed material (possibly from the collapse of an upper floor or the roof; TU9b:18) and another stone layer (TU9b:21). Directly above the supposed floor/ roof remains, numerous finds were made, including a shell bead and a fragment of an engraved sandstone ring. A wall (TU9b:12) attached to Wall TU9b:9 indicates the presence of another room east of the trench. The double-faced walls of the large building in the west and GR2 have a more regular masonry outside – towards the possible outdoor area – than inside.

TU9b:6 (GR1)

The irregular cobble-faced Wall TU9b:6 is set against Wall TU9b:8 of GR2; it runs curvilinear northwest and ends abruptly. The uppermost fill of Room GR1 (TU9b:7) consists of fist-sized stones embedded in a greyish silty sand.

Potential Outdoor Area

Between Wall TU9b:4 and TU9b:6/9, a rare feature for Ba`ja appeared: an outdoor area. Under a massive stone debris (TU9b:5) the topmost deposit (TU9b:11) is similar to the fill of GR1 and forms an eroded and redeposited layer characterised by an enormous amount of flint artefacts including nodules and FPPNB/ PPNC/ pre-Yarmoukian projectiles (e.g. Fig. 19d), bones



Fig. 16 Test Unit 9a-c (TU9a-c), Area G: Uppermost structures as exposed by season's end. Note: Room GR3 in the foreground with the stone pavement, stone weight and other objects (see Fig. 17). Almost vertical view from south-southwest. (Photo: H.G.K. Gebel)

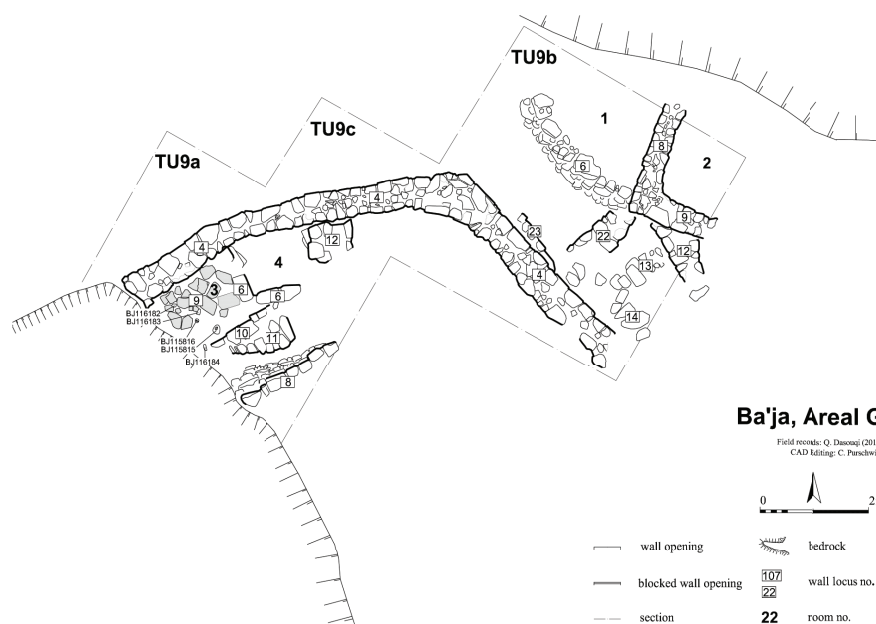


Fig. 17 Test Unit 9a-c (TU9a-c), Area G: Architectural top plan. Highlighted in grey: Stone slab floor (TU9a:9) with *in situ* finds in Room GR3. (Drawing: C. Purschwitz, based on vertical photogrammetry carried out by Q. al-Dasouqi)

and sandstone rings at every stage of production (*cf.* Gebel and Bienert *et al.* 1997: Pl. 7). Below this erosion layer in the northwest of TU9b, two temporary surfaces were found. In the upper one, lithic tools such as a denticulated blade fragment and arrowheads possibly also point to the FPPNB/ PPNC. In the southeast of TU9b remains of stone settings and walls came to light (TU9b:13-14,22-23).

The architectural and lithic evidence from TU9 attests a hitherto not localised late settlement phase, for which so far little evidence exists at Ba'ja. Together with the probability of dealing with a large and special building, this opens up new research potentials, not only for the site but also for the end of the region's mega-site development.

Continued Excavations in Area D (C.P.)

Small-scale excavations focussing on the lower room fills continued in Rooms DR19, DR22, DR25 and

DR30 in Area D (Figs. 20-23). In addition, a section through the upper fill of Room DR36 aimed to investigate the stratigraphic relation between architecture and the huge rockfall boulder which became deposited in the southern part of Area D (Fig. 1: Rockfall 1 and Fig. 21).

Room DR19

Our ongoing excavation of the lower room fill in DR19 revealed a sequence of at least two earthen floors and an infant burial (DR19:110). The upper floor (DR19:105; FPPNB/ PPNC) is characterised by a 10 to 15cm thick deposit directly resting on an older mud floor (DR19:106) (Fig. 20). A child burial (DR19:110; Fig. 22) was found in a small shallow pit (DR19:109) which was cut through Floor DR19:105 close to the southern perimeter wall (DR19:104).

Room DR25

The continued excavation in DR25 resulted in the complete excavation of the room's western half. Most of the oldest walls (*i.e.*, D12:7, DR25:120, DR25:107) are founded on the sandstone bedrock; Buttress DR25:108 is a later construction which likely relates to a mud floor (DR25:106A). Both were constructed on unconsolidated deposits (DR25:116B, DR25:117) comprised of fist-sized (wadi?) pebbles, lumps of mortar, and loose sandy sediments; it included a considerable number of LPPNB chipped lithics with many elements of bidirectional blade core technology. In contrast, the fill layers on top of the mud floor are generally lacking any signal of bidirectional blade technology but included characteristic 7th millennium BCE elements such as a foliate (F.no. 22103, identified by screening through find bags of earlier seasons) and a Tuwailan-type of dagger (Find.no. 112073; Fig. 23).



Fig. 18 Test Unit 9a (TU9a), Area G: Stone slab floor of Room GR3 with Stone Objects 1-5 associated with the pavement: 1 fragment of small grinding slab (F.no. 116184); 2 weight with biconical perforation (F.no. 115815); 3 grooved stone (F.no. 115816); 4 small pestle (F.no. 116183); 5 fragment of a handstone (F.no. 116182). (Photo/ montage: M. Renger; object photos: H.G.K. Gebel)

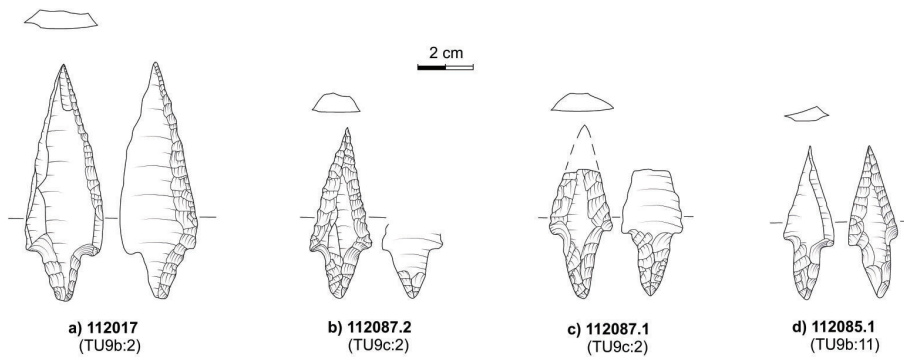


Fig. 19 Test Unit 9a-c (TU9a-c), Area G: Examples of FPPNB/ PPNC/ pre-Yarmoukian arrowheads. (Drawings: C. Purschwitz)

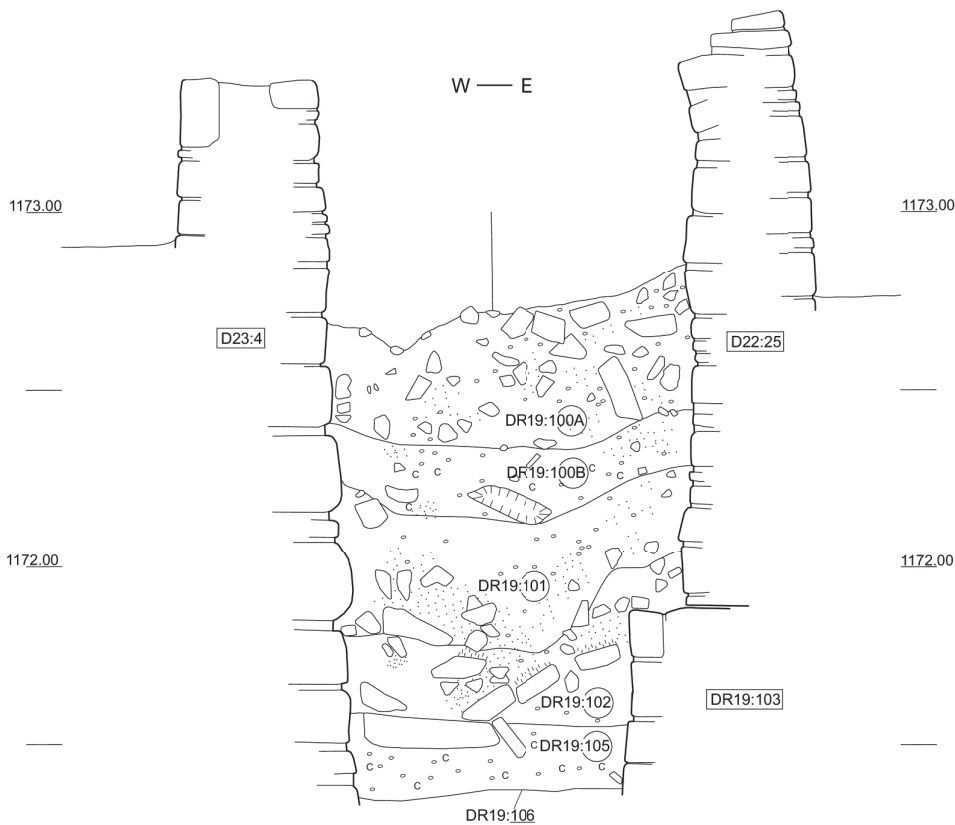


Fig. 20 Room DR19: E-W Section through room fill. (Drawing: S. al-Shoubaki and C. Purschwitz)



Fig. 21 Room DR36: N-S Section through Room Fill DR36 below Rockfall 1 (see Fig. 6) with Loci D32:21 and 55. Note: The boulder sunk onto – and getting stuck by – the preserved LPPNB wall tops inside the site's upper sediments. (Photo: C. Purschwitz)

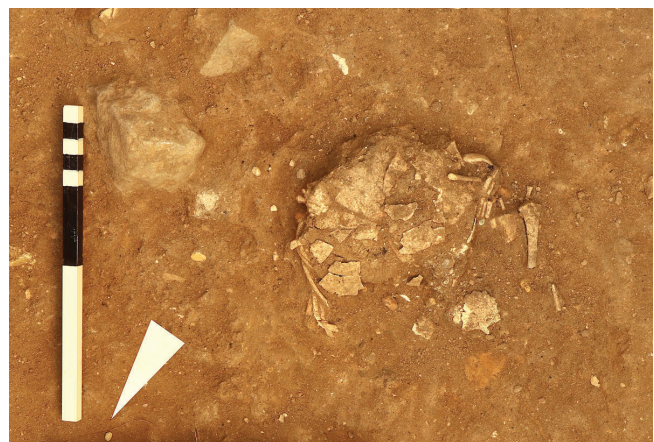


Fig. 22 Room DR19: Infant Burial DR19:110. (Photo: M. Benz)

Rooms DR22, DR30, DR32 and DR36

The operations carried out here provide some crucial information that allows now better understanding the biographies of these three rooms. One of the oldest walls of these rooms is D32:3=53 with a foundation that has not been reached yet. This N-S running wall includes an extraordinary wide (1.15m) doorway which later became blocked (D32:33). The northern and southern perimeter walls of DR22 (*i.e.* D32:28, D32:48) were founded on a layer of fist- to double fist-sized stone rubble (D32:62) mixed with very loose sediment, charcoal, some fragments of red plaster, isolated human bones and a fair amount of chipped lithic tools showing a clear LPPNB signal (many bidirectional blade blanks). This layer is sealed by the mud Floor D32:61 (level ~1170.80m) on top of which Wall Feature D32:51 was built in front of Wall D32:28. The function of this wall feature – preserved only one layer in height, and probably never higher – remains unclear. A second mud Floor D32:50 was found at level 1171.07m, separated from D32:61 by another layer of loose rubble (D32:56). Wall D32:21 was built on top of Floor D32:50 and provided Room's DR22 final layout – at which end the room became filled by a massive deposit of wall collapse.

The investigations in Room DR30 continued with the complete excavation of the mud floor D32:42. Under it, a dark ashy deposit was encountered (D32:57) that included elements of bidirectional blade core technology and may be LPPNB in date. This deposit also contained isolated human bones which were found below a horizontally laid sandstone slab (D32:58).

Room DR36 is located east of Room DR22 and was built sometime after the construction of Wall D32:21. The upper part of this wall was removed for the sake of establishing a section through the room's upper fill to investigate the stratigraphic relation between architecture and the massive rockfall present here. According to the section (Fig. 21), it is now obvious that the rockfall event did not occur during the site's PPN occupation as it slipped on the already consolidated and closed site's surface.

The continued excavation of Area D underlines the complex stratigraphy represented in this part of the site. Investigated building biographies appear to be complex and long-lasting. Many (if not most) of the ex-

cavated buildings must have been established already during the LPPNB period and were still in use until the FPPNB/ PPNC. This is indicated by the FPPNB/ PPNC lithic evidence found in the upper and main room fills all over Area D. Layers with LPPNB material culture have been excavated at a few spots only, and, generally, are preserved in quite deep stratigraphic positions related to the lowermost room fills (*e.g.* DR22, DR25). Of interest is the evidence of an isolated subfloor (?) child burial which appears to be related to FPPNB/ PPNC stratigraphic contexts, and isolated human bones in LPPNB layers of Rooms DR22 and DR30 may indicate similar relations between basements and burials as attested in Area C.

The Mural of Room DR26.2. Reappraising Extension and Preservation (H.G.K.G)

A small test excavation was carried out to check the extension of the mural with abstract motifs (Gebel 2002: Figs. 7-8) found 2001 behind a wall of the collective burial in Room DR26.2 (Loc. DR26:32). After the excavation of the room's collective burial was completed by Michael Schultz, Kerstin Kreutz and Julia Gresky the mural was removed after the close of the season by the Swiss conservator Ueli Bellwald (Endnote 4). In

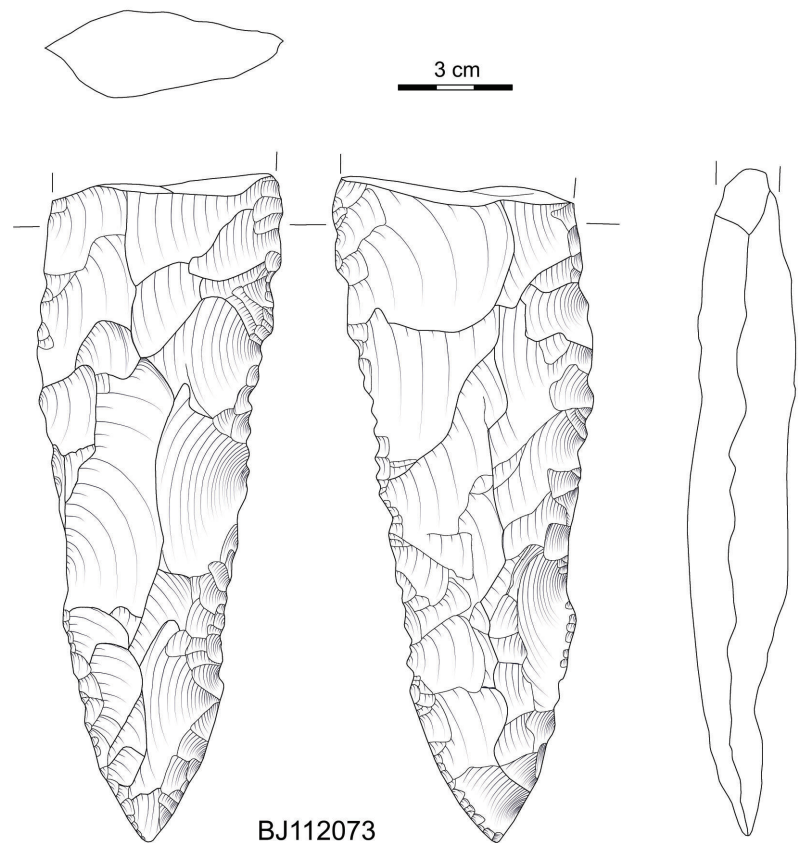


Fig. 23 Area D, Room DR25: (Basal?) fragment of Tuwailan-type dagger (F.no. 112073) found in Loc. DR25:100. (Drawing: C. Purschwitz)

terms of the empiric LPPNB ritual categories for hiding and caching, the finding is classified as a between-wall deposit (Gebel 2002): Part of the mural – and thus its meaning or message – was found not hacked away. It was respected by those who inserted the burial chamber in the room, deliberately keeping it behind a protective stone setting or wall. The protective installation was executed using a smaller vertical sandstone slab with smaller stones on top and at the side. The latter formed then the eastern “wall face” above the collective burial chamber. The chamber actually is a stone cist of c. 0.7m² inserted in Room DR 26.2. It appears that the mural decorated a special basement room later reused for the collective burial. With building the grave’s cist inside DR 26.2 (using large and heavy vertical slabs), the already damaged mural (*sensu* partially preserved) received a protective wall installation on top of the eastern vertical slab of the cist. More of this protective wall installation was removed this season.

This confirmed the reason why a further exposure of the mural’s remains was suspended in 2001: Only some 7-8 small fragments (each measuring some 2-20cm² in an area of 40 x 20cm) of the mural’s plaster appeared still attached behind the protective stones of the installation, again confirming that the mural was only partially preserved in LPPNB times when hidden behind the protective wall. However, it cannot be excluded by this season’s testing that parts were hacked away during the building of the cist. It may mean that the motif was deliberately kept as the central part of the mural’s meaning while the red-stained areas farther away were demolished. It was said that the fragmentary motif is abstract, but the remains may also stand for something figurative: It looks like a ladder-like motif associated with two head-like features – one with “shoulder” – with hair-like “rays” leading off.

Concerning the mural’s Post-LPPNB preservation it has to be noted that its remains received damage by various insect burrows, roots and especially the movement of wall (stones) due to ongoing slope/ wall pressure and tremors/ earthquake. Dislocated and loose plaster fragments behind the wall installation again testify that the mural was damaged before the wall installation was set in front. However, it can’t be completely excluded that the room’s original meaning/ function represented by the mural was the cause for its choice for the later burial chamber.

Continued Excavations in Rooms CR22.1-2: Deposits of Intentionally Buried Household Materials (L.M.)

The excavation in Rooms CR22.1 and 22.2 (Fig. 3) continued with the intention to unearth the remaining parts of the terminated household identified here (Gebel et al. 2017: 26-27; 2019: 29-30). Work was slow and difficult in these rooms due to their extreme narrowness and depth.

Loc. CR22.2:43 is an ashy silty deposit of orange-greyish colour containing larger stones in irregular positions (thrown in?), badly preserved animal bones, significant amounts of big charcoal chunks, fragments of reddish burnt clay (remains of a fire installation or of a firing process?), flint debitage, sandstone ring waste of any production stage, broken pieces of grinding tools (pestle, standard handstones including a round one), as well as small chunks of minerals possibly related to bead production (F.no. 117802: 2 carnelian chunks). Loc. CR22.2:44 was an orange-brown clayish sediment with approx. 3% charcoal inclusions and 15-20% of 5-10cm stones in various positions. Some small pieces of red-stained plaster, flint debitage and one very tiny piece of a black mineral-tempered clay sherd appeared (similar to Fig. 14 in Gebel et al. 2017). The locus became rather sterile after some 10cm. At level 1166.70m a.s.l., a new wall, CR22.2:45, appeared to be attached to the older wall CR17:101.

Excavation continued also in room CR:22.1 where Loc. CR22.1:46 is represented by a compact yellowish-brown sediment consisting of pieces of plaster and gravel; the locus is very similar to Loc. CR22.2:42 in the neighbouring room. They were embedded at the same height, thus it is very likely that they were related. As the locus did not contain any further finds, and for organisational reasons, it was decided to suspend the room’s excavation for this season: Probably the layers containing buried items of terminated household do not continue.

Continued Excavations in Room CR28 (B.K.)

Room CR28 occupies parts of Squares C10, C20 and C21 in which previous excavations were carried out in 2007. During the 2019 spring season, an extended sounding of 2 x 2m was carried out in the southwestern parts of CR28, bordered by Walls C10/20:102=C20:120 in the west and C10:65/ C10:68 in the south (Fig. 24). Our aim was to understand the nature of the deeper stratigraphy, especially to check whether the building north of Wall C10:65/ C10:68 also had an intramural basement burial ground: This is most likely the case (see below and the section on the burials).

Two Rooms (CR28.1 and CR28.2) were separated by a curved Wall CR28:101. This wall is preserved to 1.70m in height and constructed of partially dressed stones in regular layers. It includes a wall passage (Loc. CR28:101a, H 0.70m, W 0.45m, D 0.40m) which allows access to Room CR28.1 via CR28.2. Stratigraphically, Wall CR28:101 must have been constructed after Wall C10:68 as it clearly abuts it (Fig. 24). Both rooms are filled by extensive deposits of collapse (Loci CR28.1:100, CR28.1:104 in CR28.1; Loci CR28.2:103, CR28.2:105 in CR28.2).

The upper room fill in CR28.1 is characterised by tumbled (well-dressed) wall stones with mortar still attached, and many lime particles/ plaster fragments. The

fill seems to be the result of a sudden collapse of the building's upper parts (including walls, ceiling, roofs). OSL samples have been retrieved from this deposit. Remains of a collapsed, red-stained plaster floor were found embedded in Loc. CR28.1:100. The red plaster floor was *in situ* in the sense that it copied the curves of walls C10/20:102=C20:120 and CR28:101a, both of which were moved by a high energy event (an earthquake). More *in situ* remains of this floor were found

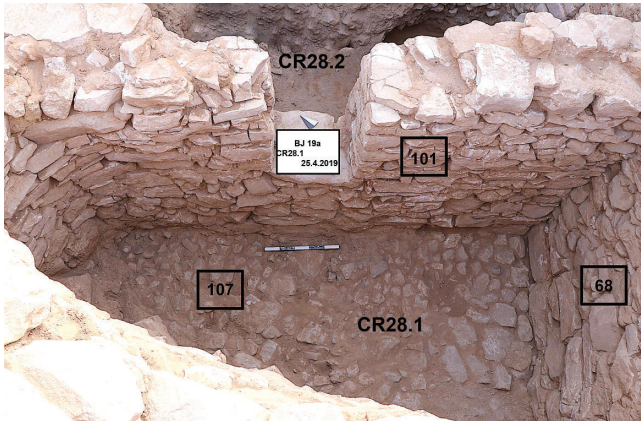


Fig. 24 Room CR28.1: Foundation of Floor CR28.1:107 and Wall Opening CR28:101a. (Photo: M. Benz).

still attached to two wall niches (C10:127a/b, part of wall C10/20:102) and on top of wall CR28:101 (Fig. 25). The lower fill of Room CR28.1 (Loc. CR28.1:104) is comprised of more compact sediment hardened by plaster particles and disintegrated mortar and including numerous grinding tools (often broken), polishers, stone weights, minerals (fossils, malachite), red ochre, and many flint tools. Below more than one meter of room fill, remnants of a lower plaster floor were found; it was constructed by an upper spread (CR28.1:106) containing a dense grit and tiny pebbles preserved only at the junctions with Walls C10:68; CR28:101; CR28:124 and a lower foundation layer of horizontally embedded stones (Fig. 24; CR28.1:107); excavation stopped at this point.

The upper and main fill of Room CR28.2 was quite similar in composition to Room CR28.1 with Loc. CR28.1:100 equating Loc. CR28.2:103 (with addition of air chambers) and Loc. CR28.1:104 being equal to Loc. CR28.2:105. In Room CR28.2, after removing collapse Layer CR28.2:105, we found a blocked wall opening (Loc. CR28:125) in Wall Loc. C10:68 that once connected Room CR 28.2. with an (unexcavated) space/ room to its south (below Room CR22.1). In addition, the remains of a terrazzo-like plaster floor (CR28.2:114) with a fine clay finish (CR28.2:110) were uncovered in the southern half of Room CR 28.2. It was running onto Walls CR28:101 and C10:68, indicating that it was made after the construction of CR28:101. Next to the Wall Opening C10:68a, the Burial Pit CR28.2:111 was cut through this floor and

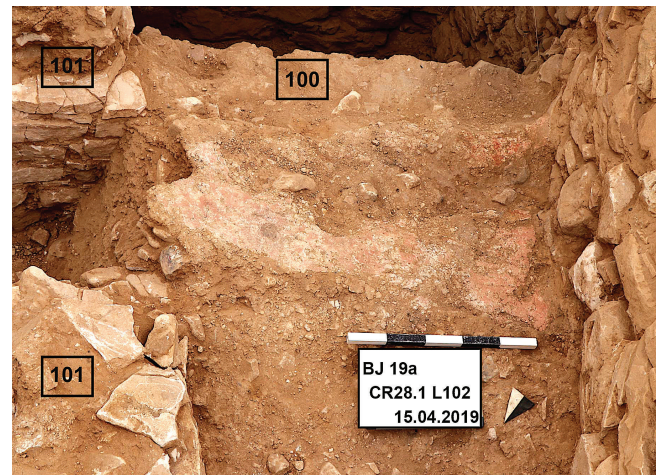


Fig. 25 Room CR28.1: Remnants of dislocated red plaster Floor CR28.1:102. (Photo: M. Benz)

was covered with fragmented white Ordovician sandstone slabs (CR28.2:117; Fig. 26). Before and next to the stepping stone of Wall Opening CR28:101a, a large flat white sandstone slab (CR28.2:112) was found. Only further excavations can clarify whether this slab once belonged to another – not yet excavated – burial or whether it was removed from the burial of subadults during the LPPNB occupation. The pit contained the multiple subadult burial with hundreds of cowries and other beads described in this contribution's section on the burials.

The new excavations in Room CR28 have considerably enriched our information on building biographies and related high energy events. The discovery of a well preserved red coloured plaster floor confirmed earlier observations. Samples of it are currently subject to further micromorphological investigations on the technique and use traces of plaster (H. al-Sababha). The lavishly decorated multiple subadult burial in Room CR28.2 supports earlier suggestions that in Area C, former ground floors/ basements had been used as an intramural burial ground, too.

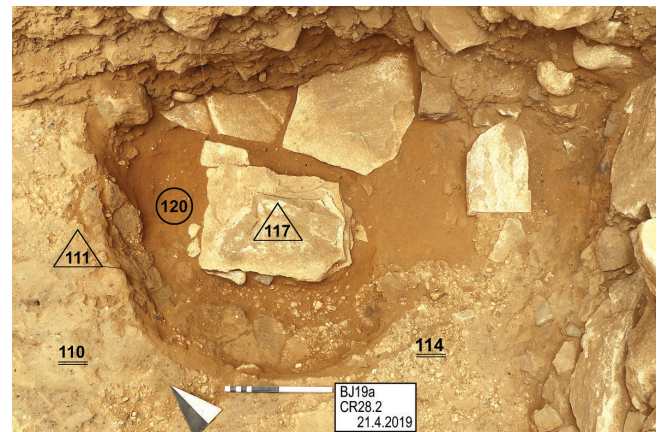


Fig. 26 Room CR28.2: Burial Pit CR28.2:111 with deliberately broken stone slabs used as grave cover (CR28.2:117). (Photo: M. Benz)

Rooms CR5 and CR6: Interfering Ritual and Domestic Evidence (B.K., L.M.)

Excavations in Room CR5 of Area C continued with the removal of the parts of Loc. CR5:42 (a loose sediment with grit inclusions, western part) left over in the 2018 season; it is interpreted as collapsed material of a ceiling construction. Loc. CR5:44 is a compact layer of plaster (eastern part), and Loc. CR5:45 and 46 are ashy layers with baked clay sherds embedded in them.

In the central part, after removal of Loc. CR5:42, Loc. CR5:47 appeared with mostly flattish stones that were embedded horizontally in the sterile sediments (site's paleosol). They were interpreted as a sub-floor construction (Fig. 27; also see below). With the progress of the excavation, it became clear that Loc. CR5:47 had to be divided into two loci, with CR5:47a representing the sub-floor construction and CR5:47b the reused stones for the grave cover of Loc. CR5:49-54 (see below).

The oval-shaped pit (CR5:48a) next to Wall Loc. CR5:55 (in BJ18 CR5:47) was dug into the sterile sediment. It contained the burial of a c. 2-year-old infant (Loc. CR5:49a; F.no. 118006; see the section on the burials).

In the middle of the room, a concentration of unbaked/ baked chaff tempered clay sherds (Loc. CR5:46) was embedded in the ashy loose Layer Loc. CR5:45. The sherds were resting against Walls C32:7 (they are the continuation of the sherd evidence from last season, see Gebel *et al.* 2019). Large parts of this wall were burnt and stained by a very thick soot-like layer. It indicates multiple firing events related to the clay sherds next to the walls, interpreted as remains of heavily used *tabun* installations. However, the firing/heating events might not (only) represent the actual use of the *tabun*(s); this evidence might also be modified by other firing activities in the area and/ or a huge fire in Room CR5 and adjacent rooms which may or may not relate to a household termination. The ashy layer (Loc. CR5:45), in which the trilith with an associated and deliberately fractured *in situ* limestone bowl (Loc.

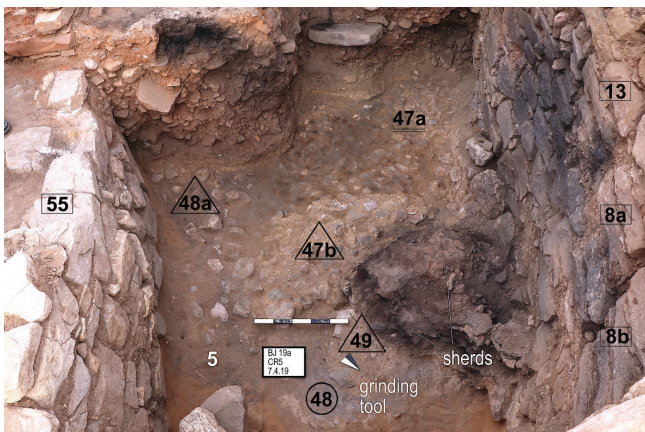


Fig. 27 Room CR5: Foundation of Floor Loc. 47a. (Photo: M. Benz)

40; see Gebel *et al.* 2019: Fig. 15) was also inserted, continued also underneath the sherds and contained a hoard of three unique finds (see the following section) (Figs. 29-30): an oversized Byblos Point (75mm), a small phallus-shaped item, and a small decorated and perforated clay cuboid with remains of twisted fibres (Fig. 31). In 2018, the base fragment of what seems to be a deliberately chopped human figurine (F.no. 101626; see next section) was found in CR5:35 which might be related to the hoard resting in Loc. CR5:45.

Under the ashy layer (Loc. CR5:45), Loc. CR5:44 (a plaster layer with gravel) appeared; it rested on the stone foundations Loc. CR5:47a. In the place of the *tabun*-like installation(s), Loci CR5:44 and CR5:47b were mixed in some places, and a thin ash layer (Loc. CR5:48) appeared in there. It contained isolated human bones and three teeth from different individuals (adult and infant). Under Loc. CR5:48 broken stone slabs (Loc. CR5:49) rested in horizontal positions. A massive violet-greyish sandstone slab (Loc. CR5:50) was also found underneath; it covered and was part of a double child burial (Loc. CR5:49-54; see the section on the burials).

In the neighbouring Room CR6, the SW-NE support wall we inserted left a narrow rectangular space for excavation. In 2018, a sounding (Loc. CR6:16; mostly loose ashy silty sediments) was carried out in the north-eastern part and revealed a section connecting Rooms CR6 and CR5 stratigraphically. It was stopped when a white sandstone slab above a human burial (Loc. CR6:48) occurred (see the section on burials). In 2019, excavations continued down through Room Fills Loc. CR6:17 (a sandy silty sediment devoid of finds), Loc. CR6:18 (a sandy rubble fill of fist-sized angular stones with some finds such as a fragment of a pestle, flints, animal bones) until the silty-clayish Fill Loc. CR6:19,

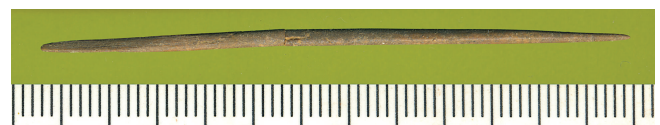


Fig. 28 From Locus CR6:19: Broken LPPNB bone tool (F.no. 115004) with two pointed and flattened (faceted) ends, possibly used as an interdental toothpick. Faceted: may mean an "anatomic" tool morphology. Note: Joint at (fresh) fracture slightly misplaced in photo. (Photo: H.G.K. Gebel)

in which more spectacular finds occurred: a bone point (F.no. 115010), a *Nerita* sp. bead (F.no. 110802), a piece of red pigment, flint tools (F.no. 112003), and an extraordinary bone item described as a formal toothpick by H.G.K. Gebel (F.no. 115004; Fig. 28). These objects were found close to the double burial of two subadults (Loc. CR6:23a and b) that was discovered in the southwestern part of the room, beneath Loc. CR6:19. Under this burial another single child burial was discovered (see the section on the burials).

The Hoard of Locus CR5:45. A Biography of Mixing Ritual and Domestic Contexts (H.G.K.G., M.B.)

While the hoard itself contains a conspicuous combination of unique pieces (Figs. 29-31), its complex contexts – in terms of stratigraphy and the sequence of participating elements and events – make it an even more crucial example and source of insights into 1) ritual and symbolic behaviour at Ba`ja; 2) the findings' interfering preservations of involved overlapping events; and 3) into frameworks of potential alternative interpretation. All this depends, of course, on the reliability of our archaeological and stratigraphical observations, which were extremely complex, inconsistent and contradictory in the case of this hoard and the loci it relates to in terms of their daily life, ritual and depositional contexts. Despite these obstacles, and as a future working basis, we propose a highly tentative, simplified, and interpretative summary of succeeding relative events in the early Room 5 biography (from earliest to later):

- 1) Double child Burial Loci CR5:49-54 in northern central part of Room CR5 deepened into Loc. CR 5:47a and the sterile sediments (site's paleosol), covered with one complete sandstone slab (broken *in situ* due to overburden pressure) and eight deliberately smashed sandstone slab fragments on top.
- 2) Deposition of ashy Layer CR5:48 including a few isolated human bones and teeth.
- 3) Covering Loc. CR5:48 with stones (up to fist-size): probably reused remains of CR5:47a (=CR5:47b), including at least one grinding stone (Fig. 27).
- 4) Depositions of ashy Layers CR5:45 resulting from continuous *tabun* use (operating on a supra-household scale?) and/ or other fire/ firing activities in the room/ neighbouring rooms.
- 5) Embedding hoard in Loc. CR5:45, which may have a relationship with the truncated human figurine found in somewhat later ashy Layer CR5:35.
- 6) Erecting of a formal trilith – made from worked stone slabs and still standing when excavated in 2018 – into the hoard-containing ashy layers of CR5:45, associated with another worked stone slab and a limestone basin deliberately smashed *in situ* (Gebel *et al.* 2019: Fig. 15). Events 5) and 6) may have been contemporaneous activities.
- 7) Loc. CR5:46: *tabun* remains Loc. CR5:46 intentionally or naturally fractured *in situ*, possibly associated with a huge fire (trilith still standing).

On Event 3: The afore-mentioned and most likely deliberately truncated human figurine (F.no. 101626; a base fragment; see. Gebel *et al.* 2019: Fig 16) was found in CR5:35 but it may possibly represent the fourth piece of the hoard. It belongs to the “stick-shaped” human figurine type with a round concave base known from es-Sifiya (Mahasneh and Bienert 1999). The base fragment is truncated just above the stand or base and has been made from a very fine-grained grit-tempered

clay intensely fired; traces of pigment indicate that it was once stained in red or came in contact with red colour during an activity.

While the arrowhead and the phallus are “obvious” objects, that of the cuboid clay object, as well as its function, is unclear (for the object descriptions see Table 3). It might be interpreted as idol-like, considering the perforations and impressed “dotted” lines as eyes with cilia. While this interpretation isn't unlikely



Fig. 29 Room CR5: Items from the hoard related to Loc. CR5:45 from beneath a formal trilith and a crashed vessel installation, all above a child burial. Hoard contains a large Byblos Point (F.no. 112026), a small phallus from oil schist/ marl? (F.no. 111815), and a decorated clay cuboid (F.no. 111602, also see Fig. 30). (Photo: H.G.K. Gebel)

in terms of decoration and iconography, the functional physicality of the piece could have been that of a connector/ joiner/ spacer/ “sewn-on” object carrying a symbolic meaning through its quite sophisticated decoration. The impressed punctuation shows a pre-planned and very thoughtful technical and spatial organization, a very developed sense and command of symmetrical expression, and a very accurate counting of points. The attached remains of twisted fibers (Fig. 31) inside one of the holes, as well as the use wear traces on the borders of the holes indicate that it was tied or fixed somewhere.

The meaning and combination of the hoard items isn't easy to understand with our taxonomical thinking. If the composition of the hoard items isn't arbitrary, their components might carry an unknown meronomic (Thornton 2020) meaning. The only characteristics the items share are that they are rare and special in their own terms, and that they are complete for their symbolic meaning. The latter must be assumed for the truncated base of the supposed human figurine, too, which carries the meaning of a deliberately fractured figurine. These features are striking also for the famous Basta hoard of four figurines (Hermansen 1997).



Fig. 30 Room CR5: Hoard item related to Loc. CR5:45. Faces 1-6 of a decorated clay cuboid (F.no. 111602). *right* View of the medial fracture/ material's texture. Note: Smaller fragments of cuboid not attested with photo. (Photos: H.G.K. Gebel)



Fig. 31 Room CR5: Hoard item related to Loc. CR5:45. Remains of a string (?) attested with the decorated clay cuboid (F.no. 111602). (Microscopic Photo: C. Purschwitz)

The deposition of the hoard items is part of spatially restricted interfering disturbances and preservations of sepulchral, domestic, ritual, and symbolic activities. They represent an intense sequence (1-8; see above) of burial-*tabun*-hoard/ trilith-*tabun* contexts. The preliminary analysis suggests a ritual space that repeatedly experienced episodes of domestic interference. Their space may not have been in use for long, and it cannot be excluded that some of its events relate to each other. In summary: The sequence is characterised by:

A) Initially a room with child burials; B) cooking activities/ use of fire; C) deposition of a hoard with symbolic items; D) marking of the area with a formal trilith associated with a limestone basin smashed *in situ*; and E) *tabun* remains intentionally or naturally fractured *in situ*, associated with a huge fire. Hitherto noticed evidence from other spaces of interference of ritual/ symbolic and domestic behaviour in Basta and Ba`ja suggests that sequential formal re-commodifications were needed – respectively ritually demanded – for the

Large Byblos Point F.no. 112026 Fig. 29	76.6mm x 23.5mm max. width x 5.7mm max. thickness; weight: (10.3g); made on a bidirectional blade; tang and tip formed by lateral parallel dorsal and ventral (steep) retouches; blank selected to suite the shape of a large Byblos Point; unknown non-regional flint raw material; blackened by surrounding charcoal-rich sediment, slightly heated/ burnt in-soil?; complete
Small phallus-shaped item F.no. 111815 Fig. 29	47.7mm x 10.8mm max. shaft diameter (11.2mm max. diameter at glans; 15.9mm max. diameter at base); weight: 7.6g; shaped by vertical (= along the shaft's length) carving courses; carving traces widths 0.4 -1.2mm; shaft's longitudinal section slightly biconvex and incurved; shaft's transversal sections are round; pronounced round base with slightly concave interior: self-standing object (!), with a stepped and obliquely carved intersection between shaft and base; raw material: possibly oil schist or marl, blackened by surrounding charcoal-rich sediment, slightly heated in-soil? (cracks in layered raw material); complete
Small decorated and perforated clay cuboid F.no. 111602 Figs. 29-31	with remains of an attached string Measurements: 58.4mm max. length; ill-preserved Width 1 and Width 2: max. preserved width is 20.6mm; preserved weight: 31.8g Surfaces, decorations and perforations: very smooth, even "polished" near edges: wear from contact with skin or garments?; surfaces without (!) finger prints (!): meaning that the punctuation lines and perforations must have been done when the piece was in a sun-dried "waxy" status which allowed to smooth fingerprints and insert the punctuated/ impressed lines and perforations; (thus) the punctuated impressions have unsmoothed sharp edges/ "rims" which appear not smoothed; the two perforations cross the complete width and are not biconical or made from two sides: they were executed in one action from one side leaving craters at the perforation's onsets and bulges at their end; perforations' constant interior min. diameter is 1.8mm, near Faces 1 and 3 "irregular" diameters of 2.5 - 3.0mm; curved grooves on Faces 3, 5 and 6 may represent smoothed (parts of) fingernail imprints Preservation (see Fig. 30): fractured during excavation along pre-existing old <i>in situ</i> cracks into 3 major pieces and several smaller fragments (c. 12-15% of the pieces substance lost) Raw material: heavily grit-tempered plastic material with lime inclusions of up to 3.0mm, mainly fine-grained clay mixture Face 1: almost completely preserved with two slightly transposed perforations from which each 5 parallel and horizontal/ obliquely punctuated impressed lines (punctuations with diam. of 0.5-0.7mm) start towards the piece's narrow sides (without crossing over to narrow sides); in the center of Face 1 three punctuated/ impression lines of the same type "divide" the face, crossing onto Faces 2 and 4 Face 2: divided in the center by the three punctuated/ impression lines of the same type like on Face 1, crossing onto Faces 1 and 3 (meaning that the three punctuated/ impression lines go around all four faces, as far as this can be said from the status of preservation) Face 3 (only left half is preserved): from the perforation 4 parallel and oblique punctuated/ impression lines (diam. 0.6-0.8mm) start towards the piece's narrow side (without crossing over to narrow side) Face 4 (only 3 quarters are preserved): shows in its center the remains of the aforementioned three parallel punctuated/ impression lines (which go around all 4 faces); traces of an applied material or coat in which the remains of an oblique string is embedded (right side); on the left side a larger and a smaller carved groove or incision are preserved (max. widths 2.0 and 0.8mm), most likely incised before the piece was burnt Faces 5 and 6 (squared narrow sides): each side covered by 7 parallel punctuated/ impression lines with the same direction as the perforations, not crossing onto Faces 1 and 3; both sides have (a bit off-center "incisions" perpendicular to the direction of the 7 parallel punctuated/ impression lines: traces of tied-up use?)
Base fragm. of truncated human figurine (F.no. 111602) (Gebel <i>et al.</i> 2019: Fig. 16)	Base fragment selected from amost likely deliberately broken human figurine, found in CR5:35

Table 3 Hoard items related to Locus CR5:45: Descriptions.

re-use of domestic and ritual spaces, using means and principles of marking, termination, *do ut des* and burying/ hiding (Gebel 2002). The background for this behaviour may rest in banning menaces from otherworldly powers, *e.g.* ancestral power (see also Hermansen 1997). Our final interpretation of the contexts related to Loc. CR5:35/ 45 will lead in this direction.

Continued Excavation of Collective Burial Remains in Room CR17 (S.D., J.G., C.P.)

Continued excavation in Room CR17 (Fig. 3) focused on the completion of the excavation of this basement room by excavating the baulk that was left in the southern half of the room in order to gain full information on the room's layout and the burial arrangements found in

its lower parts (see Gebel *et al.* 2019). As a major result we improved the stratigraphic model that had been established during the previous season. We achieved a better understanding of the complex room biography and in particular on the relationship between basal architecture and the multiple human bone deposits and arrangements found upon and below its floors. The reconstructed room biography reveals a long-lasting use as burial ground and the later – probably more domestic – phase of reuse. Several layers of human remains were uncovered in the lower architectural phase. They hint at complex collective burial events during which earlier burials became disturbed by later ones, when bones were pushed aside and mixed. Some burials were excavated only partly (as they continue below later walls). We therefore should consider the following minimum number of individuals with some caution.

According to a very preliminary infield analysis we expect at least 14 individuals being buried in CR17 which almost exclusively consist of subadults (four newborns, three Infans I, four Infans II, and at least one adolescent), and two adults. Whereas some human remains were still in anatomic articulation, suggesting a primary burial (e.g. Loc. CR17:137), other individuals were mainly represented by scattered bones with only some body parts (such as legs or arms) still being articulated.

The basement of the lower architectural phase is confined by Wall Loci CR17:101 (north), CR17:113 (east), CR17:123 and CR17:125 (both south) and CR17:110 (west) which comprises several construction events (Figs. 4 and 32). The oldest walls are represented by the northern Wall Loc. CR17:101 and a small wall segment

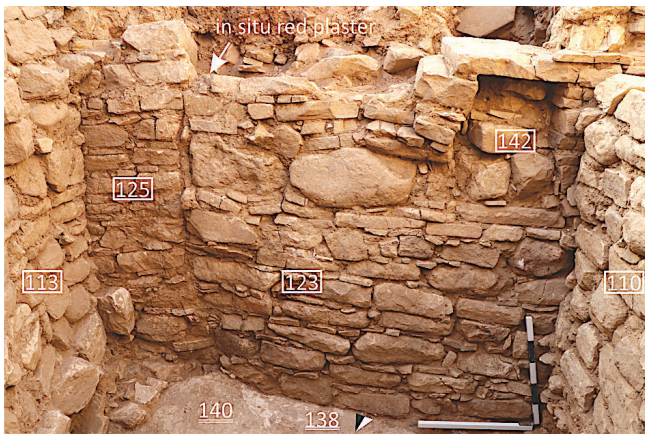


Fig. 32 Room CR17: Wall Loc. CR17:123 abutting to Wall Loc. CR17:125 and having a blocked Wall Opening Loc. CR17:142. Note: Red painted plaster on top of Wall Loc. CR17:123. (Photo: M. Benz)

in the south (Loc. CR17:125) that might be a buttress. Both walls appear associated with a white plaster floor (Loc. CR17:114=138), though the stratigraphic link was destroyed by later cuts (Fig. 33). Wall Loc. CR17:123 was built later on the plaster floor and reduced the space in the south. This wall includes a wall opening which

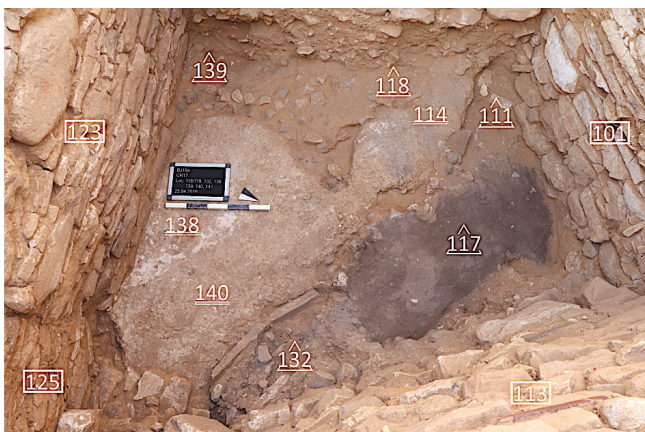


Fig. 33 Room CR17: Plaster Floor Loc. CR17:138 is cut by several pits (Loci CR17:111, CR17:118/119 and CR17:132). Note the large hump-like restoration (Loc. CR17:140) of the floor in the southwestern half of the room. (Photo: M. Benz)

was found blocked (Loc. CR17:142). Wall CR17:123 is completely preserved as indicated by remains of red (floor?) plaster on its top (Fig. 0121).

The Plaster Floor CR17:114=138 is cut by several features: Locus CR17:117, in the eastern part of the room and two or three pits in the west (Loci CR17:118, CR17:139), and another pit (Loc. CR17:111) alongside the northern wall (Loc. CR17:101). The plaster floor has been renewed in the southwestern room corner creating a c. 0.3m wide and 1.50m long hump-like elevation (Loc. CR17:140). This feature is quite distinct from the original floor (Loc. CR17:114=138), showing a different composition as well as remains of red colour on its surface (Fig. 33). Loc. CR17:140 is cut by a pit (Loc. CR17:132) which continued below wall CR17:123. The plaster floor and the hump-like feature were covered by two layers (from below to above: Loc. CR17:136, CR17:137) which included human bones, animal bones and typical burial items such as red pigments, 25 shell beads (24 *Nerita* sp., 1 barrel shaped



Fig. 34 Room CR17: *in situ* cross-shaped mother-of-pearl ornament found in Loc. CR17:137. (Photo: S. Dermeh)

bead of *Tridacna* sp. / *Spondylus* sp.), projectile points, and a cross-shaped mother-of-pearl ornament (Fig. 34; Table 4). The upper bone layer (CR17:137) was sealed by a compact layer (Loc. CR17:134a) that included many gravels and crushed stones; it seems to represent a temporary floor level. Above this locus, another

concentration of human bones (Loc. CR17:133/ 135 which includes Loc. CR17:131) was found alongside Wall Loc. CR17:123 and Wall CR17:110 in the south and western half of the room (Fig. 35; Table 4). Two mother-of-pearl ornaments (1 ring, 1 bracelet) were found close to an infant chest. Other items included 21 shell beads (*Nerita* sp., *Tridacna* sp., and *Cypraeidae*) and a fragment of a red stained stone vessel (F.no. 116808; Fig. 35). Except for one new born, found complete and in primary position next to the large stone vessel fragment (F.no. 116808), the bones of all other individuals were mainly disarticulated and mixed.

The burial Loc. CR17:133/ 135 again was “sealed” by a layer of compact sediment (Loc. CR17:134b) and succeeded by another layer of human bones (Loc. CR17:130). This bone layer was concentrated in the southeastern part of CR17 and continued below the eastern perimeter wall (Loc. CR17:113; Fig. 33 and 36), which demonstrates that this wall is a later addition.

Human bones were also concentrated in the lower part of CR17:130, while in its upper part, the human bones were associated with animal remains. Loc. CR17:130 was covered by Loc. CR17:116 in the southwest and there was an ash layer on top in the southeastern room part. (CR17:115b is not identical to Loc. CR17:115 of the 2018 season). Both layers (Loci CR17:115b and CR17:116) were overlaid by Loc. CR17:109. This layer was interpreted as a layer of collapse in 2018 (Gebel *et al.* 2019), but this interpretation needs to be revised after this year’s findings: Loc. CR17:109, which appeared to be quite thick in the northwestern room corner, became quite thin towards the southern half of Room CR17.



Fig. 35 Room CR17: Concentration of human remains (Loc. CR17:133/135) along Wall Loc. CR17:123 (top left) and below Wall CR17:110 (right). Note the complete skeleton of a newborn next to the red-stained stone vessel fragment. (Photo M. Benz).

Loc. CR17:109 was cut by Burial CR17:127, which included the human remains of at least two children. Two stone vessel fragments with red-stained surfaces (F.no. 116811, 116813), a greenstone bead (F.no. 110800, turquoise?), and a broken perforated *paillette*-type sandstone artefact (F.no. 111806) were found associated with them.

Burial CR17:127 and Loc. CR17:109 were sealed by a mud floor (Loc. CR17:124) built after the construction of wall CR17:110. The room’s function appears to have changed as no burial activity is connected to the floor’s use. Instead, a grinder (Loc. CR17:126; F.no. 116181) was placed on top and the finds associated to the floor’s surface may refer to more domestic activities (Fig. 36; Table 4).

The blocking (Loc. CR17:142; Figs. 32 and 36) of the wall opening in Wall Loc. CR17:123 might be related to the floor abandonment, though an earlier date cannot be excluded. After the abandonment the room was deliberately backfilled (Loc. CR17:102) and a new building constructed (Gebel *et al.* 2019)

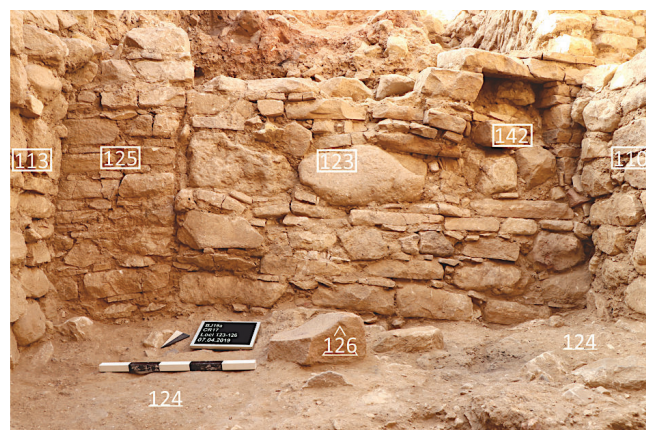


Fig. 36 CR17:124 with *in situ* grinding installation (Loc. CR17:126). (Photo: M. Benz).

The Season’s Intramural Subadult Burials (M.B., J.G., B.K., L.M., C.P.)

During the 2019 spring season, six grave contexts were completely excavated in the basements of Areas C and D (Figs. 3 and 4). All contexts contained exclusively infants and children (MNI=12), but some isolated adult bones (Loc. CR6:41a) were also found in an infant burial (Loc. CR6:40). Moreover, the excavation of the collective burial in Room CR17 continued (see this report’s section by S.D., J.G. and C.P. and Gebel *et al.* 2019: 25-26), encountering so far at least 14 individuals. In Room DR26 excavations continued down to bedrock and demonstrated that no further burials were in this room.

To avoid the collapse of the retaining wall we built in CR6 in 2018, a support construction of metal and wood was built this season to provide security for the burial excavations in CR6. As a consequence of the decreased space, the rescue operation was difficult. At the end of the excavations, Rooms CR5 and CR6 were backfilled.

The graves will be described from east to west. The focus of this section is to document the empiric evidence for events during burial rituals. The burial of a person is considered a social activity, relating the dead and living communities and creating and enhancing

Objects	Field numbers
Abbreviation: MoP: mother-of-pearl	
Objects related to Floor CR17:124	
1x Grinder (in situ on floor)	116181
1x Sandstone ring raw disk (Stage 2)	111244
1x Worked bone	115008
3x Frgm.s of stone vessels	116815
149 x Chipped lithic artefacts (predominantly microdebris, 17 blades/ blade segments, incl. 3 drills, 1 NFT)	112022, 112024
Animal bones	114001
Objects related to Burial CR17:127	
1x Stone bead (turquoise?)	110800
1x Paillette-like sandstone artefact, broken, with perforation	111806
2x Frgm.s of stone vessels with red stained surface	116811, 116813
9x Chipped lithic artefacts (6 blades/ blade segments, 2 flakes, 1 CTE; incl. 1 cutting tool)	112070, 112106, 112109
Animal bones	114032, 114091
Human bones	118013
Objects related to Deposits CR17:109 and CR17:116	
1x MoP button-like ornament	110403
1x Unworked marine mollusc	110001
1x Fossil with red pigment	117824
4x Chipped lithic artefacts (3 flakes, 1 microdebris)	112063, 112074, 112091
Animal bones	114007, 114029, 114059, 114072, 114075
Human bones	118013
Pieces of red plaster	117007, 117010
Objects related to Burial CR17:115	
1x Polisher	111824
1x Handstone fragm.	116046
9x Chipped lithic artefacts (1 Byblos Point, 2 NFT, 2 blades, 1 microdebris)	112025, 112047, 112057
Animal bones	114018, 114028, 114051
Human bones	118013
Pieces of red plaster	117033
1x Chunk of yellow ochre	117805
Objects related to Burial CR17:130	
1x Unworked marine mollusc	110006
1x Fragg. of red-stained sandstone rings 1x Fragg. of red-stained stone ring (schist-type of mineral?)	111201, 111210
9x Chipped lithic artefacts (1 Amuq Point, 1 polished celt with red-stained surface, 1 scraper 1 blade, 1 flake)	112048, 112072, 112111
Animal bones	114060
Human bones	118013
Pieces of red and yellow ochre (partly associated with human mandibula)	117009, 117814
Objects related to Burial CR17:133/ 135 including Loc. CR17:131	
6x Shell beads (5 <i>Nerita</i> sp., 1 <i>Tridacna</i> sp.?)	110804, 110807,
3x Shell beads (3 <i>Tridacna</i> sp.?)	110811,
6x Shell beads (1 <i>Cypraeidae</i> , 4 <i>Nerita</i> sp., 1 <i>Tridacna</i> sp.?)	110816,
1x Shell bead (<i>Tridacna</i> sp.)	110817,
1x Shell bead (<i>Nerita</i> sp.)	110818
4x Shell bead (1 <i>Cypraeidae</i> , 1 <i>Nerita</i> sp., 2 undet.)	
1x MoP "bracelet", perforated 1x MoP "finger ring", perforated (both related to a newborn)	110410
2x Unworked marine mollusc	110007, 110009
1x Stone vessel fragm.	116808
2x ByblosPoint	112092, 112093
Animal bones	114071, 114073
Human bones	118013
Pieces of red and white plaster	117016, 117018, 117031, 117827, 117828, 117849, 117850, 117851

Table 4 cont'd	
Objects related to on-floor-deposits CR17:136/ 137	
1x MoP cross-shaped ornament	110412
4x Shell beads (<i>Nerita</i> sp.)	110819,
5x Shell beads (<i>Nerita</i> sp.)	110822,
15x Shell beads (<i>Nerita</i> sp.)	110823,
1x Shell bead (<i>Tridacna</i> sp.?)	110824
1x Stone disc, white sandstone (d 14cm)	115814
1x Fragg. of handstone	116187
11x Chipped lithic artefacts (1 scraper, 3 blades, 3 flakes, 2 CTE, 3 microdebris)	112107, 112110
Animal bones	114086, 114087, 114089, 114082
Human bones	118013
Red pigment	117856
Objects related to Pit CR17:132 (not excavated)	
5x Chipped lithic artefacts (1 Jericho Point, 1 blades, 3 microdebris)	112071, 112094, 112108
Animal bones	114074, 114088
Human bones	118013

collective identities. Recurring events such as the deliberate destruction of stone slabs, turned the burial of some subadults into a stirring and "enchaining" (Chapman 2000) event. Since it is not possible to report every burial ritual for each grave in detail, we compiled an idealized burying process in Table 5. For each burial the absence or presence of a specific aspect and ages of the subadults are presented. Accordingly, the description in the text focuses only on extraordinary aspects and open questions. The study of the objects from graves (Table 6), and of the human and animal bones are still on-going and will be published within the framework of the *Household and Death* Project. The beads discovered in Grave CR28.2:122a-b/ 123a-b could be catalogued only preliminarily and will require further funding for scientific investigations. With few exceptions, the preservation of the bones of subadults was very poor.

Room CR5

In Room CR5, two burials were uncovered: One in the southwestern corner (Loc. CR5:48A-50A) and another one (CR5:49-54) in the middle of the northern half of the room beneath the deposits of symbolic objects (see this report's section on Room 5 and 6 by B.K. and L.M. These two burials underline the supposed special function of this room. It should be mentioned here that Rooms CR5 and CR6 constituted a single room when the burial pits were dug through the floor.

Grave Loc. CR5:49-54 is an oval pit (40x50cm, c. 35cm deep) that was covered with one large stone slab and eight deliberately broken smaller slabs on top (Fig. 37a). Two of the smaller slabs fitted perfectly well together indicating that the breakage happened shortly before their deposition. This parallels the cover of Jamila's burial (C1:46) excavated in Room CR36.1 in

Table 4 Room CR17: List of objects found in the graves in Rooms CR17 (for objects found during the 2018 season of excavation see Gebel et al. 2019: Table 2).

Room	CR 5			CR 6						CR 36.1	CR 35		CR 28.2				DR 19
Loc. (light grey=double/ multiple, dark grey=single)	53	54	49A	48	23a	23b	40	41a	41b	46	405 Ind I	405 Ind II	122a	123a	122b	123b	110
Age (y=years, m=month)	3-4y	1-2y	1.5- 2y	7±2y	3±1y	1.5- 2y	0y±2m	adult	infant	8±2y	6-9m	3-4y	3-4y	0y±2m	3-4y	0y±2m	0y±2m
Sex (f=female, 99=indet.)	99	99	99	99	99	99	99	99	99	f?	f	99	99	99	99	99	99
1. Selection of the burial place (1=near wall; 2=in corner; 3=in the middle of the room)	3	3	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1
1.1. In the same room as other burials (0=no; 1=yes, 2=related to other tombs)	1	1	1	1	2	2	2	2	2	0	1	1	99	99	99	99	0
1.2. Close to window opening (0=no; 1=yes)	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0
2. Preparation of the burial ground/ corps:																	
2.1. Grinding colour/ dressing with coloured clothes	0	0	1	0	1	1	0	99	99	1	0	0	0	0	0	0	99
2.2. Adding ornaments (1=<10; 2=<100; 3=>100; 4=>1000)	0	0	1	0	2	0	1	2	99	4	0	0	3	2	3	0	1
2.3. Preparing the burial ground (0=without pit, 1=digging pit)	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1
2.3.1 Digging through 1=sterile sediment (paleosol), 2=room floor	1;2	1;2	1	1;2	0	0	1;2	1;2	1;2	1;2	1;2	1;2	1;2	1;2	1;2	1;2	2
2.3.2 Undercutting a wall (0=no; 1=yes)	0	0	0	0	0	0	1	99	99	1	0	0	0	0	0	0	0
3. Burial construction (0=no construction, 1= constructional elements of stones)	0	0	0	0	0	0	0	99	99	1	0	0	0	0	0	0	0
3.1. Separating the pit from the room by stones/ slabs/ small wall	0	0	0	0	0	0	0	99	99	1	0	0	0	0	0	0	0
3.2. Fixing of grave pit's walls with stone slabs (=1); building a cist (=2)	0	0	0	0	0	0	0	99	99	2	0	0	0	0	0	0	0
4. Depositing the corpse (1=prim.; 2=sec.)	1	1	1	1	1	99	1	2	2	1	1	1	1	2	1	2	1
4.1. Orientation (1=N-S, 2=NE- SW, 3=E-W, 4=SE-NW, 5=S-N, 6=SW-NE, 7=W-E, 8=NW-SE, 9=other;)	2	99	1	3	6	99	1	99	99	3	3	7	5	99	5	99	9
4.2. Facing (1=N, 2=NE, 3=E, 4=SE, 5=S, 6=SW, 7=W, 8=NW, 9 heaven)	1	1	99	1	?	99	9	99	99	5	6	3	99	99	99	99	5
4.3. Position I (1=hocker 180°; 2=hocker 90°; 3=stretched; 4=sitting; 5=others)	99	99	1	2	5	99	1	99	99	2	4	5	2	99	2	99	4
4.4. Position II (1=left side; 2=right side; 3=supine; 4=ventral)	3	99	2	2	4	99	3	99	99	1	2	3	2	99	1	99	1
4.5. Associating the corpse with other beings																	
4.5.1. with humans (1=single burial, 2=double burial, 3=multiple burial, 4=collective; 5=with isolated human bones)	2	2	1	1	2	2	5	4	4	0	2	2	3	3	3	3	1
4.5.2. With animals (1=complete, 2=parts of, 3=isolated single animal bones)	0	0	0	3	0	0	3	3	3	0	0	0	0	0	0	0	0
5. Depositing grave goods in the grave pit (0=none; 1=1-5; 2=<10; 3=>10; see Table 6)	0	0	0	1	?	?	0	0	0	0	0	0	1	1	1	1	0
5.1. Destroying objects before deposit (0=no; 1=yes)	0	0	0	0	0	0	1?	0	0	0	0	0	1	1	1	1	0

Table 5 Rooms CR5, CR6, CR28.2, CR35, CR36.1, DR19: Idealized sequence of attested events related to single and double/ multiple subadult burials.

Table 5 cont'd																	
5.2. Adding pigments (1=red, 2=yellow)	0	0	1	0	0	0	2	0	0	1	0	0	2	2	2	2	2
5.3. Lighting a fire outside the grave	0	0	99	1	99	99	1	1	1	1	1	1	0	0	0	0	0
6. Covering the corpse and grave																	
6.1. With sterile sand	0	0	0	0	0	0	1	1	1	1	0	0	1	1	1	1	0
6.2. With sediment	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	1
6.3. With charcoal (1=a few pieces; 2=a lot)	2	2	2	2	2	2	2	2	2	1	1	1	0	0	0	0	1
6.4. With large gravestone slab	1	1	0	1	0	0	1	1	1	1	1	1	99	99	99	99	0
6.5. With deliberately broken stone slabs	1	1	0	0	0	0	0	0	0	1	0	0	1	1	1	1	0
6.6. With unworked stones	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0
6.7. Adding objects in the grave cover (0=none; 1=1-5; 2=>5)	1	1	0	0	0	0	2	2	2	2	0	0	1	1	1	1	0
6.8. With (re-used) flint-/limestones grit	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0
6.9. Painting the grave cover white	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
7. Marking the position of the grave in the room	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0

Objects	Field numbers	Description, raw material, measurements (mm; frgm. fragment, l length, h height, w width, th thickness, d diameter, med medial, prox proximal, dis distal, av average, dp diameter of perforation)
Objects related to Burial Loc. CR5:49-54		
Flints 1 flint flake, 1 microdebris in Loc. CR5:52	112027	
Animal bones (Loc. CR5:48)	114024, 114082	
Objects related to Burial Loc. CR5:48A-50A		
3x Mother-of-pearl pendants	110415.1	Rectangular with rounded edges and a narrowing in the middle part on both sides; 2 perforations in the upper half; l 11.9, h 12.97, th 1.0, dp 1.8; weight: 0.3g
	110415.2	Subtriangular; 1 perforation in the ~ middle; l 9.1, h 11.46, th 1.4, dp 2.6; weight: 0.2g
	110415.3	Rectangular; 1 perforation on the upper third; l 9.5, h 15.6, th 1.4, dp 1.8; weight: 0.3g
1x Shell/ limestone bead	110821	Cylindrical; l 8.2, d 4.0, dp 2.1; weight: 0.2g
1x Flint object: flakelet (in CR5:48A)	112030	
1x Piece of red ochre (found on top of the grave (Loc. CR5:47)	117807-08	
Objects related to Burial Loc. CR6:20; CR6:44-49		
1x Stone bracelet	111222	Fr gm. Stage 6a, d inside 60, d outside 72, th 3.0; weight: 0.4g
Flints from surrounding sediment of Loc. CR6:44 (non- <i>in situ</i>)	112028	n=11 (7 microdebris, 3 flakes, 1 flakelet)
1x Mini projectile point	112055	Purple flint, non-local
Flint fragments from the grave filling CR6:47/49;	112075	
1x Animal bone	114058	Astragalus from small ruminant (pers. comm. J. Peters 2.8.2019)
Animal bones indet. from sifted sediment	114042	
Objects related to Burial Loc. CR6:23a/ 23b		
33x Greenstone beads	110808.1-8; 110808.10-34	Most are turquoise, 1 or 2 amazonite, 1 malachite (?), 1 chrysocolla (?); subtriangular to sub-round or drop-shaped, l 5-11, h 4-11.8, w 1-6.9; av weight: 0.2g
1x Pale red limestone bead	110808.9	Oval/ drop-shaped; traces of red pigment; l 7.0, w 4.2, h 8.8; weight: 0.2g
Flints in CR6:27	112004	n=12; 3 microdebris, 4 flakelets, 2 flakes, 3 bidirectional blades/ bl. fr gm.
Animal bones in CR6:27	114013	
Hundreds of tiny pieces of reddish pink "plaster" north of the skull of Individual Loc. CR6:23a and concentrated in Loc. CR6:30	117024	

Table 6 Rooms CR5, CR6, CR28.2 and DR19: Objects related to the rooms' burials. Macroscopical identifications of the beads' mineral raw materials are preliminary (done with a XRF-analysed reference collection of beads from this grave and Grave C1:46: XRF by the Geological State Department Freiburg). *Tridacna* identification to be confirmed, it might also be *Spondylus*.

Table 6 cont'd		
Objects related to Burial Loc. CR6:40/ 41a/ b		
Loc. CR6:28		
1x Flint core and core preparation	112099	
4x Grinding tool fragments	116004	Grinding stone; Disi sandstone shaped by a grinding use (rounded sides and flat body [50mm])
	116008	Mano, prox/ dist frgm.; sub-oval, elongated, quite flat, resulting from use of both sides; black traces of ash? visible; lateral depressions; quartzitic sandstone; parallel cross-section; w 112, th 35
	116115	Mano, prox frgm., sub-oval, elongated, parallel long section; biconvex narrow section, quartzitic sandstone; w 89, th 39
	116171	Mano frgm., partly natural shape, parallel long section; "plano-triangular" narrow section; quartzitic sandstone; w 100, th 48; highly smoothed and flaking on both working surfaces.
2x Stone vessel fragments, matching, belonging to one object, but found separated in the grave cover, see Fig. 40	116801	Body frgm. of large plate, junction (between wall and base), Umm Ishrin sandstone; plano-concave sections; Frgm. shows clear flaking along the interior fracture delineation onto the fracture similar to piece F.no. 116809.
	116809	Small frgm. of large plate, edge/ rim; Umm Ishrin sandstone
Loc. CR6:32		
Animal bones	114081	
Loc. CR6:39		
1x Mother-of-pearl button	110814.1	Mother-of-pearl, ovoid, serrated edges, 2 perforations: l 14.5, h 9.03, th 0.7, dp 2.1; weight: 0.1g
1x Shell bead	110814.2	Conidae? Ring bead; d 5.4, th 1.1; weight: 0.1g
1x Nerite	110814.3	Perforated, faint traces of red pigment; weight: 0.4g
1x Flakelet, 1x microdebris	112105	
Loc. CR6:40/41		
Animal bones	114083 114084	
10x Ring bone beads	110806.1-10	
1x Nerite (?)	110805	Perforated; next to the adult hand; weight: 0.2g
Objects related to Burial Loc. CR28.2:122a-b/ 123a-b		
Loc. CR28.2:115		
1x Miniature stone bowl, broken in two halves found separately on top of the grave covering slabs Loc. CR28.2:117.	111825	Oval crème-coloured marble miniature bowl with red pigment coloration in the stone, production and use-wear traces run over the colouring; l 67.2, w 61.4, h max. 22.9, th rim 2.5, middle 6.7; weight: 74.0g
Loc. CR28.2:120		
2x Yellow ochre stones		Left and right of the child's skull (CR28.2:122a)
1x Quartzitic pebble	117856	In the southwestern corner of the grave pit
Loc. CR28.2:122a-b/123a-b		
3x Mother-of-pearl buttons/ 1 small pendant Numbers in square brackets refer to the ID given in the field	110413 [127]	Flag-shaped button, two perforations (one broken); l 11.9, h 8.4, th 1.5; weight: 0.1g
	110416.1[229]	Rhomboid shaped button; l 15.35, h 17.31, th 1.07, dp 2.1; weight: 0.4g
	110416.2[474]	Diamond shaped button; l 15.17, h 16.4, th 1.22, dp 2.2; weight 0.3g
	110417[308]	Half-circle shaped pendant, with serrated horizontal border; l 10, h max. 5.1, th not measured, too fragile; weight: < 0.1g
1x Mother-of-pearl pendant	110414	Cross-shaped pendant with serrated edges on all four branches; 2 parallel horizontal perforations on the upper edge of the vertical branch; on the lower part of the vertical branch 4, and on each end of the horizontal branch 2 unfinished, non-perforated drillings; l 28.2, w 20.6, th 2.0, dp 1.8; weight 1.0g
1153x Beads: every item was labelled with a number or a letter. Due to space restrictions the labels cannot be provided here.	110825	<u>Shell beads:</u> 243 tridacna beads of barrel, cylindrical, rhomboid and diamond shape, 144 nerites, 268 cowries, 118 ring beads from the apex of Conidae, 1 dentalium (?), 4 indet shells/ white carbonate beads, 15 egg-shell/ coral/sweet-water carbonate beads (?) <u>Stone beads:</u> 194 disc/ ring-shaped limestone beads, 75 disc/ ring-shaped marly limestone beads, 32 chrysocolla, 28 disc/ ring-shaped sandy limestone beads, 20 disc/ ring-shaped (calcareous) sandstone beads, 7 vulcanic (?) stone beads, 2 unidentified green-stone beads, 1 translucent silicified/ quartzitic cylindrical bead (feldspar, gypsum or fluor-/ hydroxyapatite?), 1 unidentified dark purple spherical bead (silicate/ carnelian?)

Table 6 cont'd		
Objects related to Burial Loc. DR19:110		
1x Nerite	110304	Perforated; l 24.2, w 17.8, h 12.3; weight: 4.1g
1x Green-stone button object; found beneath the right hand	110815	Turquoise (?), oval with two perforations parallel to the long side; l 6.6, h 4.8, th 1.2, dp 1.1; weight: 1g
1x Piece of yellow ochre	117823	Next to skeleton

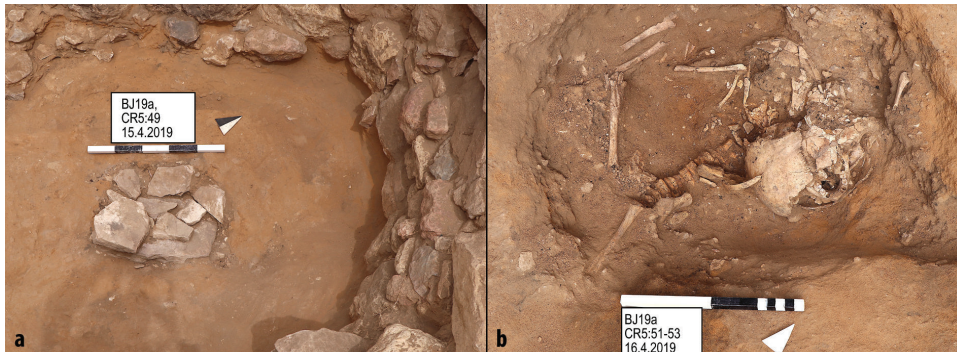


Fig. 37 Room CR5: a The burial Pit (CR5:51) was covered with eight smaller (deliberately broken) stone slab fragments (CR5:49) on top of one large slab (CR5:50). b Two contemporaneously buried subadults (CR5:53-54). (Photos: M. Benz)

2018 (Gebel *et al.* 2019). Two subadults (F.nos. 118007; 118015 [?]) were buried in the pit with the older child (Loc. CR5:53) resting on top of an infant (Loc. CR5:54; Fig. 37b). Even though some bones including the skulls were displaced, possibly by taphonomic processes and animal activities, it seems that the grave had never been reopened and that both subadults had been buried contemporaneously.

Burial CR5:48A-50A was a primary single burial (F.no. 118006; 118014) (Fig. 38). The shallow ovoid (37x27cm) pit was parallel to the southern wall. An infant was buried with barely any grave goods, but three mother-of-pearl pendants and a bead were found aligned along the right *humerus* (Fig. 38). The skull was missing, but the presence of the clivus bone indicates that it was possibly there. Due to the very poor preservation of the bones it was probably recognized too late. The bones were stained red and black.

Room CR6

In Room CR6, at least four subadults were buried (Loci CR6:23a and b, CR6:40, and CR6:48). Whereas Loc. CR6:48 was a single primary burial in a pit (Fig. 39), the Grave Pit CR6:22 in the southwestern corner of the room comprised a complex sequence of burials. Between both burial pits, remains of the terrazzo-like Floor CR6:21.1 were preserved, on which very ashy sediment was discovered (CR6:33). Additionally, Grave Pit Loc. CR6:22 contained a lot of charcoal.

Both grave pits were dug through the Floor Loc. CR6:21.1 into the sterile paleosol of the site (here CR6:35). Pit CR6:46 was covered with one stone slab, the other (CR6:22) with two (Figs. 39-40a). Additionally, Pit CR6:22, in which an infant (CR6:40; F.no. 118010) was buried, was completely filled with various stones (CR6:28), including a piece of yellow ochre, two stone vessel fragments, one complete grinding stone, and three fragmented handstones (Table 6). The pit was much too large for the infant. It seems plausible that the

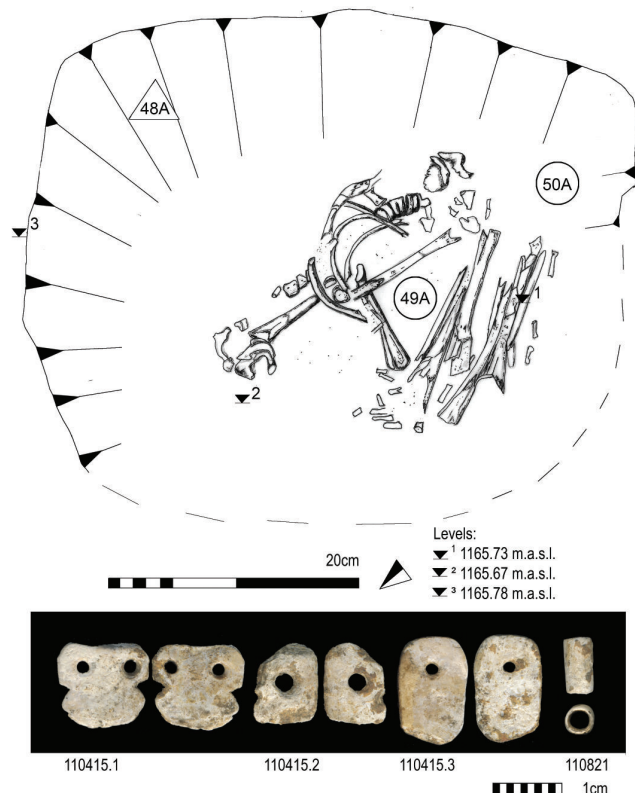


Fig. 38 Room CR5, Burial CR5:48A-50A: *top* Poorly preserved infant bones were stained in red and black; *bottom* Next to the right arm a cylindrical bead (F.no. 110821) and three mother-of-pearl pendants (F.no. 110415.1-3) were found aligned. (Drawing: M. Benz; Photo: H.G.K. Gebel)

isolated adult and infant bones (Loc. CR6:41a/ b) discovered next and slightly below the infant, might stem from older reopened/ disturbed burials.

On top of this grave's cover, two subadults Loci CR6:23a/ b (F.nos. 118011 and 118001) were deposited in a right-angled position to the orientation of the Infant CR6:40. It was impossible to recognise a grave pit for

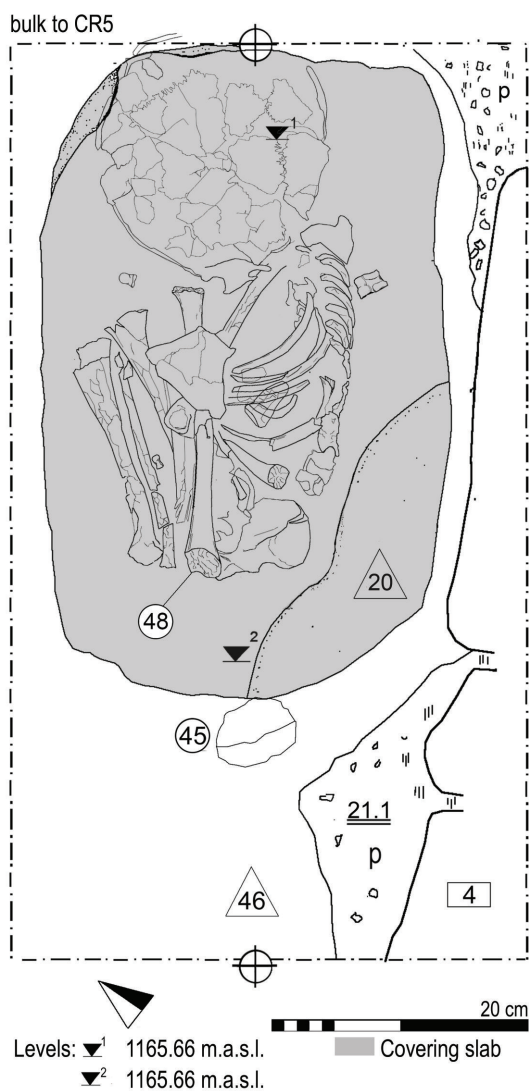


Fig. 39 Room CR6, Child Burial CR6:48: *top* Severely deformed cranium from the slab cover's weight. *bottom* Tiny projectile point made of non-local purple flint (F.no. 112055), found in the grave's fill; for legend see Fig. 40. (Drawing: M. Benz; Photo: H.G.K. Gebel)

these individuals. Next to the cranium of the older child and on its face hundreds of tiny pinkish plaster pieces were uncovered. They show impressions of fibres

which are currently under study. The older child wore a bracelet of one limestone and 33 green-stone beads (Fig. 41). For the first time at Ba`ja, a burial is clearly related to a more ancient grave. Whether the pile of stones (CR6:28), including a larger slab immediately beneath the Burial Loc. CR6:23a/ b, was accumulated for the later burial or whether it belonged to the grave cover of Loc. CR6:40 cannot be clarified.

Northeast of the burial pit, a small oval pit (CR6:25) was discovered (Fig. 40a). It was filled with 14 angular stones (up to half fist-sized) and a flint celt (F.no. 112020). Since the pit was partly covered with the same compact silty sand (CR6:24) also encountered at the border of the grave's pit (CR6:22), it is probably contemporary with the lower infant Burial CR6:40.

The precise chronological relationship of the Burial CR6:48 and the western sequence of burials remains unclear. The same holds true for the infant Burial CR6:40 and the isolated human bones (CR6:41a/ b). It seems that the adult bones were displaced for the infant's burial, but it cannot be ruled out that they were placed in the pit as some kind of "grave good". The presence of two isolated adult patellas, indicate that either the ligaments must have been dissolved at the time when most of the other bones of the adult individual had been removed or isolated bones were placed in the pit during the burial ritual. In contrast, the bones of an articulated left hand and the *in situ* alignment of ten oval bone beads (F. no. 110806) next to a right adult ulna contradict a long decay process and may speak in favour of only a slight – if at all – dislocation of the adult bones (Figs. 40b and 42). Whereas stone and shell beads are rather common in other subadult burials (see below and Gebel *et al.* 2019), bone beads are very rare in burial contexts at Ba`ja. Some were discovered in the collective burial in Area C (Loc. C10:152; Gebel *et al.* 2006). A similar bone bead (Object No. 3915) was discovered at the nearby MPPNB site of Shk`arat Msaied (Nielsen 2009: 22).

Room CR28.2

A multiple subadult Burial CR28.2:122a-b/ 123a-b (F.no. 118012) was discovered in Room CR28.2 (Figs. 26, 43-44). The oval (86 x 72cm) and 33cm deep grave pit was dug through Floor CR28.2:114 and covered with six stone slab fragments. On top of these slabs rested a miniature marble bowl (F.no. 111825) that had been broken in two. North of the pit, a large stone slab (CR28.2:112) was found (see the section on Room 28). A thin layer of sediment (CR28.2:116) between the terrazzo-like Floor CR28.2:114 and this slab proves that it had been (re-?) deposited some while after the floor construction, but before the accumulation of debris CR28.2:105. The loose position of the small covering slabs might support the idea that the grave had been slightly disturbed in prehistoric times, even though the jewellery of the subadults seemed untouched. The grave contained the articulated skeletons of two children (CR28.2:122a/ b) and disarticulated

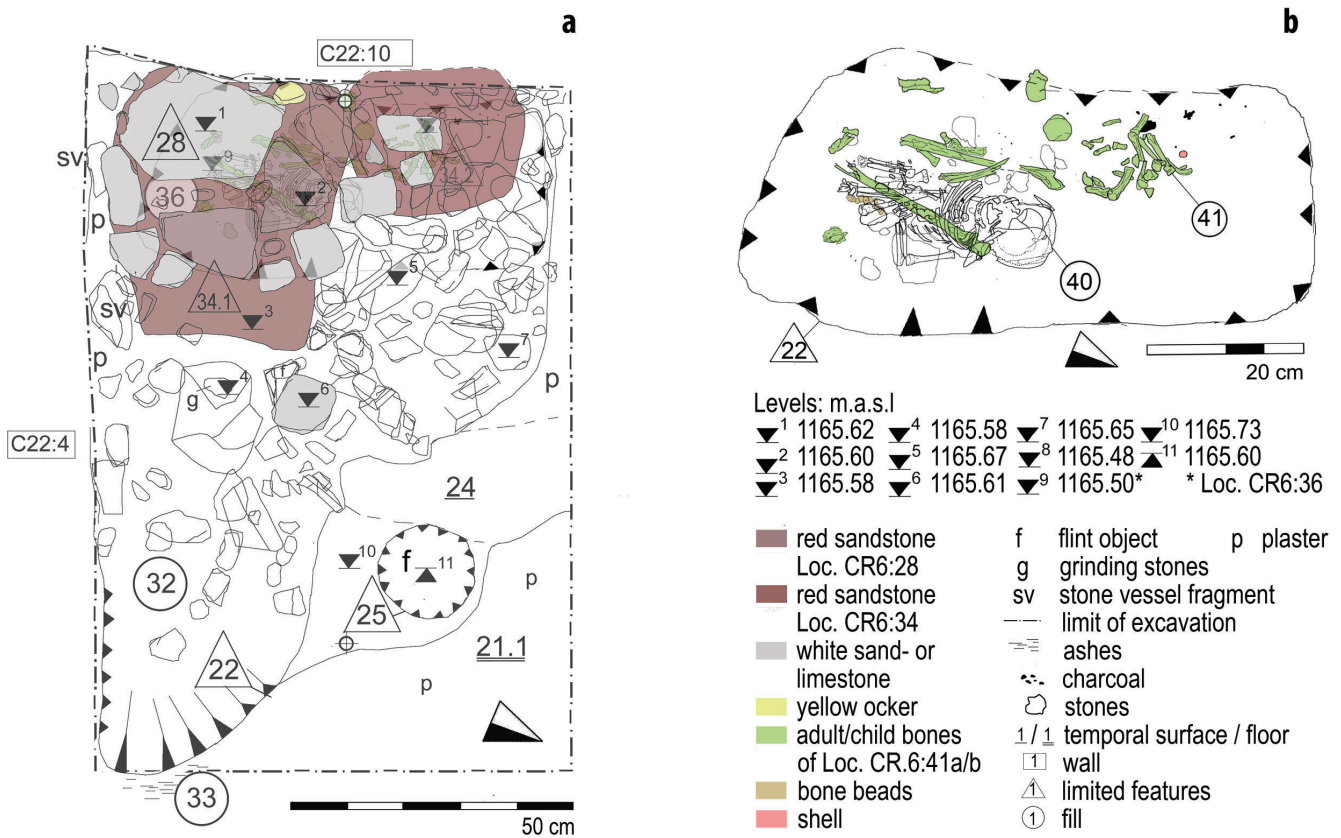


Fig. 40 Room CR6, Burials CR6:23a-b and CR6:40: a The large grave Pit CR6:22 was filled with stones and covered with two larger slabs. b The infant (CR6:40) was buried beneath the large southern slab (CR6:34.1). Slightly below and next to the infant, isolated adult and infant bones (CR6:41a/b) were found. (Drawings: S. al-Shoubaki and M. Benz)

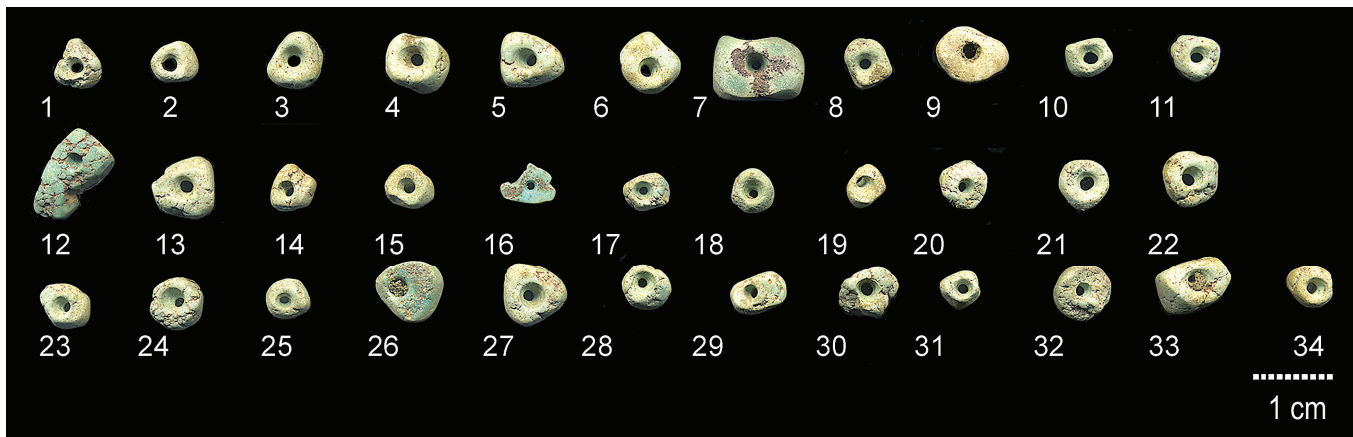


Fig. 41 Room CR6, Burial CR6:23a: Beads (F.no. 110808.1-34) of the Child CR6:23a, found next to the child's left ulna and on top and below the left pelvis; F.no. 110808.34 is from the sifted grave filling. (Photo: H.G.K. Gebel)

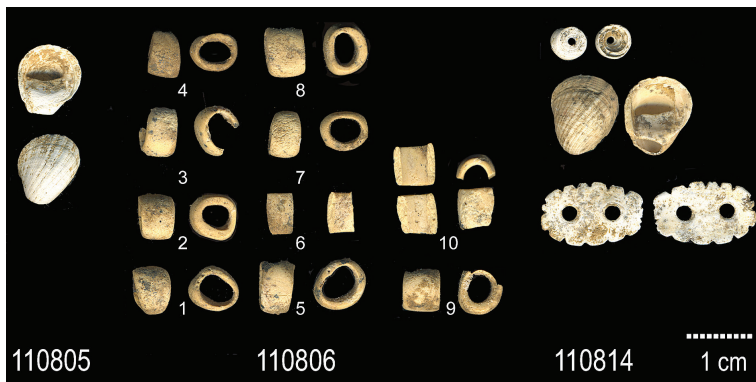


Fig. 42 Room CR6, Burial Loci CR6:40 and 41a: Ten bone beads (F.no. 110806) found aligned next to an isolated right *ulna* of an adult (Loc. CR6:41a) which was discovered slightly below Infant Loc. CR6:40. The small nerite shell (F.no. 110805) was discovered close to the left adult hand while the other objects were found in the pit's filling. (Photo: H.G.K. Gebel)

bones of at least two infants (CR28.2:123a/ b). They were decorated with several garments using at least 1153 beads and 5 mother-of-pearl items. Many colourful stone, mineral and shell beads and pendants were uncovered in the area of the pelvis of the two older children. The first child (CR28.2:122a) placed in the grave was additionally decorated with a headdress of cowries and nerite beads and several *in situ* preserved strings of shell, a few limestone and chrysocolla beads, probably sewn on some kind of cloth (Fig. 43b). Next to her/ his chest area, a cross-shaped mother-of-pearl pendant was discovered (F.no. 110414). Close to her/ his right shoulder and head, a disarticulated skull and long bones of an infant (CR28.2:123a) were uncovered. Some cowries and nerite shells were associated with these bones. A few disarticulated long bones of a second infant (CR28.2:123b) were uncovered on top of the lower body part of the other child (CR28.2:122b). As taphonomic studies are still ongoing, it is premature to speculate about the lapse of time between these depositions.

This subadult burial is the second most lavishly decorated burial of the site, but in contrast to Jamila's

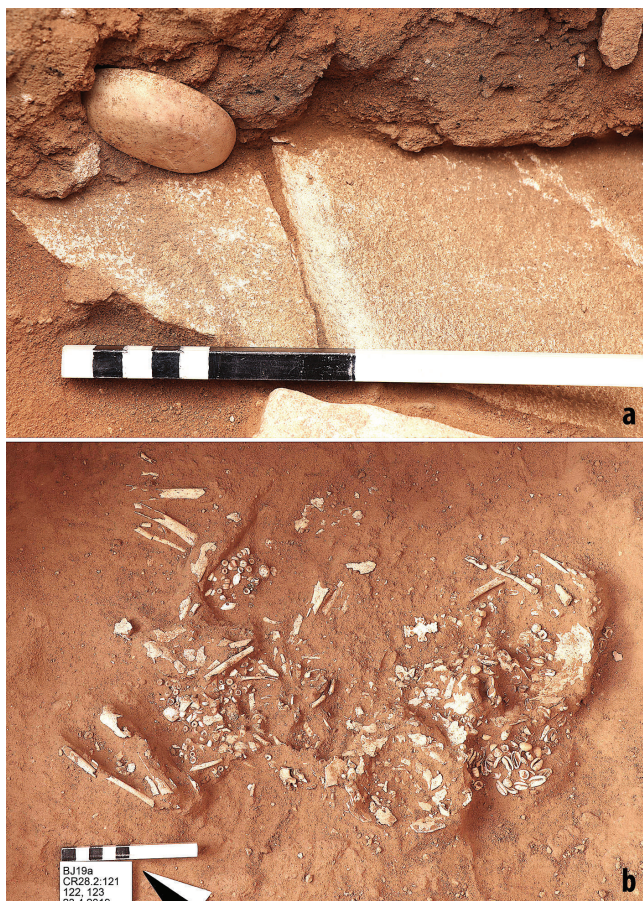


Fig. 43 Room CR28.2, Burial Loci CR28.2:111/ 117 and Loci CR28.2:120-123: a One half of the deliberately broken marble bowllet (F.no. 111825), found *in situ* on top of the stone slab fragments of CR28.2:117. b Multiple Burial CR28.2:122a-b/ 123a-b of four subadult individuals with the cross-shaped mother-of-pearl pendant (F.no. 110414) and the cowrie and other beads (F.no. 110825) *in situ*. (Photos: M. Benz)

Grave Loc. C1:46 (Gebel *et al.* 2019), the grave construction is simpler, and the beads are very colourful. The cross-shaped pendant relates these subadults to the collective burial in Room CR17, where a similar, though larger, pendant was found (see S.D., J.G. and C.P.'s report in this contribution, Table 4, Benz *et al.* 2020). The alignments of most of the beads prove that they were probably still *in situ*.

Room DR19

The small infant Burial DR19:110 (Fig. 22) was difficult to recognise during excavation. The infant (F.no. 118008) was placed in a very shallow roundish pit of c. 30cm diameter and was sitting with the legs crouched to the left side and the back to the north, facing south. Except for one greenstone button, a piece of yellow ochre, and a large nerite shell, no other grave goods were present. The button closely resembles a similar turquoise object (F.no. 100809) found in DR25:101 in 2018 (Gebel *et al.* 2019: Fig. 27y).

Discussion

Our preliminary results show that infants and children of all ages were buried either in single, double, multiple or collective graves (Fig. 45). All 3-4-year-old children

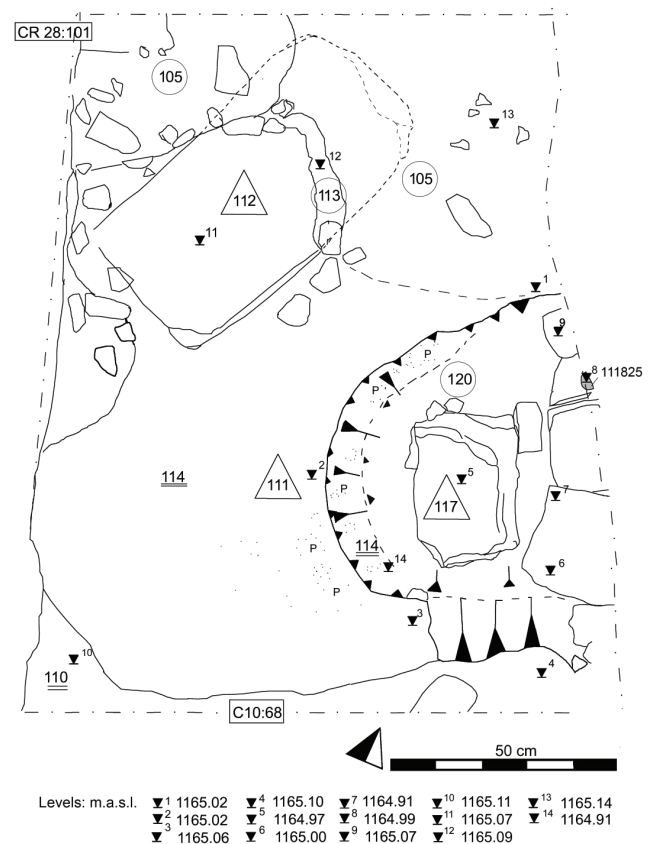


Fig. 44 Room CR28.2, Burial CR28.2:111: Large stone slab (CR28.2:112), possibly removed from the burial and Grave Pit CR28.2:111. (Drawing: Layer 1: S. al-Shoubaki, Layer 2: M. Benz, merged for the figure's digital drawing; for the legend see Fig. 4.)

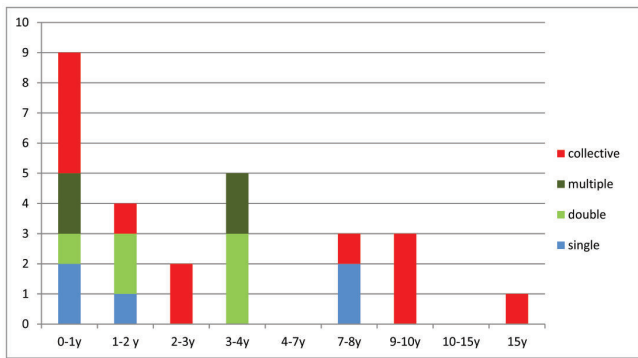


Fig. 45 Preliminary presentation of age distributions (y=years) in the various subadult burial contexts (collective, multiple, double and single burials; n= 27 individuals) at Ba`ja for the 2016-2019 seasons. (Graph: J. Gresky)

were buried with an infant, but the small sample of individuals does not allow any generalization or conclusion. Two infants were placed in primary single burials so that the pit was hardly recognisable. Since infants and older children were buried by very complex rituals and/ or with extraordinary jewellery, it does not seem that the age of the child played a decisive role. The mother-of-pearl rings and cross-shaped pendants certainly had a high symbolic meaning. However, whether these items express familial ties, indicate a special status, or were subject to standards we do not yet understand, remains an open question.

Despite variations, such as the position and orientation of the corpses and the grave construction, our study of the burial ritual shows that there must have been a clear idea how primary interments should appear (Table 5). Structural similarities, such as the deliberate breakage of things, the separation of objects placed inside the grave and in the grave cover as well as the hermetic sealing of some graves, resemble the elaborate burial ritual of a young adult in Room CR35 (Benz *et al.* 2019). However, they are in contrast to the collective burials discovered in Areas C and D (Gebel and Hermansen 2001; Gebel *et al.* 2006, see also this report's section on CR17 by S.D., J.G. and C.P.). Our data do not support the idea that the primary interments were a transitional stage in a *rite-de-passage* like burial ritual, as it has been suggested for Shkārāt Msaied (Hermansen 2017). The hermetic sealing contradicts the practice of reopening graves for the removal of bones and for secondary burials as it has been attested for so many other PPNB sites (*e.g.* Rollefson 2000; Stordeur and Khawam 2007), although within the collective burials, bones were mixed, rearranged and pushed aside for incoming new burials. However, such disturbances in collective burials must have been an acceptable sepulchral behaviour. The burial of an infant (CR6:40) with isolated adult and infant bones, and the two infants (CR28.2:123a/ b) seem to be exceptions and might turn out to be of cognitive importance. These two different modes of handling the dead – individual/ double or collective – very close to each other and the recurring combination of infants with 3-4-year-old

children remain remarkable and puzzling. The close relationship of these two modes is not only indicated by the spatial proximity, but by identical events observed in both ritual types, such as the deposition of stone vessel fragments, the covering with a stone slab and above all identical prestigious items like the daggers, mother-of-pearl rings and exotic bead types. Last but not least, the raw materials and jewellery types of the grave contexts also confirm the extensive exchange networks in which Ba`ja was involved (Nielsen 2009; Benz *et al.* 2019; Gebel *et al.* 2019). Future investigations, including stable isotope and analyses of ancient DNA and radiocarbon dating, will hopefully give some clues for the observed differences and variability.

Extraction of Jamila's Grave C1:46 (H.S., M.Bad., J.Gra.)

During the 2018 excavation season, an exceptional child burial (C1:46, Gebel *et al.* 2019: 19-23) was uncovered, later receiving the name Jamila of Ba`ja. The burial's elaborate grave construction and the extraordinary jewellery initiated the idea to reconstruct it in a Jordanian museum. The fragility of some constructional elements and the expected risks during the transport down the *siq* led the project's co-directors decide to engage a restoration team consisting of us two conservators-restorers and a documentation assistant. During the 2019a season we therefore extracted and secured the grave's cist by the following steps: documentation of spatial contexts of the individual constructional elements; onsite packing piece by piece; safe transport of the grave elements down the *siq* to the base camp; registration; and transfer of all grave elements to the storage facility of the Old Petra Museum.

After the excavation of the burial in 2018, some of the grave's constructional elements (mainly the covering slabs), were redeposited in the grave's pit. Most of them were still intact, but two slabs broke during lifting due to previous in-soil fractures.

Because the grave was located in a very narrow space/ room, and since it consisted of more than 80 sandstone slabs and slab fragments, concentrated efforts were needed. Three big slabs constituted the main structural elements of the grave cist: two were placed upright along the sides, while the third was resting on them, covering the chamber. The burial was delimited in the west by a small wall. The whole construction had originally been covered with numerous deliberately fragmented sandstone slabs fixed with mortar. Additionally, five grinding stones had been included in the grave cover. Finally, a white gravel plaster coat had been used to seal the grave (Gebel *et al.* 2019). Remains of these gravels, which are abundant on the site, were not brought down the *siq*, but they must be procured for the reconstruction. Whereas the smaller stones were rather robust and could be lifted easily, documented, and packed with bubble wrap and stretch foil, the three large, heavy and very fragile main slabs



Fig. 46 Jamila's cist extraction: Pouring liquid foam in the transport boxes' cavities. (Photo: J. Graf)



Fig. 47 Jamila's cist extraction: Developing curing of polyurethane foam fixing one of the large slabs for the descent through the siq. (Photos: J. Graf)

were a challenging task. The oval covering slab (83 x 51cm, 5cm in thickness) had already been broken into three pieces in 2018. The fragility of the large slabs is partly due to their thinness but also to in-soil erosional processes such as scaling and sanding. Therefore, augmented protective packing techniques (Fig. 46)

had to be used to safely transport them down the steep descent through the *siq*, at times climbing and using ladder crossings. The large slabs, wrapped in several layers of stretch foil and fixed with polyurethane foam, were placed in wooden transport boxes tailored to size to protect them (Fig. 47). The wooden boxes were bound onto an external frame backpack and brought to the base camp for registration (Fig. 48). This task was quite strenuous at the *siq*'s steepest sections, where frame and boxes had to be lowered with a climbing rope and fittings.

Despite the difficult working conditions at the site, the extraction operation was a great success. The accurately documented grave elements are now waiting in storage at the Old Petra Museum for the reconstitution of Jamila's grave (Fig. 49). In preparation of its presentation in the museum, a digital 3-D Model (Fig. 50) documenting the positions of the constructional elements was created.



Fig. 48 Difficult transport of slab boxes through the *siq*. (Photo: M. Benz)



Fig. 49 Interim storage of all cist elements in the dig house after registration. (Photo: J. Graf)

Season's Summary and Progressing Research Perspectives (H.G.K.G., M.B., C.P.)

Our "deep-knowledge research" on *Household and Death in Ba`ja* progresses with an unexpected pace due to continuing rich evidence of sepulchral findings

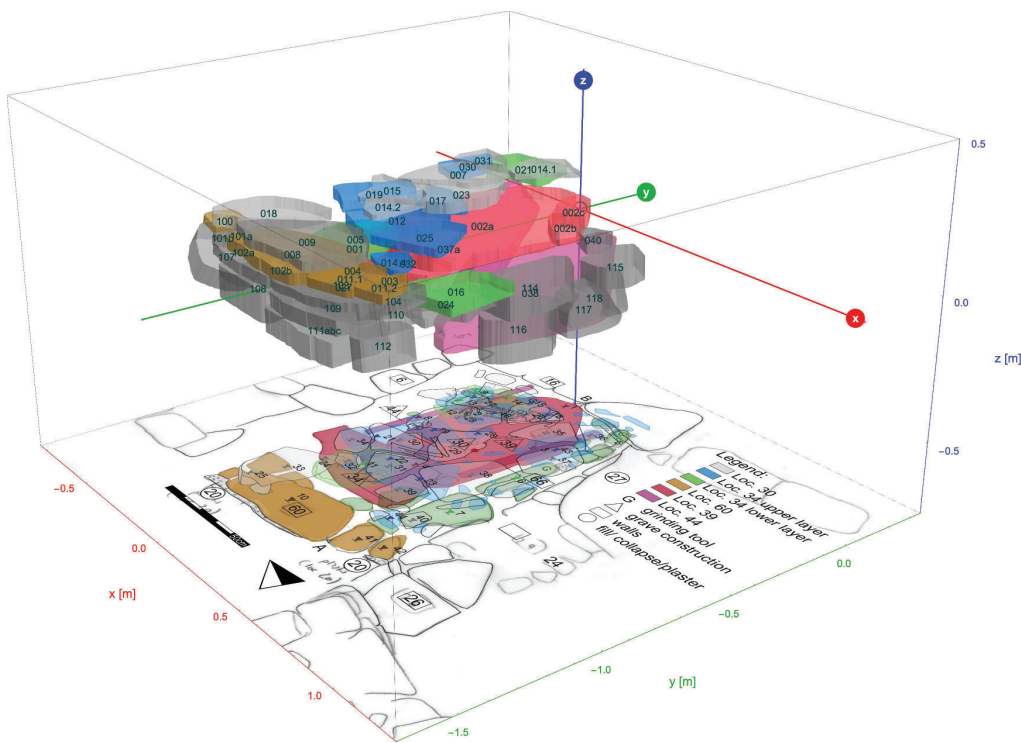


Fig. 50 Preparing the museum reconstruction of Jamila's Grave (Loci C1:30-44, 60, 66). Digital 3-D model created in order to show the position of the cist's construction elements. (Graph: M. Bader, based on 2-D drawings by C. Purschwitz)

and terminated households. Intramural sepulchral occupations, mostly of subadults, also seem to exist in the basements of other building units in Areas C and D. This season again confirmed that sedentary village life at Ba`ja was characterised by wealth showing acceleration, agglomeration and heterogeneity processes in architecture, crafts, social structures, and value systems. More evidence emerged for the last phase of the site belonging to the FPPNB/ PPNC (from the topmost layers in the new excavation Area G), indicating that the regular occupation at Ba`ja continued in times when neighbouring Basta's LPPNB mega-site Areas A-C were deserted and became occupied by ruin squatters. Or: Could the FPPNB/ PPNC architectural evidence of small Ba`ja mean that in really large mega-sites the shrunken FPPNB/ PPNC occupations have a good chance to be missed by excavations? The abundant new evidence for the Transjordanian LPPNB Mega-Site Phenomenon after three decades of research demands regional updates that better explain the complexity and sustainability of the phenomenon, including the regional and interregional adaptations to its collapsing networks. Ba`ja meanwhile has become a case study site for the involvement of another cause supporting the end of the Mega-Site Phenomenon: tectonic/ earthquake impacts.

By the end of this season, several topics – among others – of our deep knowledge research agenda produced

- 1) more arguments for the discussion of Ba`ja's supra-household/ communal territoriality, indicating that our modern standards make it difficult to understand the norms of the confined and pragmatic territoriality of the Ba`ja-type of a habitus community;
- 2) more insights on Ba`ja's community of the living and the dead, especially norms of differentiation ex-

isting beyond those caring about social status and incipient social hierarchy. The latter became obvious by more evidence from the children's grave goods, and evidence for the increasing role of commodities for interpersonal differentiation;

3) and promoted the understanding that the psychodynamics of the LPPNB sepulchral rituality cannot be understood without socio-neurobiological, thanatological, ethnoarchaeological, and religious history approaches;

4) increasing understanding of how imperative it is to develop and operate interpretation and concepts with constantly tested and refined terms, bringing empiric data to levels close to the ethology and early Neolithic ontology of Ba`ja's inhabitants. Increased findings reflect behaviour that seems to result from meronomic thinking (Thornton 2020) and demands more intensive testing of this concept at Ba`ja.

In detail, the season's results can be summarised as follows:

High-Energy Forces and Events

This season's systematic archaeological and geoarchaeological mapping of wall damage provided insights into the interacting forces engaged in causing structural instability at the village. At least one earthquake event during the site's later LPPNB occupation destroyed parts of the village's architecture and led to its (partial?) rebuilding. Permanent forces affecting wall and building stability were: topography/ pressure on steep slopes; bedrock and basin fill as two different transmission agents for shock waves and pressure; the weight/ mass of the two-storied buildings on the steep slopes; and the permanent

tremors along the Rift Valley. Wall damage was studied by archaeological means in Areas B-North, C and D, showing that different topographical locations caused different combinations of damage features.

Area G and Ba`ja's Latest FPPNB/ PPNC Occupation

The new excavation Area G, a secluded part at the site's highest topography, provided formal structural evidence for Ba`ja's FPPNB/ PPNC occupation, associated with its characteristic arrowheads. In previous seasons, restricted evidence of FPPNB/ PPNC arrowheads and lithic style became known from some layers in Areas C and D. Area G may hint to a continuous occupation from the LPPNB into early 7th millennium BCE FPPNB/ PPNC, most likely interrupted by earthquake impacts in parts of the site.

Three connected test units (TU9a-c) were opened in Area G. Barely buried by eroding wall stones, the first floors, room fills, a buttress-like reinforcement, and an upslope open area/ passage way was found along a curvilinear long wall leading downslope. Wall dimensions may hint at a larger building, but this must be confirmed by future excavations.

Understanding Occupational Complexity by Room Biographies

One of this season's major other results is the positive test of the room biography approach for the combined stratigraphical-functional interpretation of rooms and buildings (Gebel *et al.* 2019: 37-40). Before the 2018 season, we approached Ba`ja's stratigraphic records, room functions and room associations/ buildings by means of building stratigraphical interpretation, proving to be an insufficient tool for interpreting the complexity and flexibility of the "vegetative" spatial organisation in the village. This season, our new room biographical concept turned out to be a breakthrough for the understanding of the sequential socio-economic and ritual room functions, and these were associated with neighbouring rooms. Multiple wall and room modifications, both horizontal and vertical, led to a structural hyper-complexity throughout the occupation, most likely accompanied by a complete vanishing of open spaces in the village. These agglomeration processes included the vertical re-use of older walls, and most likely the earlier upper storeys were turned into basements on top of intentional room fills for the new structure. These characteristics of slope architecture at Ba`ja and other LPPNB sites make it a difficult task to identify the main stratigraphical units.

Despite these difficulties we are now able to present a general stratigraphic and functional model for Area C rooms that separates three major architectural building levels before and after at least one dramatic destruction event/ earthquake. The lower ones are of LPPNB date and represent the dense occupation of the entire plateau. The later levels are marked by a more diffuse reconstruc-

tion and reorganization of the built space involving only parts of the site, and may represent a transition from the LPPNB to the FPPNB/ PPNC in Area C.

On Intramural Burying, Cooking and Working

Before the 2019 season, evidence from Ba`ja prevented the recognition of a direct relationship between living households flourishing on top of floors with burials beneath. By this season, we can definitely state we have an intramural cemetery deepened into the natural soil, often cutting through formal floors resting on the paleosol of the site. At the same time, this season again made clear that there is little direct primary evidence for active households in non-eroded layers even though we have the evidence for buried and burnt/ terminated households/ household items as room deposits. We assume that active households primarily operated in the upper floors and on the roofs, attested by their secondary evidence in the room fills. However, in one case we seem to have a row of rooms (CR5, CR10 and CR31) truncated by the slope's erosion that must have functioned as a supra-household kitchen area characterised by *tabuns*. As for burials, this season made it also very obvious that LPPNB basements in Ba`ja were often used – or even regularly used ? – as burial grounds in their latest part of occupation, before their biography records their abandonment and decay.

Taken together, this lets us suggest – for the time being – intramural cemeteries under active households operating in upper floors that have not been preserved. In that sense, we are dealing with "sub-floor" burials and a continuing role and spatial relation of the dead in ongoing social life. Findings so far do not allow a firm conclusion whether basements were "cleaned" from previous activities' remains before they became a space for the dead. In that respect: Did the later re-use of Room CR5 as a cooking area violate its previous sepulchral function and caused the attested ritual activity connected with the hoard, the trilith and the smashed limestone bowl (CR5:40)?

Subfloor Child and Adult Burials

This season's excavations exposed the highest number of graves and individuals ever found at Ba`ja, most of them representing primary subadult burials in Area C basement rooms (and one in Area D). The excavation of the CR17 collective burial continued this season, and it still might not have reached its end. Between 2016 and 2019 ten burials and the collective burial of CR17 were excavated. So far, a minimum of 36 individuals are subject of palaeoanthropological analysis, including the minimum of six individuals of the collective Burial C10:152 excavated in 2005. If one considers the yet unstudied collective Burials C10:170 and DR26:26 (excavated in 2005 and 2001), the number of individuals found in Ba`ja may exceed 50.

Ba`ja's high number of burials permit us to approach LPPNB rituality, demography, and questions of

social identities by diversified means, and they especially allow us to make conclusions about the social status of subadults. Apart from features shared by all graves, diversities in grave goods, empathy, wealth and symbolic signals indicate existing differences: Burial rituals appear standardised with a limited variability and must have served various social identity purposes for the buried and the burying, and appear to comprise psychodynamically intensive performances such as the deliberate smashing of items or cover stones.

Differences in burials between adults and subadults were certainly influenced by social structures, but they must have served an internal discrimination of individuals, too. This season testified a deliberate and room-wise spatial organisation of burials. Grave goods may not accompany burials, but individuals, including children, may have received extraordinarily rich grave goods (such as the multiple child burial in CR28.2 with a head gear and belts/ decorated clothing with more than 1150 sewn-on beads). Grave goods made from non-local raw materials give a strong clue about the supra-regional contacts of the Ba`ja community and the diacritic role of commodities.

Preservation is a major obstacle for studying the human remains of Ba`ja. We deal with a generally poor bone preservation; C/N analysis has so far failed to provide results, and results of Sr/O stable isotopes and aDNA analyses are still awaited.

Colour Choices and Symbolism

This season's child burials rich in grave goods confirmed earlier clues that preferences for colours and colour combinations were not only meaningful to the Ba`ja villagers, but they also reflect established and commonly accepted symbolic and aesthetic conventions serving specific identities. While the origin for colour preferences certainly relates to local and exchange network availabilities of raw materials, conventions developed mainly culturally and potentially are rooted in earlier periods. The use of pigments or pigmented raw materials is visible in both the daily and sepulchral contexts and shows a preference for red that is mainly combined with yellowish/ white colours and, more rarely, with black and blue/ green colours. More research must be invested in these questions once we can better identify the gender, social, and event contexts in which colours and colour combinations appear.

The Disturbed Collective Burial in CR17

Room CR17 continued to offer collective burial findings influenced by complex depositional events of human bones. They rarely included primary positions and were dominated by various sorts of dislocations and other disturbances including, most likely, the later removal of body parts. These activities may have also influenced the completeness, positions, and preservation of grave goods. At least six infants and children were deposited in the southern part of the room. Future

excavations will have to reveal whether there are more burials at the spot's deepest layers. Among the rather rare grave goods is a new type: a cross-shaped mother-of-pearl object not yet identified from other Early Neolithic villages of the region (but also from the above described multiple sub-adult burial in CR28.2, Table 6, F.no. 110414, Fig. 43b). The collective burial itself is also peculiar and strange, at least for the conventions we have so far identified in Ba`ja and Basta: 1) Burial remains are not concentrated in a confined and segregated space but extend across a room. 2) Some of the human remains are dislocated or shifted in a different way than known from the other three collective burials at Ba`ja.

Area D Reconsidered

Small scale excavations in Area D continued in Rooms DR19, DR22, DR25/26 and DR30, and aimed at clarifying the function and stratigraphy of the related architecture. A child burial was found below a mud floor in DR19, and isolated human bones were found below a sandstone slab in Room DR30. These findings lead us to expect to find a similar relationship between basements and burials as testified in Area C. Limited excavations in Room DR36 below a huge sandstone boulder showed that this rockfall represents a downslope sliding event ending here after the site's LPPNB occupation.

Other Special Findings

1) A reinvestigation of the locus of the wall painting encountered in 2001 (DR26:32) proved that it definitely belongs to a use of the room prior to the insertion of the collective burial chamber. A small test probe again also proved that the mural does definitely not continue, except for a few patches, downwards behind the lower courses of the eastern wall inserted into the chamber, and it appears to have been deliberately hacked away from the room's original wall before a stone cist was constructed in front of the mural for a collective burial.

2) Resumed work in a garbage area (Sounding 1 of 1984 in Area A) again revealed patchy deposits rich in arrowheads, bidirectional flint refuse, animal bones, some ornaments, all with little or no evidence of downslope re-deposition. It became obvious that the dump contains the refuse of bidirectional flint technology as well as of an 'Amuq Point production locality, deposited here within a very limited time. However, the location of the dump in the main site access and the nature of its carrying sediment remains enigmatic.

3) Above this season's child grave and below last season's standing trilith in Room CR5, a very special location was exposed. Under, and "marked" by, the trilith's ashlar inserted in an ashy layer with burnt material and possibly associated with the lowermost tabun sherds of this complex stratigraphy, a hoard of extraordinary objects (Byblos Point; decorated clay cuboid; small phallus; and a possibly related truncated base of

human figurine) was deposited. The finding represents complex sequential ritual-domestic-ritual activities employing several known symbolic and ritual behavioural patterns.

4) The site becomes more and more interesting for very specific and new details, among which this season a toothpick was recovered, showing anatomically shaped facets which resemble closely modern toothpicks.

General Remarks on Future Research Perspectives and Conservation Needs

Any future project at Ba`ja needs to study the mechanisms of the attested LPPNB-FPPNB/ PPNC prosperity-collapse complexity on a regional scale, aiming also to understand these in their historic dimensions, together with the risk patterns characteristic for any productive life modes, including modern ones. In that respect, this season's discovery of the latest formal architectural occupation of the site's highest topography is most important.

Ba`ja investigations have now reached a point wherein a long-term deep knowledge research about the consequences of sedentary and productive life modes and their (re-) productive value systems may explain historic and modern wealth-to-collapse trajectories and their cultural and socio-economic re-setting better, and how much of the Neolithic legacy is inherent in human development and our modern ethos.

Backfilling took place with stone and sifted sediment material to the extent of their availability. The conservation of wall tops is an ultimate need for the site's sustainability and its security. Fortunately, the visit of the Chief Commissioner of Petra Development and Tourism Region Authority, Dr. Suleiman Farajat, revealed that no touristic development of the site is planned for the near future, and that running excavations are respected in all developments.

Acknowledgements: The 2019 excavations were supported by the Department of Antiquities of Jordan (DoA) and its – at that time acting – Director-General Yazeed Elayan, Aktham Oweidi (Director of Excavations and Surveys), and Ahmad Lash (Head of Loan Section). Abdallah Rawashdeh, Ma`an Office of DoA in Wadi Musa, was our DoA representative for the season. They and other staff of the DoA gave us and the project their warm hospitality and cooperation. The people of Beidha integrated us by their warmest hospitality and care, recognising us as a part of their village.

The main sponsor of the season was again the Deutsche Forschungsgemeinschaft (DFG; GZ:BO 1599/16-1), Bonn, with ex oriente at Free University of Berlin and private sponsors complementing budget needs. Ten permanent and seven part-time team members, 8-16 workmen from Beidha and its environs, and the DoA representative guaranteed the success of work carried out on the site and in the Beidha base camp. Dominik Bonatz, Director of the Institute for Near

Eastern Archaeology, supported the season from the side of Berlin Free University.

Aside from the co-directors and our most cooperative workmen, the permanent team members included: Sarah Dermech (archaeologist), Julia Gresky (palaeoanthropologist), Filip Hájek (archaeologist), Lucia Miškolciová (archaeologist), Barbora Kubíková (archaeologist), Martin Renger (archaeologist), and Sereen al-Shoubaki (archaeologist). Martin Bader (conservator), Julia Graf (assistant conservator), Sahar al-Khasawneh (OSL-Dating), Bilal Khrisat (geoarchaeologist), Hussein al-Sababha (conservator), Juri de Atrip (dig assistant), and Qutaiba al-Dasouqi (surveyor) were part-time team members. Their devotion and efforts made this season so successful.

Hani Hayajneh, Dean of the Faculty of Archaeology and Anthropology, and Zeidan Kafafi, President of Yarmouk University, developed the framework for the joint project on the conservation, restoration and presentation of Jamila's grave in one of Jordan's museums. Special thanks are due to Hala Alarashi (bead specialist, CEPAM, Nice), Alice Costes (bead conservation) and Andrea Fischer (conservator, State Academy of Art and Design, Stuttgart) for the excellent conservation and reconstruction of "Jamila's" necklace and to Dr. Manfred Martin and Melissa Gerlitzki (Landesamt für Geologie, Rohstoffe und Bergbau, Freiburg) and to Dr. Julia Schultz (State Academy of Art and Design, Stuttgart) for the important raw material analyses. We also thank Maysoon al-Nahar, Jordan University, for her cordial advice, and Suleiman Farajat, PETRA Chief Commissioner, for visiting the excavation. H.G.K. Gebel warmly thanks Veit Templin, Möglin, for his expert comments on wall stones and building in Ba`ja.

We sincerely thank Gary Rollefson for his comments and language editing of this contribution.

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solely to material analysis (ground stone, chipped stone and sandstone ring industries; beads' documentation) and the processing of soil samples from the spring season for palaeoethnobotanical analysis; it took place in the dig House of Beidha from Sept. 18th – Oct. 10th, 19. Participants were, apart from the project's co-directors H.G.K. Gebel, M. Benz and C. Purschwitz, the students Milena Luongo and Annika Wegner, both from the Abteilung für Vorderasiatische Archäologie und Altorientalische Philologie of Albert-Ludwigs-Universität Freiburg.

² The sterile layers underneath the LPPNB settlement of Ba`ja represent the Pleistocene fills of an intramontane basin (locally called al-Mehmad); in previous publications these fills have often been called “*playa*-like sediments”. Since the use of this term appears problematic to some, we have chosen the more neutral term “paleosols” in this contribution.

³ While the arrowheads shown in Fig. 19:b-c appear to correlate with those of Ba`ja V (Bienert *et al.* 2000: 139-140; further Gopher 1994), the projectile of Fig. 19:a is less diagnostic. H.G.K. Gebel, now in charge of studying the Ba`ja V lithics (stored by him in the Faculty of Archaeology and Anthropology at Yarmouk University), dates them – after a re-examination of the assemblages – to a pre-Yarmoukian facies influenced by – or being part – of the FPPNB/ PPNC (Gebel, pers. comm.).

⁴ A conservation or restoration of the piece, now on display in the Jordan National Museum, took place hereafter; the repainted motif and other features make it difficult to recognise the original executed *in fresco* technique.

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Neo-Lithics is published and distributed by *ex oriente*, Berlin.

Printing House (Printed Version): Uni-Druckerei Freiburg



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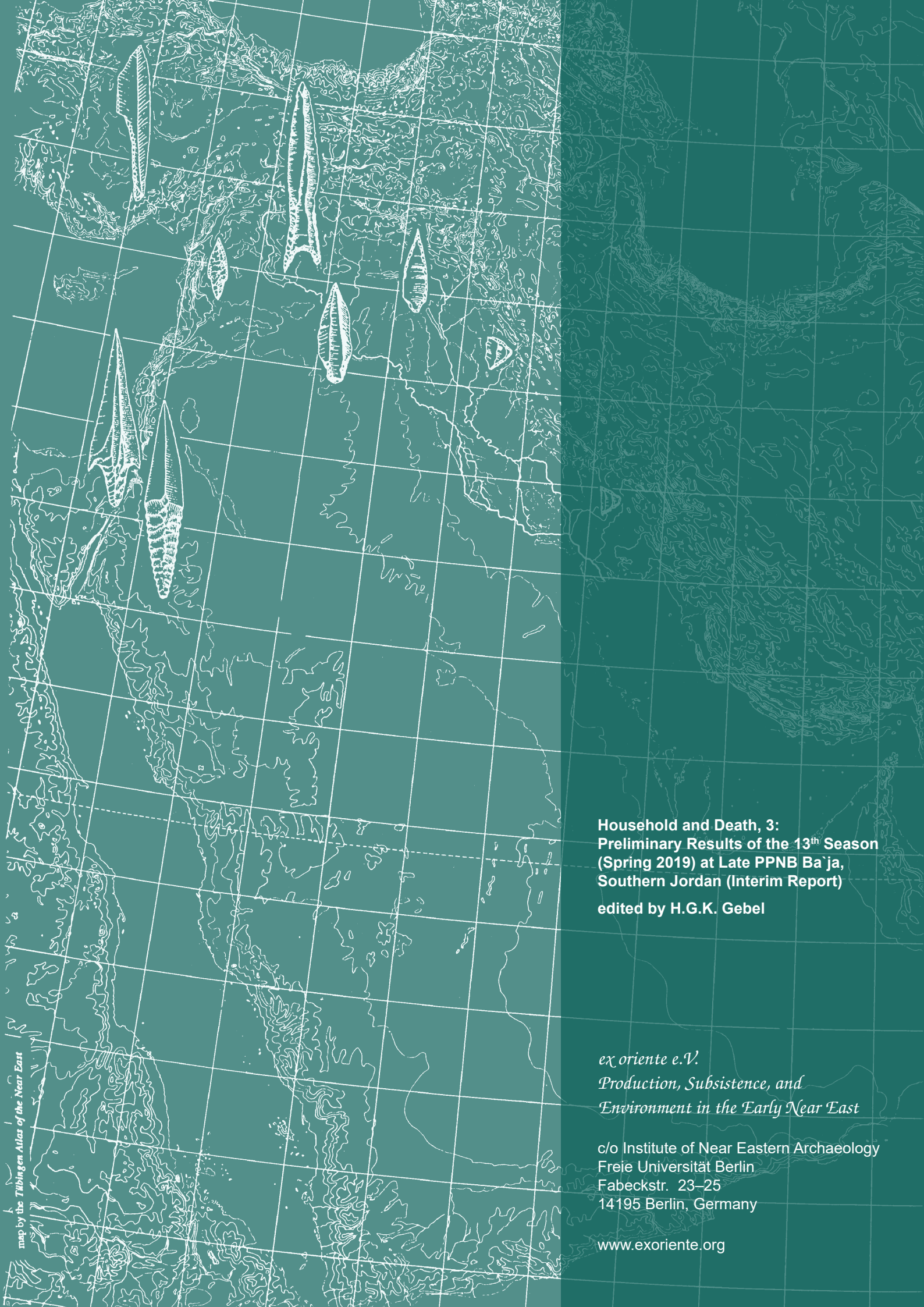
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