

# TRACKING THE NEOLITHIC IN THE NEAR EAST



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# TRACKING THE NEOLITHIC IN THE NEAR EAST

*Lithic Perspectives on Its Origins,  
Development and Dispersals*

*The Proceedings of the 9th International Conference  
on the PPN Chipped and Ground Stone Industries of the Near East,  
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*In memory of the late Ofer Bar-Yosef and Carole McCartney*



# The Ba`ja Daggers

## Type, Technology and Commodification of a LPPNB Burial Object

Hans Georg K. Gebel, Christoph Purschwitz,  
Denis Štefanisko and Marion Benz

### Abstract

The strictly symmetrical and bifacially flaked flint daggers from Ba`ja are introduced as a new LPPNB tool type, representing a most distinctive and elsewhere not yet attested artefact type. They allow for meaningful statements on off-regional procurement and technologies, demand networks, the de- and ex-commodification of burial objects (respectively subjects), ritual behaviour and symbolic properties, social differentiation, and more. The daggers' highly specialised production most likely took place in the eastern (or western) steppes. Their well-preserved primary burial contexts testify also to intentional damaging of the daggers, most probably related to burial rites. The contextual and biographic analysis of the daggers provides basic and rather sound emic insights into Ba`ja's LPPNB community, its commodification regimes and social structures.

*LPPNB Ba`ja daggers, technology, commodification, status-providing object, sepulchral contexts*

### 1. Introduction

The three complete bifacially flaked flint daggers from Ba`ja (Fig. 1) are an eye-catching, most distinctive and hitherto extremely rare artefact type from the LPPNB (Figs. 2-4); find contexts allow far-reaching statements on their procurement, high-skill flint technologies, demand networks, sepulchral ritual and symbolic behaviour and practices, and on social differentiation. The daggers are especially distinguished by their non-regional raw material to come from the eastern or western steppes, their highly specialised production, and for being dedicated burial objects showing the traces of intentional damaging most likely related to the burial rite. A preliminary replicative study by one of the authors (D.S.) confirms technological skill levels not attested with Ba`ja's household levels in "semi-specialised" flint production (Purschwitz 2019). The Ba`ja daggers promoted the identity and social hierarchy debate in our current *Household and Death in Ba`ja* – Project ([www.bajahouseholdanddeath.de](http://www.bajahouseholdanddeath.de)) on LPPNB social organisation; the ascription of identity and status; ritual de-commodification and related symbolic behaviour.

The bifacially flaked and partially serrated flint daggers from Ba`ja are a yet unknown distinctive artefact type, that is easy to discriminate from other M-FPPNB/PPNC classes of penetrating cutting and butting long implements.

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Fig. 1. Panoramic bird-eye view of Ba`ja before sunset, from South (October 2019). (Photo: H.G.K. Gebel).

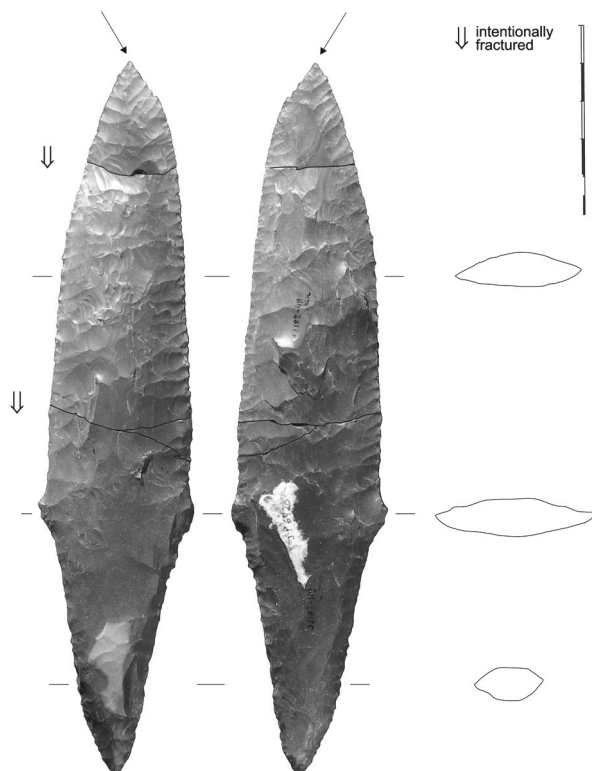


Fig. 2. Ba`ja Dagger (F.no 32182.119) from collective chamber Burial DG1 in Room DR26.2 (primary context: D11/12/21/22: 26, later LPPNB occupation). (Photos/ Drawing: H.G.K. Gebel, C. Purschwitz).

## 2. The Ba`ja dagger: the type (H.G.K.G., C.P.)

### 2.1. Typological definition

Our definition of the Ba`ja flint daggers emphasises the following exclusive typological, morphometrical and affordance features and characteristics:

- a pronounced and set-off or “suggested” double-edged handle zone; double-edged symmetrical blade and handle zones with very flat-convex/straight edge courses; clearly pointed basal and distal ends.
- “strictly” symmetrical: longitudinal axis symmetry for the faces and widths’ cross-sections, following an intended pointed flat biconvexity for all sections.
- average lengths/medial widths/medial thicknesses of around 200 mm/ 40 mm/ 10 mm; with a blade/“cutting” zone that has about the double length of the handle zone.
- final shaping by full-covering bifacial parallel scalar pressure/direct soft hammer flaking on both faces (cortex areas may remain), often resulting in intended (partial) serrated<sup>1</sup> edges.
- initial manufacturing steps created a raw form expected to be similar to those of the replicative study (*cf.* below); unlikely to be made from a large blade blank.
- representation of a fragile artefact suggesting the use and capacity to penetrate by a pushing impact (dagger) rather than penetrating by cutting (knife); edge serration results also technologically from the parallelism of bifacially invasive flat retouches.

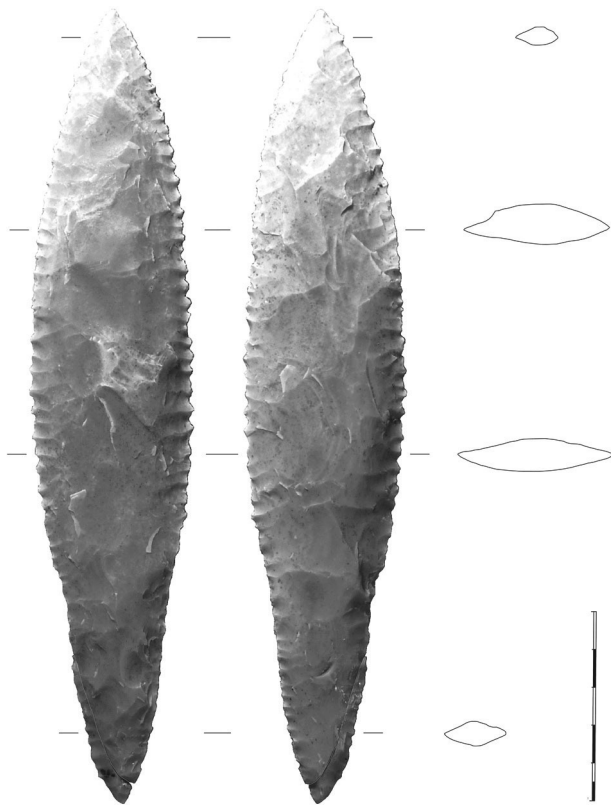


Fig. 3. Ba'ja Dagger (F.no 52024) from collective pit Burial CG1 in Room CR35 (primary context: C10:152, later LPPNB occupation). (Photos/Drawing: H.G.K. Gebel, C. Purschwitz).

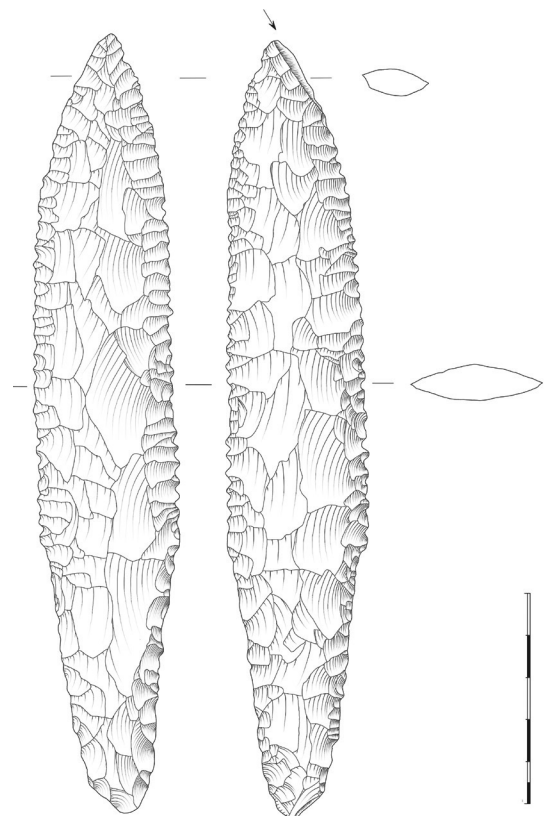


Fig. 4 (above/below right). Ba'ja Dagger (F.no 92019) from single cist-type Burial CG10 "Usaid" in Room CR35 (primary context: C10:408, later LPPNB occupation). (Photos/Drawing: H.G.K. Gebel, C. Purschwitz).

This definition is based on the three complete daggers from Ba'ja (Figs. 2-4), and does not consider information from fragments which might relate to Ba'ja Daggers or which were modified by use or recycling; it also excludes all knife classes made on large blades without being symmetrically shaped by full-covering bifacial parallel pressure/direct flaking even though they may show a handle zone. Further, it excludes bifacial parallel scalar pressure-/direct soft hammer flaked foliates, foliate knives and non-pointed foliate-type items as we know them *e.g.* from Basta (*e.g.* Fig. 5: 3).

## 2.2. Morphometrics and technology

The shapes and dimensions of the three daggers show high standardisation norms for this artefact type (Table 1, Figs. 2-4), for which we avoid the term "tool", since there is no evidence that they were implements of daily use (*cf.* below): Lengths range between 185-210 mm, the upper central (blade) widths and thicknesses range between



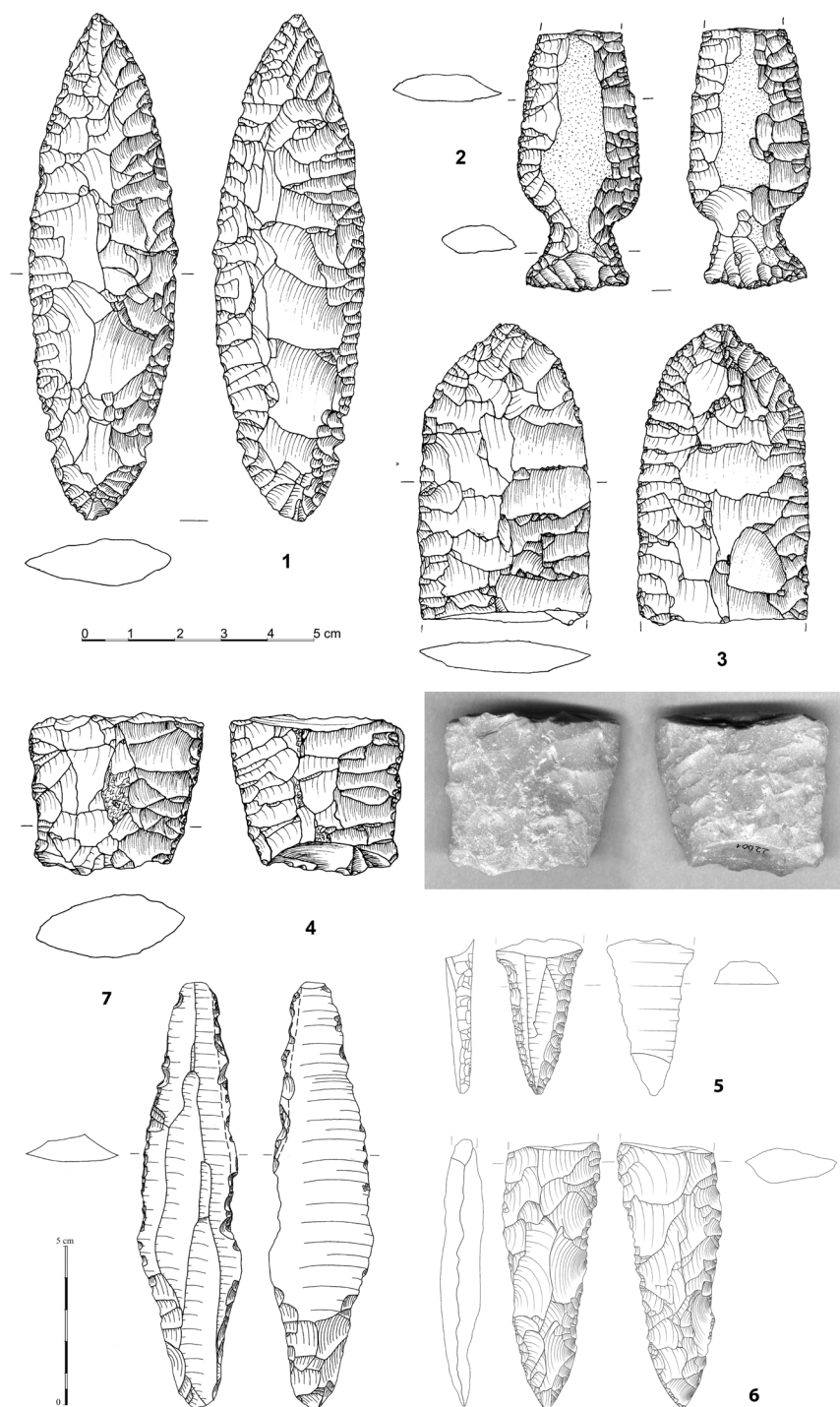


Fig. 5. Basta and Ba'ja. Selection of bifacially (parallel-) retouched flint artefacts from LPPNB and FPPNB/PPNC layers. 1-4 Basta, 5-7 Ba'ja. 1 foliate by bifacial pressure flaking, partial dorso-ventral invasive parallel flat retouches (BA 12419; Lower Rubble Layers/Phase B0); 2 tile knife fragm. with fish-tail base, parallel dorso-ventral flat retouches (BA 32255); 3 foliate knife fragm., bifacial pressure flaking, partial dorso-ventral invasive parallel flat retouches (BA 32132; BII room fills); 4 medial fragm. of a Ba'ja Dagger or foliate, bifacial pressure flaking, partial dorso-ventral invasive parallel flat retouches (BA 22001; B53, Top Soil); 5 knife/dagger handle fragm., on mega-blade, dorsal semi-abrupt retouches (BJ 102042; Burial CG11 of Room CR17: LPPNB); 6 Tuwailan-type of bifacially flaked/dagger/knife fragm. (BJ 112073; DR25:100: FPPNB/PPNC); 7 blade knives, partial dorso-ventral semi-abrupt to flat invasive parallel retouches, use retouches at lateral cutting edges and right-lateral moderate gloss (BJ62002a.001; BNR17:102: LPPNB). (Drawings: 1-4 I. Raidt, 5-7 C. Purschwitz).

Dagger's Field & Burial No. (Fig.)	Measurements (mm)	Raw Material, Shape/ Proportions, Damages
Ba'ja Dagger F.no. 32182.119 Burial No.: DG1 (Fig. 2)	length: 188 medial- distal section width/ thckn.: 33 / 9 section width/ thckn.: at handle/ blade junction: 42 / 10 basal section width/ thckn.: 18 / 9	<i>raw material</i> : non-local/ regional raw material (Eocene?); from thin tabular (seam) flint body; colour: dark brown with some variation; lustrous surfaces; cortex remnant: thinly abraded, originally pock-marked cortex, remaining natural fractures with slight desert varnish?, weathering clefs; quality: slightly fine-grained inhomogeneous matrix of opaque raw material, manageable – very manageable flaking ability <i>shape/ proportions</i> : length ratio between handle and blade: c. 1:2; handle set off from blade by protruding nose; handle thicker than blade; rather perfect symmetries; straight to very flat-convex course of blade and handle edges; intended straight longitudinal axis slightly bended <i>final retouching</i> : bifacial parallel pressure flaking with areas of near-edge and areas of invasive flat retouches: extensions disturbed by erratic humps on both central faces that were/ could not be removed during preceding soft hammer percussion; no or restricted serration of edges <i>damages (LPPNB)</i> : intentionally broken ("bending fracture"); burination of the tip (accidental? "dropping damage"?)
Ba'ja Dagger F.no. 52024 Burial No.: CG1 (Fig. 3)	length: 210 near-tip section width/ thckn.: 11 / 4,5 upper medial section (blade) width/ thckn.: 38 / 10,5 lower medial section (blade) width/ thckn.: 41 / 9 basal end's section width/ thckn.: 16 / 6,5 "the masterpiece among these daggers!"	<i>raw material</i> : non-local/ regional raw material (Eocene?); colour: blueish grey/ reddish light brown/ whitish grey with considerable variation; no cortex remnants; dull surfaces; quality: slightly fine-grained semi-homogeneous matrix of opaque raw material, unidentified smallest dark-red inclusions, manageable – very manageable flaking ability, partial (in-soil?) patination <i>shape/ proportions</i> : length ratio between handle and blade: c. 1:2+; handle zone not pronounced, "suggested"; blade zone highlighted by pronounced continuous serration; pointed ends at tip and basal have similar sections; perfect symmetries; straight to very flat-convex course of blade and handle edge <i>final retouching</i> : perfect bifacial parallel (partially scalar) pressure flaking by near-edge and partly invasive flat retouches over preceding negatives from soft hammer percussion; pronounced continuous serration (blade zone) <i>damages (LPPNB)</i> : unbroken <i>preservation</i> : vertical dropping during lab recording process resulted in a "burination" at the basal edge
Ba'ja Dagger F.no. 92019 Burial No.:CG10 "Usaid" (Fig. 4)	length: 185 near-tip section width/ thckn.: 15.5 / 6.5 medial section width/ thckn.: 31 / 8.5	<i>raw material</i> : non-local/ regional raw material (Eocene?); colour: greyish – greenish beige with some variation; dull surfaces; no cortex remnants; quality: slightly coarse-grained rather homogeneous matrix of opaque raw material, unidentified small inclusions, manageable – very manageable flaking ability <i>shape/ proportions</i> : length ratio between handle and blade: c. 1:2+; handle zone not very pronounced ("suggested"), but has a thicker section; blade zone highlighted by rather pronounced and rather continuous serration; rather perfect symmetries (except the upper blade area) with more bulky sections if compared with the relative slenderness of the piece; straight to very flat-convex course of blade and handle edge; slight and partial edge serration <i>final retouching</i> : bifacial parallel pressure flaking by near-edge flat retouches, resting over the larger negatives (from preceding soft hammer percussion?) <i>damages (LPPNB)</i> : burination of the tip (accidental? "dropping damage"?); retouch damage at the tip and at the base (by pre-funeral handling of the piece?)

Table 1. Ba'ja Daggers: Information on dimensions, raw materials, shapes and damages (locations of section measurements: cf. Figs. 2-4).

41-41 mm/ 9-10 mm. Thicknesses at the handle/ blade junction vary between 31 and 42 mm/c. 10 mm. Handles tend to be slim, more bulky and much less pronounced, and have no or only a slight serration. The daggers' shapes were also strongly standardised, and the strictly pointed and straight-biconvex edge courses and symmetries of the three dimensions are particularly striking. The length ratio between handles and blades is about 1:2.

Technological statements on the manufacture can – of course – only be made for the visible final stage of the daggers. For the potential former stages of manufacture the replicative study by one of the authors (D.S.) should be consulted (cf. below). The very last stage of lateral bifacial thinning, creating the pieces' final shapes must have been performed by either pressure or direct soft hammer flaking, or a combination of both.<sup>2</sup> The parallel and subparallel flat retouches run from the edges onto the pieces' medial surfaces, resting over and partly removing the previous negatives (mostly from preceding direct soft hammer thinning). These stepped or scalar flat retouches cover larger parts of the daggers' two faces. The highly skilled regular positioning of the parallel flat retouches created not only attractive even surfaces, but also created the edges' serration. No evidence was found that grinding was involved in the last step of manufacturing. Further detailed analysis of the positioning strategies for

the invasive flat retouches and of the failure/breakage avoidance strategies, have to be carried out once the pieces are accessible again.<sup>3</sup>

### 2.3. Raw materials and manufacture areas

Different flint raw materials were used for the three Ba'ja daggers (Table 1). They are not represented among the regional raw materials groups attested in Basta and Ba'ja (cf. Muheisen *et al.* 2004; Purschwitz 2019; Parow-Souchon and Purschwitz 2020). Thus, we expect that their raw materials are of non-regional origin, probably from farer Eocene. The total lack of dagger production waste (half-fabricates, the typical debitage including the chips) in Ba'ja and Basta and of the respective skill levels in Ba'ja supports our understanding that both raw materials' acquisition and manufacturing of the daggers took place in specialised workshops outside the region. Most likely the late 8<sup>th</sup> millennium BCE's steppes east of the escarpment, e.g. the greater Ma'an/al-Jafr regions of the southeastern Badia, were the origins of the raw materials and daggers. However, the western steppes of the an-Naqab or even the Sinai shouldn't be excluded as resource and production regions. Transhumant inhabitants of Ba'ja may have had exchange contacts with workshops in such regions, or a locally confined exchange may have let the items reach Ba'ja.

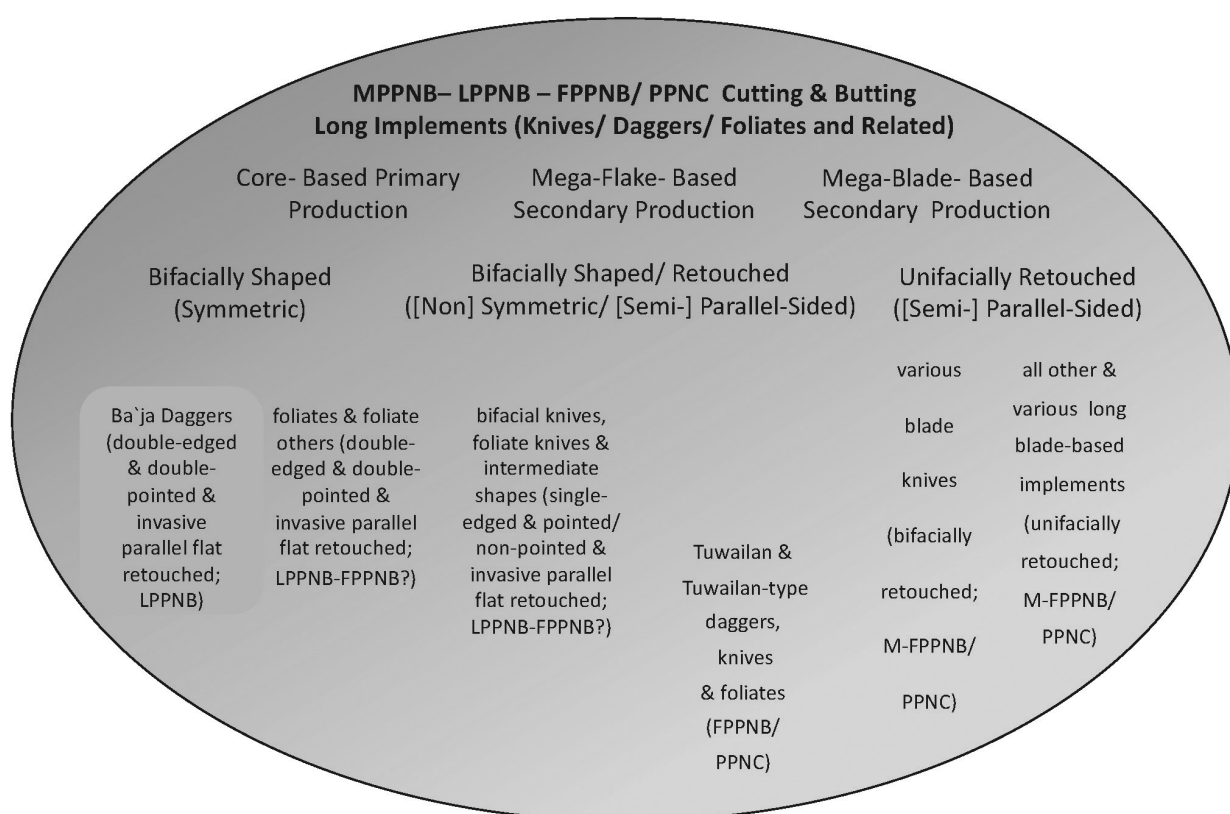


Fig. 6. Categorising bifacially/unifacially flaked MPPNB-FPPNB/PPNC cutting and butting long implements (knives/ daggers/foliates and related, including the tile implements): blanks, production and products (Graph: H.G.K. Gebel).

Cortical remains allowing conclusions on raw materials' kinds are preserved for only one of the daggers (BJ32182.119). It shows the use of a thin tabular flint with a thinly abraded whitish cortex. Such cortices are very often found with desert raw materials.

## 2.4. Chronology

The Ba'ja Daggers were exclusively found in burial contexts of Ba'ja's later PPNB occupation; according to radiocarbon dates, they date to a later phase of the LPPNB. Because of their rarity, it cannot be said whether Ba'ja Daggers were still produced and in demand in FPPNB/PPNC times. Contacts with the excavators of FPPNB Motza do not allow clear answers for this question (*cf.* below), since the Motza daggers appear to be related to the FPPNB/PPNC Tuwailan tradition (Fig. 6). At the time of writing, it cannot be excluded that daggers with features like exclusive direct percussion, less parallel and scalar retouching and less symmetrical shapes gained terrain in the southern Levantine FPPNB/PPNC, together with all sorts of knife types, and that the Ba'ja Daggers disappeared from the exchange networks.

## 2.5. Other long cutting/butting implements from Ba'ja

Only a few specimens of the other long implement classes – knives/daggers/foliates – were found in Ba'ja. Another medial fragment of a Ba'ja Dagger was found in a secondary context (F.no. 22165, Layer D12:50 above an LPPNB floor in Room DR6) which may have originated from a burial and was later reworked into a burin. F.no. 102042 (Fig. 5: 5) is the unifacially retouched handle of a presumed knife/dagger; it was found displaced in the context of an LPPNB collective burial inside Room CR17 (Locus 109). F.no. 62003a.101 (Fig. 5: 7) represents a blade knife, which was found in a burnt LPPNB Building (Phase BI, Locus BNR17:102); use-wears including moderately developed gloss are visible on the lateral cutting edges. F.no. 112073 (Fig. 5: 6) is probably the basal fragment of a Tuwailan Dagger/Knife, deriving from a secondary FPPNB/PPNB context in DR25 (Locus 100). F.nos. 32158 and 32183 represent the class of Tuwailan-type of bifacially flaked foliates/knives/daggers; they may represent eroded FPPNB/PPNC material on LPPNB house ruins (F11:8 and baulk F11/12), and originally may have belonged to burial inventories.



### 3. Discriminating the type and its chronology (C.P., H.G.K.G.)

No clear comparators appear to exist for the Ba'ja Daggers. Several formal classes of bifacially worked daggers, knives, foliates and other penetrating long implements are known from later MPPNB, LPPNB and FPPNB/PPNC tool kits, but many of their technological and morpho-typological features as well as their skill levels do neither match those of the Ba'ja Daggers, nor do they show this explicit contextual relation to burials. Among the technologically similar bifacial parallel flat-retouched foliates and foliate knives from Basta<sup>4</sup> (e.g. Fig. 5: 1-3, 4?) a great variance of forms is observed (we still lack such evidence for contemporaneous Ba'ja). The new excavations at FPPNB Motza revealed “hundreds” of bifacially retouched knives/daggers, in most cases fashioned from thick long blades, with the cortex entirely removed by extensive scalene flaking, followed by the modification of the working edges by pressure retouch” (Vardi *et al.* 2020). The rich Motza evidence is most helpful in differentiating the Ba'ja Daggers from the other (FPPNB) knife/dagger classes, and to gain further insights on procurement and chronology; some of the Motza daggers apparently show traces of desert varnish.

As rich as the M-FPPNB/PPNC evidence for “relatives” of the Ba'ja Daggers is, „floating type transitions” make it difficult to distinguish classes and types of the bifacial “long implements” (e.g. Crowfoot Payne 1983; Garfinkel and Dag 2001; Gopher 1989; Goring-Morris *et al.* 1994; Rokitta-Krumnow 2013; and the references below); confusion is further promoted by fragmentation and manufacturing statuses. Literature contains efforts to compare the yet incomparable, including the temptation to compare quite distinct bifacially non- or “semi”-parallel flat-retouched knife and foliate classes and types like e.g. the fragments found in Ba'ja and Basta (Fig. 5). Here we restrict our short review on the state of the art to both sides of the southern Jordanian Rift Valley. Although we are aware that the actual types of long implements with bifacially worked edges developed an own diversity from the “liveliness” of their use<sup>5</sup>, we pragmatically and formally tried to systemise the general classes (Fig. 6); a descriptive elaborated presentation is planned for Gebel *et al.* in prep. a.

Basta's assemblages of bifacially worked long implements illustrates the dilemma of fragmentation for any systematics. For example, it is not possible to assign medial fragments to the Ba'ja Daggers (e.g. Fig. 5: 4), despite matching cross-sections and technology. In Basta there are a number of artefact fragments, but no serrated ones, which can be attributed to the highly skilled craft traditions of the Ba'ja Daggers (e.g. Fig. 5: 1-3). Not all of them were made from off-regional raw material, indicating that also regional Ba'ja Daggers' skill levels must have existed in Basta.

The earliest evidence of bifacially flaked daggers probably dates to the later part of the MPPNB and is indicated by the few finds from Beidha B/C (Mortensen 1970), and the Badian sites of Wadi Jilat 26 (Baird 1993) and Wadi Abu Tulayha (Fujji 2013). In the LPPNB mega-sites of 'Ain Ghazal and Basta daggers with deeply invasive bifacial flaking (Type K-1) first occur (in small numbers) during the LPPNB, but increase in number during the FPPNB/PPNC (Rollefson *et al.* 1994). Bifacial flaked daggers have been found in FPPNB burials at Motza (Vardi *et al.* 2020) and at Atlit Yam (Burial H50; Galili *et al.* 2005). Moreover, at Atlit Yam several other broken and complete daggers are reported to be found in a well (Galili *et al.* 2020). However, the distinction between bifacially flaked daggers and Tuwailan-type daggers is generally difficult if the dagger is preserved incomplete or remained in an unfinished state of production (or if the dagger is not illustrated). Nevertheless, bifacially flaked daggers appear to be earlier than Tuwailan-type daggers. Tuwailan-type daggers, which are common for the PPNC and Late Neolithic, have been found in many 7<sup>th</sup> millennium BCE sites across the Levantine corridor (e.g. Rokitta-Krumnow 2017).

An overview on M-FPPNB on flat retouched flint daggers and knives from other parts of the southern Levant and the Northern Levant/Mesopotamia (planned for Gebel *et al.* in prep. b) illustrates even more how multivariate the evidence we have is, and the need to identify their distinctive features for the individual dagger/knife classes and their commodification. By writing up this contribution, we understood how disadvantageous research's neglect of Early Neolithic flint knives and daggers including foliate knives of various kinds and classes is; a fundamental and specific research investment is highly needed for these extraordinary tools and commodities. The traditions of the long cutting and butting implements appear to start in the late PPNA as daggers made on long bidirectional blades (minimal retouching for shaping the tip and handle; e.g. Cauvin 1994; Cauvin and Abbès 2008; Schmidt 1998). In the Northern and Central Levant including Northern Mesopotamia blade daggers continue throughout the PPNB (e.g. Arimura 2007; Coşkunsu 2007; Rokitta-Krumnow 2018; Schmidt 1998). Southern Levantine evidence is rarely reported, although many large blades fall within the metrical range of blade daggers. Among the earliest finds might be an unpublished dagger from the mortuary site of Kfar HaHoreh (EPPNB?, Goring-Morris, pers. comm.).

### 4. Contextual evidence (H.G.K.G., M.B., C.P.)

All three Ba'ja Daggers come from primary contexts of burials (Table 2), indicating their substantial – if not principal – sepulchral-ritual territoriality (this applies to both their material and intangible contexts). Two daggers were burial objects of collective Burial CG1 and single Burial CG10, both being part of the Ba'ja's later LPPNB intramural cemetery

Burial & Dagger's Field No., Room, Square: Locus, Occupational Phase (Fig.), Previous Publications	Primary Burial Contexts of Daggers
Burial No.: DG1 Dagger F.no. 32182.119 Room DR26.2, D11/12/21/22:26 CII (later LPPNB occup.) (Figs. 2, 7) Gebel and Hermansen 2000, 2001	Collective chamber burial (MNI 12 individuals, 3 adults, 9 subadults/ infants [in field observations]), most likely belonging to the later LPPNB occupation (late 8 <sup>th</sup> -early 7 <sup>th</sup> mill. BCE) chipped lithics in the room fills above burial contain FPPNB-related material (e.g. F.no. 22046) Several superimposed skeleton layers (no burying in groups observable) Burial chamber relates to former special room function with figurative mural Proximal and medial dagger parts of on the spot fragmented dagger (4 pieces) in scattered position, embedded in the lower third with the dislocated (pushed aside) human bone deposits above the burial's stone pavement (distal end/ tip was found later in a human bones' bag); dagger not assignable to a specific skeleton Associated with other burial objects: 9 arrowheads (type similar to that in Burial CG1); 1 macehead (basalt); 2 types of mother-of-pearl ring-shaped paillettes; > 80 beads (mostly <i>Tridacna/ Spondylus</i> , few limestone, c. 15 greenstone beads), 2 sandstone ring fragments Liquid red pigment used for burying, colouring also burial objects, including (remaining) red pigment lumps and yellow ochre
Burial No.: CG1 Dagger F.no. 52024 Room CR35, C10:152 CII (later LPPNB occup.) (Figs. 3, 8) Gebel <i>et al.</i> 2006, Klingner n.d.	Collective pit burial (6 individuals: 2 young adults, 1 juvenile and 2 children, and one new-born), part of intramural cemetery of Ba'ja's later LPPNB occupation in Area C (late 8 <sup>th</sup> -early 7 <sup>th</sup> mill. BCE) Several superimposed skeleton layers (no episodic burying observable) Burial pit was cut through Floor C10:146A Upper bone layer was covered by a large broken sandstone slab (50×100 cm) and contained a mano end fragment and a stone vessel's sherd with mixed red pigment (gives the impression of a temporary "closure" until next burial that took not place Associated with 4 arrowheads similar to the type in Burial DG1; 4-5 bone beads, 1 "hairslide"/ large bone spatula, c. 15-16 beads [unstudied], 1 sandstone ring fragment; dagger not assignable to a specific skeleton Liquid red pigment spread over corpses and burial objects
Burial No.:CG10 "Usaid" Dagger F.no. 92019 Room CR35, C10:408 CII (later LPPNB occup.) (Figs. 4, 9) Gebel <i>et al.</i> 2017, Benz <i>et al.</i> 2019	Single cist-type burial (young adult [25-35yrs] male?), part of intramural cemetery of Ba'ja's later LPPNB occupation in Area C (late 8 <sup>th</sup> -early 7 <sup>th</sup> mill. BCE) Lower part: burial with pit deepened through plaster floor (Loc. C10:146A) in the paleosol interment with personal? burial objects ( <i>in situ</i> smashed basalt mace head; upper left arm ring made of one mother-of-pearl and four marly rings, upper right arm ring made of several pieces of mother-of-pearl; c. 7 greenstone beads (+ fragments), 1 carnelian bead, 1 <i>Tridacna</i> bead, 2 strongly leached shell fragments (Conidae), 1 red pigment stone (s. below); one sandstone <i>mano</i> fragment Upper part: with the burial's slab stone cover and a stone layer/ cache with status-related burial objects ( <i>cf.</i> text) among which the dagger is, all embedded/ sealed in a gravel/ mortar mixture: unbroken pestle of basalt, sandstone vessel fragment, 2 short arrowheads, 1 bone spatula, 2 grinding tools (sandstone <i>mano</i> fragment, small grinding slab) Except for red pigment stone in between the fingers of the right hand, no evidence for the use of red pigments.

Table 2. Ba'ja Daggers: Basic context information.

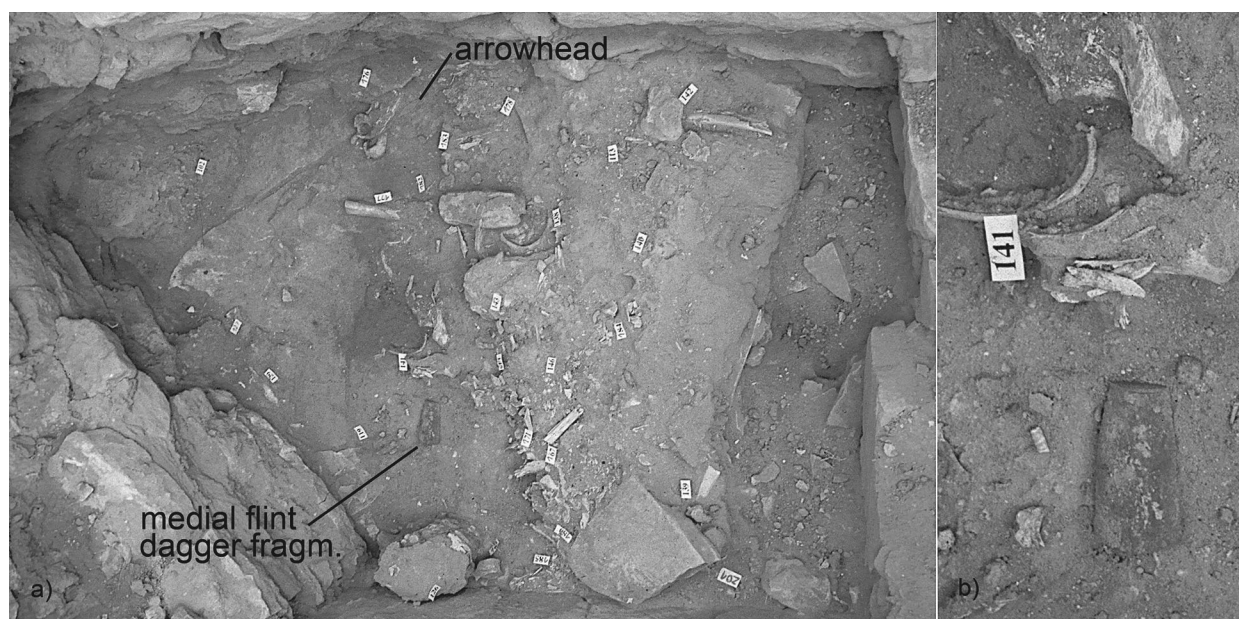


Fig. 7. Collective chamber Burial DG1 in Room DR26.2 (primary context: D11/12/21/22: 26, later LPPNB occupation). a-b *in situ* medial fragment of intentionally fractured dagger (F.no 32182.119), resting in the lower part of burial deposits: secondary position. Note the pigmented burial sediments and bones (Photos: H.G.K. Gebel).

of excavation Area C's Phase CII at Ba'ja (Gebel *et al.* 2006, 2019, 2020; Benz *et al.* 2019, 2020) which was terminated by an earthquake. Here, the intramural cemetery occupies several smaller rooms, most of which were housing (*sic!*) single, double and multiple interments of subadults (Gebel

*et al.* 2019, 2020; Benz *et al.* 2020, forthcoming b); the three collective burials (Burials CG1, CG11 and CG12) also contained some adults and several young subadults and infants (Klingner n.d.). The burials often penetrated floors and entered the natural layers/former basin fills on which

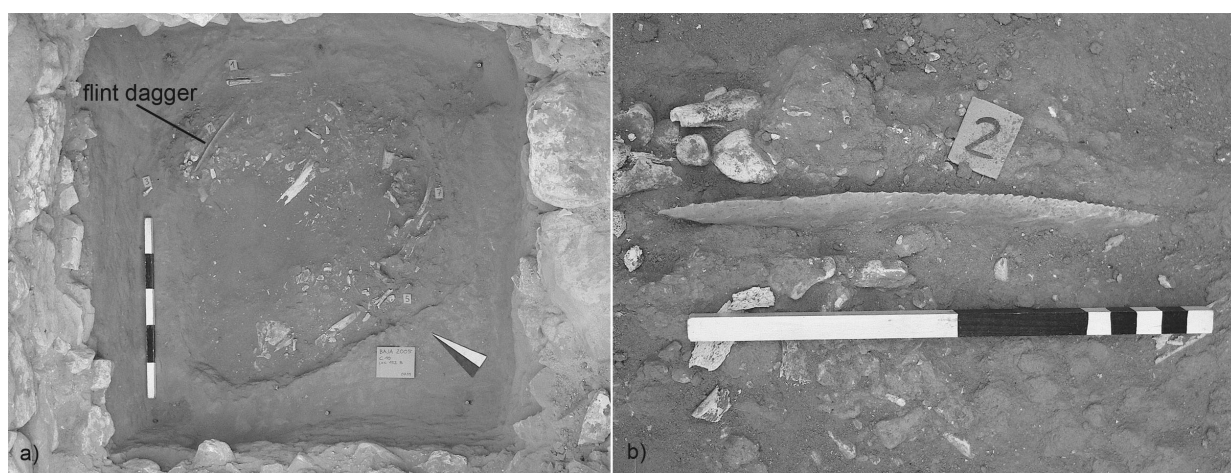


Fig. 8. Collective small room pit Burial CG1 in Room CR 35 (primary context: C10:152, later LPPNB occupation). *a-b in situ* complete dagger (F.no F.no 52024), resting on its edge: secondary position? Note the pigmented burial sediments (Photos: C. Purschwitz).

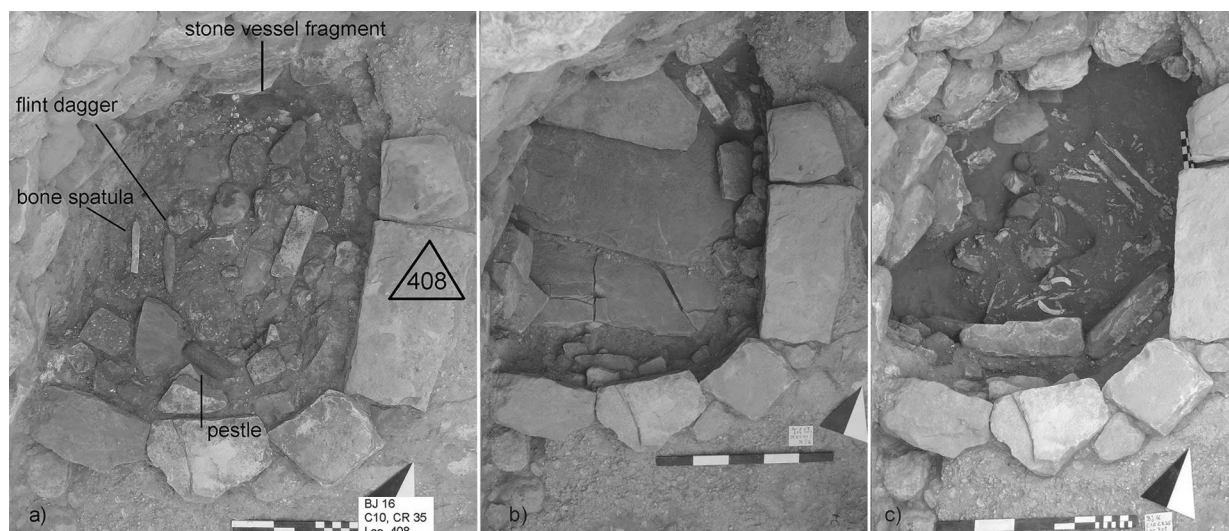


Fig. 9. Single cist-type Burial CG10 “Usaid” in Room CR35 (primary context: C10:408, later LPPNB occupation). *a in situ* dagger (F.no F.no 92019), resting as deposited? in upper cover layer with burial objects; *b* stone slab cover of burial between *a* and *c*; *c* burial (Photos: H.G.K. Gebel, M. Benz).

Ba’ja’s architecture rests. The third dagger was found in four pieces in Area D’s collective Burial DG1; as was for the dagger of collective Burial CG1, it had been found displaced inside the burial for having been moved by subsequent burial activities. For the time being, little can be said about the likelihood that Burial DG1 also belongs to an intramural cemetery in excavation Area D.

Collective Burial DG1 is a stone chamber burial whose cist-type stone slab and wall borders and pavement were inserted along a small room’s inner walls (DR26.2; Fig. 7a); collective Burial CG1 is a pit burial inside small Room CR35 (Fig. 8a), and single Burial CG10 is a cist-type

burial with an upper and lower part in the northwestern corner of Room CR35 (Fig. 9a-c). For the exact locations of the rooms consult the top plans in Gebel *et al.* 2020; Area C’s intramural cemetery map will be published as Fig. 1 in Benz *et al.* forthcoming a.

While Dagger F.no. 92019 can be clearly related to the individual of single Burial CG10, most likely to the young man buried underneath the burial objects’ cache (Fig. 9a; Benz *et al.* 2019), Daggers F.no. 32182.119 from DG1 (Fig. 8a-b) and F.no 52024 from CG1 (Fig. 9a-b) can’t be related to a specific individual in their collective burials’ contexts.

The burial objects' cache of CG10 is a unique feature in LPPNB grave architecture, representing a separated and sealed burial cover with burial objects (Dagger F. no. 92019, a sandstone stone vessel fragment, two sandstone grinding objects, an unbroken bone spatula, two projectile points, and a complete basalt pestle, *cf.* Table 2) above the actual burial and its burial objects; the objects in this cover/cache were inserted into a consolidated mixture of gravel and mortar. Could this cache represent ascribed status items while the actual burial was furnished with the dead's personal items?

This segregation of two kinds of related object assemblages contrasts with the collective Burials CG1 and DG1 where none of the objects (except for a few ornament items) can be clearly attributed to one individual. Even this once had been the case, the intensive handling of bones in the collective burials make an assignment of objects to a specific individual impossible. In the case of DG1, the dagger was deliberately broken and scattered in the burial. In the collective Burial CG1, the complete dagger was placed at or pushed to the northeastern border of the burial pit.

## 5. Biographical stages and commodification acts (H.G.K.G.)

When translating the contextual evidence of the daggers into a meaningful understanding of their social, ritual and symbolic roles and functions, our biographical and commodification concepts<sup>6</sup> become the essential source for generating insights; from this perspective, the Ba'ja Daggers are to be seen as burial subjects (*cf.* below).

Important biographical stages of the Ba'ja Daggers so far identified are: Acquisition/Procurement of Raw Materials, Manufacture, Exchange, Pre-Funeral Use, Sepulchral Commodifications and Deposition, and, of course, the Archaeological Excavation and Studying. For the sake of brevity, we offer here a keyword-manner summary of the biographical sequence with embedded interpretation, in parts already addressed by Benz *et al.* 2019; they are presented in more detail in Gebel *et al.* in prep. b.

*Procurement sensu Raw Material Acquisition:* non-local/non-regional raw material (supposed to have taken place in the eastern or western steppes).

*Manufacture:* non-local/non-regional production/workshops in the steppe areas (which must not necessarily mean that the skills for parallel and direct soft hammer flaked bifacial items were not available at "industrial" lithic centres like *e.g.* Basta); manufacturing relates to the commodification of a prestige-giving (for the manufacturers) high-skill and time intensive product.

*Procurement sensu Exchange:* via (the pastoral?) networks existing into the eastern (western) steppes; prestige by obtaining a prestigious commodity; at this biographic level, daggers become commodities of destination; they must have become also precious for

arriving unharmed in the demand area (for being delicate and unique: damage risks through transport)

*Pre-Funeral Use:* only slight polish on surfaces and at the edges visible (from protecting cloth/leather wrapping?: D. Štefanisko, pers. comm); unlikely to have been used as a tool<sup>7</sup>; became also precious for arriving unharmed in the demand area (for being delicate and unique: transport risks); "having" and controlling – an eye-catching commodity of destination – may have provided exclusiveness/demanded a certain status (bearers of a certain political or ritual role, leading group or family members): also in that respect daggers had agency<sup>8</sup>; in their pre-funeral existence, or their living environments, the Ba'ja daggers most likely had social and symbolic functions (performative/display, prestige and otherwise status-giving functions; *cf.* also the comments by D. Štefanisko, this contribution); were mainly procured and kept to become a burial subject; no indications that the daggers were inheritable objects.

*Sepulchral Re-, De- and Ex-Commodifications (succeeding acts):* one dagger was fractured/de-commodified during burial rituals (all four parts inside Burial DG1), like this is true for other de-commodifications attested with the burials (*e.g.* arrowheads with snapped-off tips or the *in situ* smashed mace head in CG10); de-commodification character of burinations of two daggers is debatable; deposition of daggers re-represents ex-commodification (Burial CG10: including its sealing into a mortar-gravel bed, covered by a plaster layer); as a commodity of destination meant to be received by/ascribed for only certain status holders/dead; by the burial practices a dagger's agency turns – in addition – from that of a sepulchral ritual object to a sepulchral ritual subject (a re-commodification); was possibly also ascribing prestige to those who were entitled to use it during the ritual: The dagger becomes a ritual agent and object of de-commodification to manifest and terminate the dead's status (co-active sacrifice meaning/purposes not excluded); by the symbolic termination of the dead's functions by acts of breaking (burinating?) the dagger; since not removed/removable? from the burial, the act of burying the dagger represents a kind of ex-commodification (although it remains known that it is there and in what condition); occasionally needed in case of debated terminations/de- and re-commodification? (among other reasons): sealing of these testimonies by stone covers/stone slabs/mortar beds/plaster is done to avoid that the meaning of the re-, de- and ex-commodification of a dagger (or other burial objects) is disturbed by the removal of the (objects from the) cache. (Table 1)

*Further Re-Commodifications (e.g. the re-use of the former ritual equipment)*<sup>9</sup>

*Latest Re-Commodification by Archaeological Study:* see the agencies and commodification the Ba'ja Daggers mean for this article.

There is no biographical evidence from the archaeological contexts that the Ba`ja Daggers played a significant role outside their sepulchral contexts, despite that they must have provided prestige to producers and “bearers”/curators. Their main power seems to have come from their capacity to act in sepulchral contexts, including the high arousal and prestige they create if they are broken/damaged, and subsequently locked away in a burial (kind of ex-commodification; Gebel *et al.* in prep. a). Is it in the symbolism of these acts – which simultaneously signify the confirmation or manifestation of status and taking/terminating/banishing status at the same time – that we find the real purpose of these artefact? Needless to say in front of their biography, that daggers represent- at any rate – commodities of metamorphosis (Gebel 2010). Further research has to be invested in the question of how the acts of de- and ex-commodification for daggers relate to other such actions of terminating values in Ba`ja's community (e.g. the termination of households/household items, cf. Gebel *et al.* 2019). It is interesting to understand that these destructive and terminating acts were directly targeting present objects – inherited households/household items – while daggers apparently had to be procured and loaded before, with a symbolism referring to a special person and his/her role. Taking out this role from continuing life cycles – while formally confirming a terminated status to help the dead to stay members of the community in another social function – makes the daggers an essential ritual subject of relevance in the ritual template (Benz *et al.* 2019). It appears that ex-commodified daggers were mentally unremovable testimonies for personified status manifestations, and the ritual confirming that.

By all these considerations we should expect that the general idea of breaking and terminating a function must not have concerned all of the rare Ba`ja Daggers, and that there must be reasons for that. More so, breaking and terminating may have been followed also with other materials, for less prominent dead, such as joining already broken items to the burial for less prominent dead, or by e.g. adding freshly snapped-off arrowheads to a burial. In following FPPNB/PPNC times, less prestigiously elaborated daggers may become more common and taken the role of the Ba`ja Daggers. (Fig. 6)

## 6. A replicative study for the *chaîne opératoire* of the Ba`ja daggers (D.Š.)

We expect that the replicative *chaîne opératoire*, presented below in a highly condensed summary, is broadly similar to that of the Ba`ja Daggers; of course, this can only be postulated due to the lack of attested LPPNB waste for the early manufacturing steps. However, it must be expected that direct soft hammer flaking was possibly less invested in LPPNB daggers' production, in order to minimise the risk of breakage. This danger of labour and material loss

through applying the soft hammer is especially given for Stage 3b with its limited error correction potentials, an issue also pointed out by Phil Wilke in his commentary on the Ba`ja daggers (cf. endnote 2).<sup>10</sup>

The experimental dagger operational chain includes four major stages:

### *Stage 1: Raw material selection*

Raw material selection preferably should consider bedrock-fresh thinner lenticular nodular or tabular fine-grained homogeneous flint bodies, with dimensions at least 10% longer and 300% wider than the intended length and width of the dagger; thinner bodies could save 20-30% of time needed for initial flaking. For the replication presented we used an available rather thick nodule from Eocene sources near Shoubak Castle (Fig. 10a).

### *Stage 2: Establishment of bifacial platform and primary reduction*

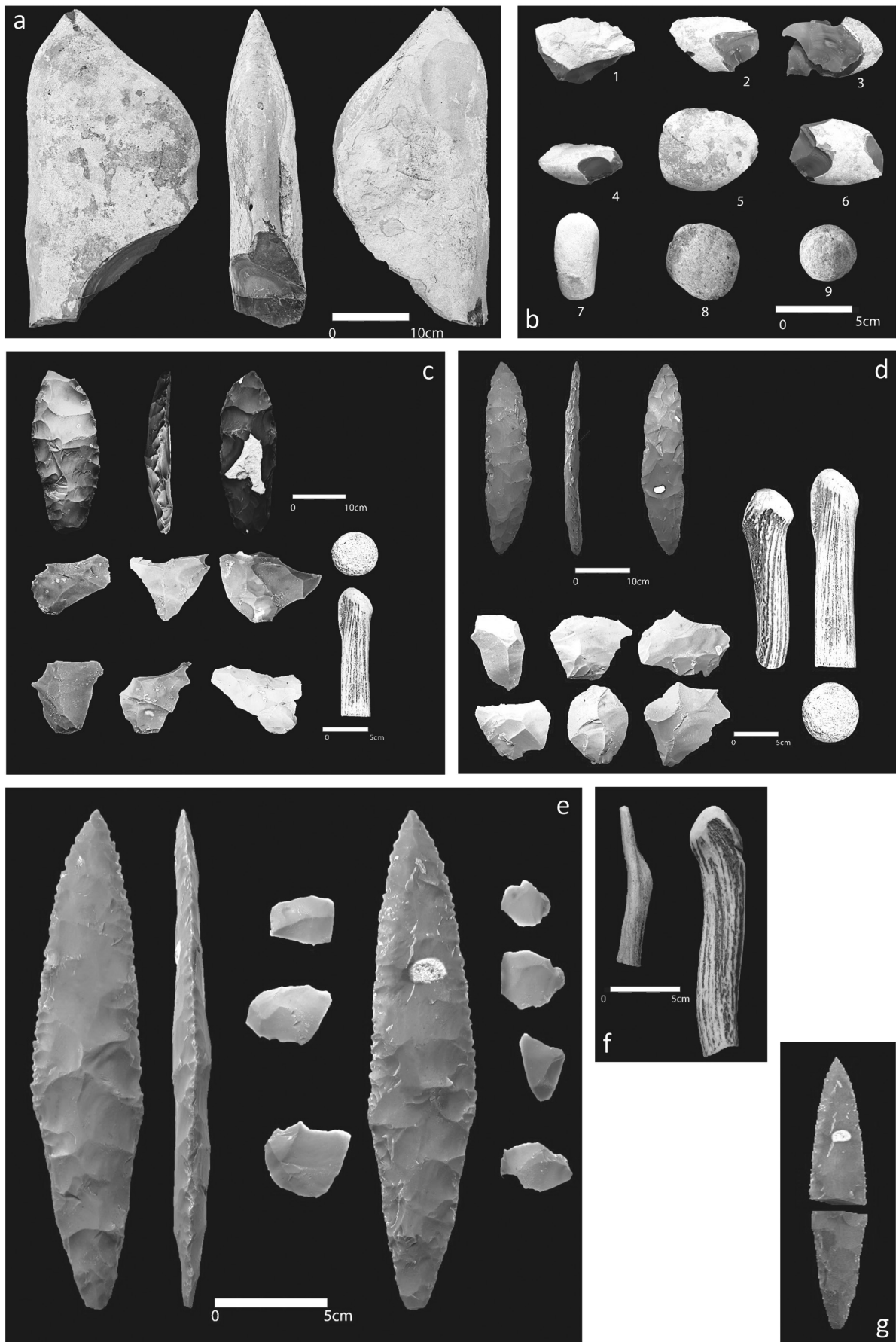
This initial stage serves the de-cortification of the nodule and the establishment of a bifacial platform by which bifacial thinning can be started; it is executed by hard hammer percussion, leaving broad flakes with high platforms remnants and large cortex proportions (Fig. 10b: 1-4). The most efficient method to establish the platform is the “zig-zag strategy”. Platform creation could be accompanied by initial thinning. Heavy hammerstones (Fig. 10b: 7-9) allow for reducing more mass and produce large spalls for other tools (Fig. 10b: 5-6).

### *Stage 3a: Initial bifacial thinning and shaping*

This stage (Fig. 10c) represents the start of bifacial thinning and preparing the dagger's raw form, performed by direct soft hammer flaking using small hammerstones and antler billets; bifacial thinning flakes (BTFs) of Stage 3 are thicker and more curved than those of Stage 3b, and have wider platform remnants. The thinning strategy has to determine the longitudinal axis of the later dagger, and thinning/ shaping has to be systematically executed for both faces. Most successful is the alternate use of smaller soft hammerstones in combination with bigger antler billets.

### *Stage 3b: Advanced bifacial thinning and shaping*

Advanced bifacial thinning and shaping (Fig. 10d) is also executed by direct soft hammer flaking; the use of soft antler billets is more efficient than the use of small hammerstones. By this stage the dagger's straightness and shape are established, and BTFs become thinner and less curved. Platform preparation becomes essential (ridges are getting shallow with less convexity). This stage has the highest risk for knapping accidents from step/hinge flakes, a bad support and/or strokes missing the platform.



#### Stage 4: Final shaping and edge serration

Stage 4 is the final lateral shaping by direct parallel and sub-parallel soft hammer flaking and subsequent pressure flaking and serration (Fig. 10e), using small antler hammers and then bone or antler tines (Fig. 10f). The replicative studies show that risk levels at this stage are much lower since serration and re-sharpening do not require degrees of specialisation like Stage 3 and can be done by less skilled craftspersons, meaning that this might have been an issue of labour division.

Fig. 10g is illustrated to record the dramatic fate of this series (Fig. 10), ending with the medial breakage of the near-final product.

Three major types of fatal/ruining knapping accidents are frequent in experimental dagger production: 1) hinge/step terminated flakes resulting from bad platform angles and/or from insufficient stroke energy; 2) unintentional overshoots with too much energy or/and a failed positioning of the blow, removing part of the opposite edge; and 3) snap fractures resulting from either blows missing the platform or a bad support resulting in additional bending stress.

Seen from the experimental perspective (*cf.* also comments in the paper's other sections), the Ba'ja Dagger production must have been extremely time consuming, skill demanding and highly failure sensitive. The use of the Ba'ja Daggers for cutting or stabbing is seen as being impossible; their edges would turn dull rapidly (in contrast to the razor-sharp edges of naviform blades), or they would break immediately. Furthermore, carrying them permanently is highly risky, too, and would have been a constant fracture risk and resulted in dulled edges. In addition, we must expect that they were kept stationary/stored, and were not moved much. The author (D.Š.) studies household wear in Ba'ja and its technological frameworks, as well as insights received by the replication. He presents here his special vote, saying that he cannot imagine that the Ba'ja Daggers had a practical tool function beyond being ritual objects in sepulchral environments, or display objects at the utmost in living environments.

### 7. Social, ritual and symbolic frameworks (H.G.K.G., M.B.)

The Ba'ja Daggers are embedded in the milieus of productive commodification which self-reinforcingly culminated during the LPPNB mutually promoting the securing and controlling of the natural, social and cognitive resources in large parts of the southern Levant. This took

place to a hitherto unprecedented extent while many traits of these commodification regimes still show inherent traits of the preceding late foragers' value systems. LPPNB commodification in the southern Levant, especially in the Transjordanian Highlands, is characterised by hypertrophic acceleration and agglomeration processes (*e.g.* in settlement layout, crafts, population dynamics, social differentiation, exchange systems, etc.). It finally ended in many regions – from 7000 BCE – by the collapse of its fast-growing systems (*e.g.* the collapse of the promoting LPPNB megasites in the Transjordanian Highlands) through not finding the solutions in time for the consequences of that hypertrophic development. Possibly this decline was also fostered by emergent alternative lifeways in the steppes, like advancing pastoralism and “industrial” hunting with kites, aside impacts resulting from over-exploitation of near-settlement habitats, and negative climatic developments. The late LPPNB must have been a period of intensified steppe contacts, an exchange through which we see the Ba'ja daggers arriving in the settlement. Would it be conceivable that the Ba'ja Daggers also represent a brought-in norm of the steppe for the dead, who had connections to, or came from, the steppe? Even though first strontium analyses point rather to a local origin of the late young adult man of Burial CG10 (Benz *et al.* 2019: S3), it cannot be excluded that others came from that area and influenced the ritual scripts decisively. The socio-cultural frameworks of the Ba'ja Daggers offer a rich base for speculations in this period of transformation at the LPPNB- FPPNB/PPNC junction ...

At any rate, the Ba'ja daggers are seen as an expression of securing and controlling social and cognitive resources: We interpret them as subjects of social differentiation and manifestation in the sepulchral regime, and most likely also in life. This interpretation also results from the overall view on the sepulchral activities in Ba'ja and Basta, and the related findings of the living social system and its cognitive dispositions: The sepulchral spheres of that time most likely were an essential part of social life, especially insofar that most dead remained physically and above all psychologically, part of the community's extended households, by being “locked” in their intramural cemeteries.

Another important aspect in understanding the social and cognitive frameworks of the Ba'ja daggers, is the period's societal constitutionality. We assume that this was ruled by habitus conventions and group selves shared by individuals (for the explanation of this social type *cf.* Gebel 2017), all of them functioning by rather informal but fierce

Fig. 10 (left page). Replicative Study: The experimental *chaîne opératoire*. a) Stage 1: selected raw material: lenticular nodule acquired near Shoubak; b) Stage 2: primary reduction products from de-cortification and the creation of a bifacial platform by direct percussion (hammerstones: 7-9); c) Stage 3a: early bifacial thinning and shaping by direct flaking/soft hammer; d) Stage 3b: advanced bifacial thinning and shaping by direct flaking/ soft hammer; e) Stage 4: final shaping and parallel retouching by pressure flaking/small soft hammer; f) Stage 4 antler billet; g) example for the loss of a product by a near-end breakage (Photos: D. Štefanisko).

ritual and symbolic regimes (as opposed to the external and similarly fierce northern regimes marking the other end of the habitus-ideocracy polarity, cf. Gebel 2017).

We could not identify pre-funeral social, cognitive or practical roles for the Ba`ja Daggers, apart those resulting from their initial commodification (production) and the supposed agency they gave and received by their pre-funeral existence (performative and prestige-/status-providing commodity; cf. the paragraph above on Pre-funeral “Use”). It remains open whether the dead “receiver” of a dagger was also the living “bearer” of the dagger, or if the dagger was obtained for the funeral and had a period of performance and status-support for an entitled “curator”. If the daggers would have been personally owned and transferable (e.g. inheritable) items – like e.g. the *khanjars* in sub-recent and today’s Southeastern Arabia, carried for documenting malehood and prestige to be shown, we would expect a more common and wider contextual evidence for them. Our current hypothesis is that they were status-marking and status-giving items supporting the social and memory function of the mutually approved bearer/recipient (commodity by status) for especially the sepulchral sphere. We explicitly do not exclude performative and status-giving functions of the daggers for their pre-funeral existence. These arguments lead to our interpretation that – given the still rather egalitarian social environments at Ba`ja (Gebel 2017) – a dagger was assigned to leading/important members of the community, *primi inter pares* (Benz *et al.* 2019).<sup>11</sup>

Among the acts that must have been related to a sequential funeral rituality and its symbolism, two of them explain the fundamental role of daggers: 1) the act of physically transforming the dagger’s function and power, i.e. by breaking it into pieces or possibly by snapping off/burinating its tip; and 2) the act of depositing the dagger by attributing it to the entitled dead. As explained before under the biographic and commodification properties and traits of the Ba`ja Daggers, these funeral-related acts of de- and ex-commodification also represent a fundamental shift for the meaning of the daggers: Through both acts they also became subjects – *sensu* a mean or a tool – of status transfer, whereas they were objects of a living world before. Needless to say, that this shift requests a re-commodification, meaning to make the object of power/force and performance a subject of funeral rituality and its termination symbolism. These (needed) fine-tuned distinctions are made only visible by applying the commodification concept.

Single cist-type burial CG10 (“Usaid”) is special in a sense beyond what was described in Benz *et al.* 2019: The other two daggers (Burials CG1 and DG1) lost their affiliation, since succeeding burials in the collective burials let the daggers dissociate from the skeleton of

the entitled person (like it is true for all collective burial objects). This was hindered in the case of CG10 in the strongest terms: Here the dagger was fixed and sealed – with other burial objects – in a separate hard gravel/mortar bed under a plaster floor and above the actual burial’s stone cover (Table 2)<sup>12</sup>. Does this mean that the dagger and its testimony had to be prevented from being manipulated or removed? And is it also the reason why an “outsourcing” of the dead into a single burial took place, a collective burial was avoided? This – if it really was a debated status affair occurring with the funeral – would make Burial CG10 even more unique. The other burial objects testify the outstanding character of CG10’s individual, too.

Acts of testifying and burying terminated power and functions (Benz *et al.* 2019), are also attested by other funeral inventory (arrowheads with snapped off tips; the mace head fractured *in situ* in CG10; fragmented items such as stone vessel sherds, handstones, and possibly the deliberately fractured burial cover slabs, as observed with many children burials). They reflect similar cognitive dispositions like visible in Ba`ja’s life domains (habitation, production, rituality and exchange regimes). They testify that more acts and behaviour are driven by isolating/banning and terminating or manipulating powers and forces, and by the agencies of the things related (Gebel 2002).

In terms of symbolism: As it is evident by the three findings, daggers entered by their deposition a protected area; but did they become unremovables? Two of them remained at least accessible in their open collective sepulchral environment (while one was fractured). It cannot be ruled out that daggers were later removed from burials. But this appears unlikely, since at least other findings from Ba`ja and Basta seemingly attest to an untouchability of objects holding agency from “the former others”/the – even unknown – predecessors; but this evidence relates to common objects and materials (Hermansen 1997, Gebel 2002). These considerations make the sealing of objects in the upper cache of Burial CG10 even more conspicuous.<sup>13</sup>

## 8. Summary (H.G.K.G., M.B., C.P., D.Š.)

The following summary statements on the Ba`ja Daggers’ evidences pursue the identified biographic order and domains.

1. Ba`ja Daggers are extremely rare, and so far have been found only in a later phase of the PPNB burial contexts of Ba`ja. Other kinds of bifacially flaked daggers start to appear from the later part of the MPPNB, and may have taken over in the FPPNB/PPNC (especially the Tuwailan-type daggers/knives/foliate) the ritual competence of the Ba`ja Daggers in more common ways.



2. The Ba`ja Daggers appear to be part of the ritual inventory of the LPPNB villages' sepulchral regimes, which are controlled by the social and cognitive frameworks of a strict societal habitus and group selfs' constitutionality (Gebel 2017), controlling any social expression by a supposedly fierce informal rituality and symbolism (Benz 2017).
3. The daggers' raw material acquisition and manufacture at specialised workshops took place outside regional contexts. Most likely the workshops performed the complete production near flint sources in the eastern steppes (e.g. the Greater Ma'an/al-Jafr regions); tabular flint sources may have been preferred.
4. Manufacture was a time-consuming, very skilful and risky task, but possibly also very prestigious work. Especially the near-final stages, using combined bifacial direct soft hammer and pressure flaking, which were sensitive to successfully achieve the intended full coverage of both faces by parallel (and scalar) retouching without breakage; pressure flaking most likely was the preferred albeit less risky method once possible in the operational chain. Skills indicate that the experienced craftspeople must have produced these items frequently in larger quantities, most likely supplying larger and distant demand areas.
5. Dagger production creates a commodity with high commodification potential in several domains of LPPNB life and death; it unites the basic traits of both a commodity of intangible destination, and of metamorphosis (to become a subject in sepulchral environments). Biographically it moves through all stages a commodity can go through: commodification, re-, de- and ex-commodifications.
6. For the LPPNB villages, the procurement of the daggers probably came via the pastoral connections they had with networks existing in the steppe, or of which they had become a part. If inhabitants of Ba`ja were also inhabitants or users of the steppe, a direct transfer of the daggers to Ba`ja may have taken place. Otherwise, local trade via third agents may have let the daggers arrive in Ba`ja. At any rate, they can be seen as a "steppe/desert signal".
7. The daggers apparently were not an item of daily use. The daggers should be interpreted as primarily prestige/status-marking and -providing items at the advent of LPPNB social hierarchisation (In Ba`ja this possibly remained on the level of a segmentary community which situationally assigned its leaders/leader groups, or represented a flat-topped chiefdom at the utmost.). If the daggers at this stage of their biography were personal *sensu* a "dividual" property at all, for which no evidence would exist, they also would have had a performative, prestige-giving and status-supporting purpose for the entitled "curator"/bearer, before they became a sepulchral subject and burial object.
8. If not before, at least by the arrival of a dagger in the village, it becomes an eye-catching commodity of destination. The three daggers appear not to show clear signs of use/wear, except that one has a slight polish on the surfaces and at the edges (probably from protecting wrapping during storage). Since the daggers were fragile and not repairable when broken, they must have become also precious for arriving unharmed in the demand area. Aside from their other agencies, they certainly provided exclusiveness to those entitled to have or control them. In their pre-funeral existence, the Ba`ja daggers most likely had a "silent" performative and prestige-/status-providing social function.
9. As said before, it remains unclear if and how the Ba`ja Daggers pass through acts of re-, de- and ex-commodifications during their contact with village life. However, after getting re-commodified as a burial object and in addition as a sepulchral subject/tool, they can – but seemingly must not – become symbolically de-commodified by destructive measures (breakage during burial ritual, burination questionable), followed by a (kind of) ex-commodification through depositing it in a burial: While it becomes invisible by this type of ex-commodification, it does not lose its testimony and retains a transformed agency by everyone who knows that "it is there". The question whether the daggers were used by specific actors to kill animals during the sepulchral rite has yet to be tested.
10. The buried daggers are strong documents for a confirmed and/or ascribed status to the dead which was terminated by "burying the power" of a *primus inter pares* (Benz *et al.* 2019). Other fragmented or destroyed burial objects may symbolise other traits ascribed to – or "commenting" – the dead, as does the empathies attested with burial gifts or furnishings for infants and children in Ba`ja (Benz 2020, forthcoming b).
11. Daggers inside burials may have had an untouchable status and may have been understood as not removable. Debated terminations/de- and re-commodification may have existed and led to protection measures inside a burial (the case with Burial CG10?).
12. The re-use of daggers/dagger fragments from disturbed burials may have occurred, and may be the result of social disconnection.

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## Notes

- <sup>1</sup> Serration is understood as showing pointed teeth, denticulation as showing “rounded or squared” teeth like saws/sickles may have.
- <sup>2</sup> It was an astonishing result of the replicative study to understand to what extent skilled direct soft hammer flaking can be involved to produce the daggers, a matter also confirmed by distinguished chipped stone experimental expert Phil Wilke. However, applying the soft hammer techniques is also the reason for the high breakage risk during the time-consuming manufacture of the daggers, as experienced during the replicative study for Stage 3b. Phil Wilke by letter, 30 Sept. 2019: “This kind of work is very, very difficult to do, if it is entirely done by percussion except, I believe, for the final edge work to get straight margins, before doing the denticulations, or minor “teeth” on the margins. The trouble with this kind of work is trying to keep the piece from breaking when hit near the ends, and one of these is over 20 cm long. I don’t know how one person could do it. The well-known Danish daggers ... are pressure flaked, and this can be done without undue worry for breakage, like there is no real “shocking” of the workpiece as there is in percussion flaking. One might bind the workpiece to a splint of wood, holding it very tightly that way, while working by percussion on a short segment of one entire margin of the work piece. ... These items conjure up thoughts of prestige markers?, grave accompaniments for afterlife?, anything but actual work. They are a true enigma.”
- <sup>3</sup> The three daggers from Ba`ja are currently on display in the new Petra Museum (F.no. 32182.119 from Burial DG1) and in the Jordanian National Museum in Amman (F.no. 52024 from Burial CG1); Dagger F.no. 92019 from Burial CG10 is stored in the premises of the Department of Antiquities in Petra.

- <sup>4</sup> Despite a larger number of burials (c. 38), Basta does not show evidence for Ba`ja Daggers (except for the possible fragment Fig. 5:4). Otherwise, there is evidence from secondary LPPNB contexts and FPPNB/PPNC-related deposits for bifacially worked foliates with parallel/ sub-parallel flat-retouching all along both edges (including a fish-tail tile knife, *cf.* Fig 5:2), as well as very few Tuwailan-type artefacts.
- <sup>5</sup> A basic distinction of daggers vs. knives is made by understanding the first as symmetrical double-edged and knives as non- or semi-symmetrical single-edged tools, aiming to distinguish butting and cutting types of penetration.
- <sup>6</sup> Short definition: Commodification in early productive milieus is understood as the capacity to make tangible and intangible things subjects of common acceptance and value by (re-) production and use, and to receive and maintain social values through this; it flourishes best in milieus of confined reciprocity and by – at least incipient – social stratification; they initiate interrelated and self-promoting systems in their environmental, technological, social, cognitive and ritual milieus; it creates complex and prolific and thus growth-sensitive material and immaterial subsystems, regimes, and identities (concepts first presented in Gebel 2010, 2013a, 2013b).
- <sup>7</sup> The long “shark-toothed” cutting edges of the Ba`ja Dagger cannot easily be assigned to a practical use. Aside from being a quite fragile close-range weapon, the penetration capacity would have been hindered by the serration. For the same reasons, it cannot be assumed that they were tools for sustained cutting or even sawing. Unlike the replaceable elements of composite sickles, a used and long serrated edge of a dagger cannot be kept re-furnished easily. These practical reasons also do not make the Ba`ja Daggers appear to be utilitarian. The impractical and serrated edges of the daggers, on the other hand, increase the showiness and fierceness of the artefact.
- <sup>8</sup> A socially effective formal display of the daggers must not necessarily be postulated: For the agency effect – including the status-giving and -supporting –, it is only important that the community and its groups know of the presence of the dagger in the possession of the entitled person.
- <sup>9</sup> Another medial and quite attractive fragment of a Ba`ja dagger was found in secondary context (F.no. 22165, Layer D12:50 above an LPPNB floor in Room DR6); it may originate from a burial and was later reworked into a burin (identified by D. Štefanisko).
- <sup>10</sup> The piece presented here took 21-23 h of work (5 years knapping experience) for the nodule shown in Fig. 10a. A thinner and smaller nodule, or a piece

of tabular flint with more suitable dimensions, would have taken less time and produced less debitage.

- <sup>11</sup> This hypothesis includes the notion that “pre-funeral” daggers became transferable when entitled holders/receivers lost their societal acclamation of status in the habitus self-organizational structures consisting of group selves.
- <sup>12</sup> This separation of burial could also indicate a divided burial ritual, in which first the corpse was buried with its personal objects and then the status was ascribed by the dagger and other depositions in a following act. It may relate to an individual having unique properties or abilities, e.g. willpower/courage, social or martial skills/ leadership or healing qualities, special mental or spiritual properties, bodily appearance, performance capacities etc. Of course, “sepulchral messages” by objects/gifts may not only be driven by respect; they can include expressions of empathy by the surviving, and must also be expected for other kinds of *prima inter pares* as this might be the case with Burial CG7 “Jamila” (Benz *et al.* 2020, forthcoming a).
- <sup>13</sup> More questions are related to the daggers’ symbolism: Prestige due to exotic provenance/biographies? Was there an original symbolic meaning transferred/not transferred from the production area? Would the flint knappers of Ba’ja be “entitled” to produce such daggers themselves? Is the dagger production related to exclusive rights? These and other subjects are to be treated in Gebel *et al.* in prep. b.

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