

# Kent Academic Repository

## Full text document (pdf)

### Citation for published version

Richter, Tobias and Bocaege, Emmy and Ilsøe, Peter and Ruter, Anthony and Pantos, Alexis and Pedersen, Patrick and Yeomans, Lisa (2019) Ochre, ground stone and wrapping the dead in the Late Epipalaeolithic (Natufian) Levant: revealing the funerary practices at Shubayqa 1, Jordan. *Journal of Field Archaeology*. ISSN 0093-4690. (In press)

### DOI

### Link to record in KAR

<https://kar.kent.ac.uk/73785/>

### Document Version

Author's Accepted Manuscript

#### Copyright & reuse

Content in the Kent Academic Repository is made available for research purposes. Unless otherwise stated all content is protected by copyright and in the absence of an open licence (eg Creative Commons), permissions for further reuse of content should be sought from the publisher, author or other copyright holder.

#### Versions of research

The version in the Kent Academic Repository may differ from the final published version.

Users are advised to check <http://kar.kent.ac.uk> for the status of the paper. **Users should always cite the published version of record.**

#### Enquiries

For any further enquiries regarding the licence status of this document, please contact:

[researchsupport@kent.ac.uk](mailto:researchsupport@kent.ac.uk)

If you believe this document infringes copyright then please contact the KAR admin team with the take-down information provided at <http://kar.kent.ac.uk/contact.html>

# **Ochre, ground stone and wrapping the dead in the Late Epipalaeolithic (Natufian) Levant: revealing the funerary practices at Shubayqa 1, Jordan**

Tobias Richter, Emmy Bocaege, Peter Ilsøe, Anthony Ruter, Alexis Pantos, Patrick Pedersen, Lisa Yeomans

## **ABSTRACT**

The appearance of rich and diverse funerary practices is one of the hallmarks of the Late Epipalaeolithic Natufian in the Levant. Numerous burials at a number of sites excavated mostly in the Mediterranean zone of the southern Levant have fed into the interpretation of the Natufian as a sedentary society of complex hunter-gatherers. Here, we report on the human remains recovered from Shubayqa 1, a well-dated early to late Natufian site in northeast Jordan. The majority of the minimum of 23 individuals that are represented are perinates and infants, which represents an atypical population profile. Ground stone artifacts and traces of colourants are associated with some of these individuals, providing a rare insight into funerary treatment of subadults in Natufian contexts. We interpret the Shubayqa 1 evidence in the light of current and ongoing debates concerning Natufian burial practices and the issue of social complexity.

## **KEYWORDS**

Natufian, Epipalaeolithic, mortuary practices, ochre, wrapping, fragmentation, Jordan, southwest Asia

## **INTRODUCTION**

The appearance of large numbers of graves and the richness and variability of burial practices have widely been considered as one of the hallmarks of the Late Epipalaeolithic Natufian (c. 14,600 – 11,500 cal BP). Dorothy Garrod, who defined the Natufian initially, found numerous and diverse types of graves during her excavations at Shuqba and el-Wad (Garrod 1932a, 1932b; Garrod and Bate 1937). Some of these graves featured body decorations (e.g. bead necklaces and headsets), and displayed a wide variety of burial practices, ranging from differences in burial position and the number of individuals in graves to primary and secondary inhumations. Over the course of the next several decades, as more and more Natufian settlements were excavated, the numbers of burials and the diversity of burial practices steadily increased (Belfer-Cohen 1988, 1995a, 1995b; Belfer-Cohen, Schepartz, and Bar-Yosef 1991; Belfer-Cohen and Hovers 1992; Bocquentin 2007; Byrd and Monahan 1995; Croucher 2012; Lengyel and Bocquentin 2005; Henry 1989; Kuijt 1996). The treatment of the dead during the Natufian contrasts with burial practices prior to and after this period. Whereas there are still few burials

known from the early and middle Epipalaeolithic (Nadel 1995; Richter et al. 2010), burial practices in the subsequent PPNA are numerous, but are more homogenous in burial treatment (Kuijt 1996, 2002).

Natufian human remains have underpinned the interpretation of the Natufian as a semi- to fully-sedentary complex hunter-gatherer society. On the one hand, the placement of dead individuals beneath, beside and inside buildings has supported the idea of Natufian base-camps that served as major aggregation centers (Bar-Yosef 1998). Thus, the appearance of burials has been seen as an indicator for a reduction in mobility and increased sedentism in the Natufian. It has also supported the argument for the emergence of more confined and delineated territories, with burial grounds seen as indicative of increased territoriality (Bar-Yosef and Belfer-Cohen 2000; Belfer-Cohen 1991; Henry 1985). The inclusion of grave goods and the variety of burial practices – including the removal of crania (sometimes including mandibles), secondary burial, and a range of burial positions and grave installations – has also highlighted the Natufian as a phase in which symbolism, spirituality and human engagement with the dead changed suggesting that changes in the way in which humans related to the dead occurred. Lastly, human burials have also formed the basis on which many discussions concerning the social structure of Natufian society are based (Byrd and Monahan 1995; Grosman, Munro, and Belfer-Cohen 2008; Wright 1978). These discussions range from debates concerning the presence of social hierarchies and family structure, to the appearance of religious specialists.

In this paper, we present burial data from the early to late Natufian site Shubayqa 1 in northeast Jordan (Richter et al. 2012, 2014, 2017; Richter 2017a, 2017b), which provides yet another perspective on the treatment of the dead in the Natufian and, in particular, the youngest members of the group. The Shubayqa 1 burials are unusually skewed towards younger individuals with 80% representing the remains of neonates, infants and children. A small number of these were covered with red ochre, a treatment previously also recorded from the early Natufian site Azraq 18 (Bocquentin and Garrard 2016) where the crania of two adults were painted with red ochre. We draw connections between the appearance of ochre on some of the burials at Shubayqa 1, the association between burials and ground stone tools, the occurrence of ochre staining on many ground stone tools at Shubayqa 1, and the processing of hides with ochre, and argue that at least some bodies were wrapped in textiles or skins decorated with ochre. We discuss the implications of these practices for the treatment of children during the Natufian and the relationships and connections such practices entailed.

## SHUBAYQA

Shubayqa 1 is located to the north of the Qa' Shubayqa in the Jordanian Harra basalt desert (**Figure 1**). First identified during survey in 1993 (Betts 1998), and briefly excavated in 1996 (Betts pers. comment), the site was excavated on a larger scale between 2012-2015 (Richter et al. 2012, 2014, 2017; Richter 2017a, 2017b). Excavations have produced evidence for seven distinct phases of occupation stretching from the early to the late Natufian (between c. 14,400 – 11,600 cal BP, see Richter et al. 2017 for details). Although the site was not occupied continuously, architectural remains and the large quantity and diversity of finds attest to a series of recurrent and intense occupations. Two major architectural phases are evident: Structure 1 is the earliest and better preserved building and was set into a construction cut dug into the virgin soil. It represents a semi-subterranean oval-shaped structure, with its exterior wall made up of a single row of large basalt rocks set on edge and its interior covered by a paved floor, around a stone-lined fire pit. This structure was infilled by sediments and another

occupation event, characterized by a stone-lined fireplace and stone pavement, occurred afterwards. This succession of occupations occurred, according to radiocarbon dates and chipped stone typology, during the Early Natufian between 14,400 – 14,200 cal BP. Following the interment of this phase beneath further sediments, another building – Structure 2 – was built on top of Structure 1. This building is also a semi-subterranean structure, with a partly extant wall of upright standing stones and a paved basalt surface, which included several installations (a fireplace, cup-marked stones, ground stone mortar and grinding stones). The construction and use of Structure 2 is dated to the Late Natufian between 13,300 – 13,200 cal BP (Richter et al. 2017). A midden deposit accumulated above the paved floor and across the surrounding deposits after the abandonment of this structure. A number of deflated, less well-preserved structures were found in 2015 at the southern edge of the mound. These date to the final occupation of Shubayqa 1, which occurred in the Late/Final Natufian between c. 12,100 – 11,600 cal BP, but no human remains were found in association with this phase.

Both articulated skeletons and isolated remains of human perinates, infants and adults have been recovered from Shubayqa, amounting to a minimum number of 23 individuals (**Table 1**). Two main phases of burials have been identified, one within the time range of the Late Natufian and associated with Structure 2 (Phase 2 & 3, **Figure 2 & 3**), and another in the Early Natufian phase of the site and associated with a phase of reuse of Structure 1 (Phase 5, **Figure 2 & 4**). The following description of the burials is based on field observations and on-site anthropological analysis. Skeletal age was determined according to standard methods (Al-Qahtani et al. 2010; Buikstra and Ubelaker 1994; Fazekas and Kosa 1978; Scheuer and Black 2000). Age estimations for the perinates are based on dental histological analyses where teeth were available. Individuals whose teeth showed a neonatal line, a permanent microscopic marker of the transition from an intra- to extra-uterine environment, are referred to as neonates (Bocaeye et al. in prep.).

## LATE NATUFIAN BURIALS

In addition to the isolated remains found in a midden deposit (Context 20) and occupation debris (Context 40) above Structure 2, a cluster of disarticulated and highly fragmented adult human remains (Context 36) were also found overlying the paved floor of Structure 2. No grave cut was discernable for Context 36, and it is unclear whether the remains were placed in this position on the floor deliberately, or whether they were deposited as part of a gradual infilling of Structure 2 due to midden accumulation over time. The skeleton from Context 36 is represented by about 20 elements, mainly long bones (tibia, fibula, ulnae), parts of the cranium (parietal and frontal bones, and mandible) and smaller bones (metatarsals, phalanges, ribs and foot bones). None of these bones were found in articulation. While certain cranial features (prominent glabella and robust supraorbital margin) suggest that this skeleton is possibly male sex determination cannot be made with confidence due to the fragmentary nature of these remains. A quern (SF 245) was associated with the human remains; broken in half, its use surface was facing downwards towards the human remains and showed traces of red pigmentation (**Figure 4**).

Under the stone pavement of Structure 2, six burials (Contexts 51, 85, 96, 104, 108 and 112) were found, containing only subadult human remains (**Table 1, Figure 6**). Two of these (Contexts 51 and 85) were beneath a phase of pavement repair (Context 24) with the later burial (Context 51) partially truncating the earlier burial (Context 85). Context 51 (**Figure 6a**) is the primary burial of an infant (8 months – 1 year). The grave was covered by two ground stone artefacts: a large flat flagstone with a small cupmark on one face (SF-275) and a quern with two opposing use-faces (SF-209). The skeleton was nearly complete, except for the left scapula and humerus. The infant was lying on its right side in a flexed position, with the head to the northwest and facing south. The upper limb was flexed at the elbow

and was beneath the torso, whereas its left hand extended away from the body and was in close association with a lump of red ochre. Its left lower limb was flexed at the hip and knee with the foot close to the pelvis. This context also included intrusive developing crowns of deciduous upper and lower fourth premolars of an infant with a developmental age of 124 days (4 months). Context 85 (**Figure 6b**) is the primary disturbed burial of a neonate with a developmental age of 14 days. The upper body of this individual was truncated by a later burial (51), which cut away most of the upper body. The lower limb and foot bones were found in situ, indicating that this neonate was lying on its left side, in a flexed position. The remaining skeletal elements were displaced and found at the base of the later burial cut [54].

A further four subadult burials were found under the stone pavement (Context 22) of Structure 2. Context 96 (**Figure 6c, Sketchfab Model**<sup>1</sup>) contains a child (around 8 years of age at death). Most skeletal elements were represented, only the vertebrae and right ulna were missing. The child was lying on its left side in a flexed position, on top of some cobble stones. Its head was to the northeast and facing south. Its right hand was located on its chest. It is worth noting that a dentalium shell with chipped edges, probably due to wear (SF 742), was located near the cranium. But, as noted with regards to other Natufian burials (for example the bone awl behind the cranium of Raqefet H19 described by Nadel et al. 2012 or cases in Weinstein-Evron 2009), it is difficult to be certain if this shell was intentionally included in the burial fill or placed with the body, since the graves were dug into existing archaeological deposits that were rich in finds. This burial also included a fragmented neonate (right) radius and pedal phalanx, which might have originated from Context 112 (**Figure 6d, Sketchfab Model**), a disturbed primary burial of a neonate (1-3 months). Its cranium, upper limb and lower limbs were poorly preserved and the pelvis and feet were missing. The body was lying on its left side in a flexed position, with its head to the south. Its right hand was near its face.

Context 104 (**Figure 6e, Sketchfab Model**) is the primary burial of a perinate. The skeleton was nearly complete, only the cranial bones and humeri appeared damaged. The body was lying prone, with the cranium to the east. Its upper limbs were flexed at the elbow, with its hand by its head. Its knees were flexed, with the right tibia and fibula positioned slightly away from the mid-line body. The left tibia and fibula were beneath the body.

Context 108 (**Figure 6f, Sketchfab Model**) is a primary burial of a neonate (1-2 months of age at death) with most skeletal elements represented and in articulation. The body was lying on its left side in a flexed position. Its cranium was to the west and facing north. Its hands were located on its abdomen. Red staining was apparent across the whole skeleton including on the long bones, cranial bones, hyoid bone and on the occlusal surface of the developing deciduous premolars and lingual surface of the developing incisors (**Figure 8**). Yellow staining was apparent on the ribs. Context (108) and (51) were placed just to the west of an ochre-stained grinding slab (S.F. SHUB1-2013-404, **Figure 10**) that was installed into the pavement of Structure 2.

---

<sup>1</sup> The links provide access to 3D models for some of the burials from Shubayqa 1. These are available on the Copenhagen University Library, South Campus [HUMlab] sketchfab account. All 3D models were created using AgiSoft Photoscan 1.4.1. The models generated during during the current study are available in the Electronic Research Data Archive of the University of Copenhagen. The data can be downloaded from this link <https://sid.erd.dk/public/archives/f55d4ad8a7e41d718bc23164b6b806c3/published-archive.html>,

## EARLY NATUFIAN BURIALS

In addition to the isolated adult remains (Context 26) found outside a hearth inside the partially infilled Structure 1, four burials (Context 136, 189, 175 and 169) were recovered from underneath an area of paving laid outside the main structure in Phase 5 during a phase of re-use. Context 136 is the primary burial of a neonate (0-1 months of age at death) which had been slightly disturbed by an animal burrow at the north end of the fill (**Figure 6g, Sketchfab Model**). Most skeletal elements were represented and found in articulation. The body was lying on its right side in a flexed position. Its cranium was to the north and facing west and a red colourant staining the sediment was observed underneath the cranium (**Figure 6h**). The skull bones however, did not show any signs of red pigmentation. Both upper limbs were flexed at the elbow with the left hand underneath the chin. A geometric microlith (lunate) was found lying directly above the pelvis, but as in the case of Context 96 its presence could be incidental.

Context 189 (**Figure 6i, Sketchfab Model**) is a disturbed primary burial of an infant (7-8 months). The vertebrae and left ribs were not found in situ and the burial contained an intrusive isolated adult tarsal (left third cuneiform) and a perinate sphenoid body. The burial cut was roughly oval shaped, orientated east-west and measured 40cm in length, 32cm in width and 5cm in depth. The body was lying on its left side in a flexed position. Its head was to the north and facing east.

Context 175 (**Figure 6j, Sketchfab Model**) is the heavily disturbed primary burial of an infant (around 3 years at age of death) that truncated an underlying burial (Context 169). The burial cut was oval-shaped, measuring 32x22cm and had a depth of 10cm. Many cranial bones were missing, as were the clavicles, the left distal humerus and ulna and the right ossa coxae. These might correspond to the isolated human remains recovered from Context 157 in the backfill of the construction cut [158] for the wall <58> of Structure 1. The body was lying prone, with its cranium to the north, facing down. Its left hand was in front of its face and its right upper limb and hand extended to the north. Intrusive perinatal vertebrae and cranial and long bone fragments were also found in this burial.

Context 169 (**Figure 6j, Sketchfab Model**) is the heavily truncated burial of an adult. The burial cut was orientated east-west and measured 50x39cm. The cranium was missing, but the adult cranial fragments found in Context 175 and a mandible found in the construction cut backfill (Context 132, SF 918) might belong to this skeleton (**Table 1**). The body was lying on its left side in a tightly flexed position. Metric data (femoral and humeral head diameters) suggest that this individual is probably female, but a sex determination cannot be made with a high degree of confidence due to the fragmentary nature of the ossa coxae. There are striations on the medial side of the left humerus which could correspond to rodent gnawing. Red pigmentation is visible on the cranial fragments of Context 175 attributed to this skeleton (**Figure 7**).

### Burials Incorporating Ochre

Four burials from Shubayqa 1 show signs of pigment use the majority of which appears to be ochre: Context 51 (lump of ochre positioned close to left hand), Context 108 (red staining of long bones, cranium, hyoid bone, teeth; yellow staining on the ribs) Context 136 (ochre staining under the cranium), and Context 169 (red striations on cranium). The staining on the neonate from Context 108 was particularly prominent (**Figure 8**), with red pigmentation on most skeletal elements, including the long

bones, cranial bones, hyoid bone and the occlusal and lingual surfaces of the developing deciduous teeth and yellow staining apparent on the ribs. All of these, except Context 169, are the remains of very young children ranging from perinates to infants in age. The majority of these belong to the Late Natufian Phase 3. Context 169 is the only grave associated with some pigment that date to the Early Natufian Phase 5.

To confirm our visual determination for the presence of ochre X-ray fluorescence spectroscopy (pXRF) was employed to measure the concentrations of various elements in the stained and unstained areas of the neonatal bone, along with a range of controls including fresh and archaeological bone from other contexts, sediment samples and lumps of ochre from associated contexts at Shubayqa 1 (**Supplementary Table 1, Supplementary Figure 1**). We used the NITON XL3 GOLDD+ pXRF an energy dispersion x-ray analyser, fixed to a stable table stand at the Danish Museum of Natural History (SNM). The instrument is equipped with a 50 kV Au-anode and 200  $\mu$ A x-ray tube and a sensitive Large Area Silicon Drift Detector (LASDD). All measurements were made in standard room temperature and pressure (approx. 1 bar) without helium purge or vacuum. The resulting data were processed with “Standard Thermo Scientific™ Niton Data Transfer (NDT™) PC software suite” set for “Test all Geo” at four separate runs of: light elements, medium heavy elements, heavy elements and standard elements each measured for 120 seconds, producing estimated concentrations expressed as parts per million (PPM). The instrument’s precision is controlled regularly by running a one cm<sup>3</sup> test sample of Fantale Obsidian. The results of the analysis are averages calculated from multiple static measurements on each sample. These were taken at selected points on the bones while the mineral and sediment samples were homogenized with a mortar and pestle prior to scanning. The ppm concentrations of selected elements measured for these samples are presented in Supplementary File 1.

The pXRF analysis showed that concentrations of silica (Si), aluminium (Al) and potassium (K) are much higher in the sediment and ochre samples than in the bone, as expected. These elements are derived directly from the chemical weathering of the basalt regolith. However, levels of both Si, Al and to a lesser extent K are significantly higher in the archaeological samples than in the fresh bone, indicative of some diagenetic addition probably from illuviated clays. Conversely, concentrations of calcium (Ca) and phosphorus (P), the constituent elements of bone apatite, are more than a magnitude higher in the bone samples. The concentrations and relative proportions of these elements are comparable between the archaeological and fresh bone samples indicating that these are stable at Shubayqa 1, and not subject to loss by dissolution. The concentration of iron (Fe) is most relevant to confirming the presence of ochre at the site and on the neonatal skeleton. The mineral samples identified as ochre had Fe concentrations twice as high as the surrounding sediments but with comparable levels of Si and Al. This is consistent with ochre, a ferric oxide with variable amounts of clay and sand. These ochre samples also had higher concentrations of titanium (Ti) and magnesium (Mg) than the sediment. These elements like the Fe, were derived directly from the basalt regolith. Manganese (Mn) concentrations were also somewhat higher in the ochre samples than in the sediment. The sediment samples are homogeneous, with Fe concentrations at least three times as large as those measured on the stained area of the neonatal bone, so diagenetic iron transfer is probably a factor. The adult cranial fragment with no ochre staining had an Fe concentration nearly 16 times higher than the modern bone sample which had never been buried or subjected to diagenetic contamination. Titanium was also present in all the archaeological bone but could not be detected in the modern bone control. However, diagenesis alone cannot explain the variance in Fe and Ti concentrations in the bone samples because the concentrations of these elements on the bones with obvious staining were five to nine times higher than that of the cranium fragments with no staining. “Ochre staining” is strongly correlated with elevated

concentrations of the elements diagnostic of ochre. The most plausible explanation is the direct application of these as pigments.

## DISCUSSION

What were the funerary practices that resulted in the inclusion of ochre in the Shubayqa 1 burials? Some studies suggest that ochre staining was a secondary activity, with graves opened up after some time and skeletal elements covered with pigments after decomposition. Erdal (2015) argues that for the early Neolithic remains from Körük Tepe, the structured coloured pattern must have been painted directly on the bone, as the decomposition of soft tissue and internal organs would have prevented the transfer of neat lines of pigment without any deformation. Added to this, multiple cutmarks on the human remains from this site also point towards human intervention in the decomposition process. Similarly, Bocquentin and Garrard (2016) put forward several arguments supporting the secondary handling of the dead, such as the appearance of pigmentation in areas that contain large amounts of flesh and also in the lateral part of the orbit, which might imply that a modelled eye was placed in the orbit before staining. In contrast, Rosenberg (2011) explains ochre staining on skeletons of relatively well-articulated individuals as the result of the wrapping of the body with bitumen-soaked strings and subsequent 'ochre' scattering. During and after decomposition, both the strings and the pigment would then stain the bones. Similarly, there are several examples of the use of pigments in burials at Çatalhöyük (Boz and Hager 2013a).

There is no evidence for active defleshing of the Shubayqa 1 individuals, as cutmarks have not been observed on any of the skeletal material. The presence of labile articulations, e.g. of cervical vertebrae, hands, phalanges and metatarsals, hyoid rib/sternum, scapula/thorax or patella were in Contexts 108 and 136 would suggest rapid burial of the individuals after death, which would suggest that natural mummification did not occur (Duday 2009, 2012; Duday et al. 1990; Knüsel and Robb 2016, Knüsel, 2014; Knüsel and Robb 2016; Sellier and Bendezu-Sarmiento 2013). However, this may not have been the case for all the burials. Further taphonomic analyses of the skeletal materials will be undertaken in due course to shed further light on this particular question. At first, we also considered it most plausible that the ochre staining on the child remains was the result of a secondary burial practice, whereby graves were re-opened and the skeletal remains were painted or sprinkled with ochre. However, the perinatal, infant and child remains are highly fragile yet, unless disturbed by subsequent graves, were found in perfect articulation. Given the fragility of neonatal and infant bones, it is difficult to see how the skeletons would have remained in anatomically correct alignment if the graves had been opened up again as part of a secondary burial rite. It also seems improbable in the case of Context 108, which showed ochre staining on many of its long bones and the hyoid bone, which would likely not have stayed in situ had the ochre been applied during a secondary re-opening of the grave. In the case of Context 136 it seems particularly improbable, since the ochre staining was found underneath the cranium. Thus, painting bones or sprinkling pigment on them as part of a secondary burial rite seems improbable. It therefore seems more likely that the pigments stained the bones after decomposition had occurred. This raises the question as to how the ochre came to be included in the graves in the first place?

A possible explanation may be that at least some of the remains were originally inside a container or wrapped in skins or textiles, and that these were either painted or otherwise treated with ochre, as previously suggested by Rosenberg (2011) in the case of Demirköy. As decomposition



occurred the ochre remained and stained the bones. This explanation appears to be particularly applicable to Context 108, which has the most extensive evidence of staining. In the case of the other burials that show signs of ochre staining or contain ochre this interpretation is somewhat more tentative. Nevertheless, many of the burials were buried in tightly flexed positions, which has often been interpreted as evidence for the use of containers, bindings or wrappings (e.g. Bocquentin 2003, 137). Boyd (2017) recently reviewed evidence for wrapping human remains in the Epipalaeolithic and Neolithic of the Levant, and has argued that there is evidence for the widespread use of this technique. Furthermore, Dubreuil and Grosman (2009) also noted that there is ethnographic evidence for hides sometimes being treated or finished with ochre. Based on this evidence, along with use-wear analysis, they argued that some ochre-stained Natufian handstones from Hilazon may have been involved in processing hides. Evidence from the later site of Çatalhöyük also points to the use of wrapping or binding bodies (Haddow et al. 2015, 90-91, 2016, 98-99). Haddow and Knüsel (2017) suggested that these bindings and wrappings could be related to delayed burial practices. At Shubayqa 1, there are also multiple instances of ochre-stained ground stone tools, which are often closely associated with graves (see below). We argue that Shubayqa 1 provides yet more evidence for the practice of wrapping or binding bodies in the late Epipalaeolithic Natufian, and suggest that in some cases containers or the materials used for wrapping or binding may have been painted or stained with ochre. The evidence for Shubayqa 1 also shows that this practice was also sometimes used for very young individuals, a point we wish to further elaborate on and discuss below.

Beyond the use of ochre, and the probable use of hides or textiles to wrap bodies, the evidence from Shubayqa 1 also provides new insights concerning the relationship between spaces of the dead and the living. Subfloor burials within houses are not uncommon in Epipalaeolithic Southwest Asia, although they are more commonly associated with the PPNA and PPNB. In the Epipalaeolithic they have been documented in the Kebaran at Ein Gev 1 (Arensburg and Bar-Yosef 1973) and Kharaneh IV (Maher et al. 2012), in the Geometric Kebaran at Neve David (Kaufman 1987; Kaufman and Ronen 1988) and at some Natufian sites, e.g. Eynan - Ain Mallaha and Wadi Hammeh 27 (Edwards and Webb 2002; Valla and Bocquentin 2008)). It has been suggested that the association between houses and human bodies may relate to concepts of ownership and lineage (Byrd and Monahan 1995; Watkins 1992). Byrd and Monahan (1995) compared subfloor burials with cranial removal practices and argue that both are ways of affirming descent lines. Bocquentin et al. (2013), however, write that it is extremely difficult to stratigraphically associate burials with floors of active households and, as such, opinions about this association differ across sites and between researchers (Bar-Yosef 1998; Bocquentin 2007; Boyd 1995; Goring-Morris and Belfer-Cohen 2003; Perrot, Ladiray, and Soliveres-Massei 1988, Valla and Bocquentin 2008). Nevertheless, describing the burials associated with Final Natufian houses 203 (H156) and 200 (H160-166) at Eynan (Ain Mallaha), Bocquentin et al (2013, 190) argue that “there is no doubt that the end of the Natufian is characterized, at Mallaha, by a strong increase in the co-mingling of the dead and the living in residential space”. Boyd (1995), on the other hand, argued that burials preceded the construction of some buildings during the Early Natufian phase at Eynan - Ain Mallaha, and that the placement of the two largest structures (1 and 131) was deliberate overlying two clusters of burials. Thus, the buildings may have referenced the dead buried underneath.

At Shubayqa 1, burials are concentrated beneath stone pavements associated with two structures. While there is evidence for the lifting of pavement stones followed by the insertion of burials and the repair of the pavement, it is unclear whether or not some individuals were buried prior to the construction of the pavements. The interments apparently occurred as separate events, which were spaced out across time, because some of the burials truncated earlier graves and disturbed the remains

in them. There is evidence for the truncation of earlier burials by later interments, but the question of whether these burials were present prior to the construction of the building and pavement cannot be resolved. The repeated interment of individuals beneath the pavements and their subsequent repair, suggests that the structures continued to be ‘in use’, and that the living were indeed ‘living with the dead’. That said, we should point out that ‘in use’ is an ambiguous term, since it could involve either domestic or symbolic activities or, more likely, both. Indeed, as has often been pointed out before, these two domains may not be that easily separated in non-western societies in the deep past (Barrett 1989, 1991; Banning 2011; Croucher 2012; Goody 1977; Hodder 1982). At Shubayqa 1 there is some evidence for activities that were performed in relation to burial activities, while there is also evidence for more day-to-day, routine activities. These are not easily or straightforwardly separated. For now, we would observe that the living continued to occupy and use the buildings at Shubayqa 1, and that buildings were not abandoned after human remains were interred there.

While ochre occurs commonly in Natufian living spaces, its use in burials is more rarely attested, and its use in child burials has hitherto not been reported. Bocquentin and Garrard (2016) mention the presence of similar pigmented areas on some of the adult cranial remains from the Early Natufian site Azraq 18 (Jordan), including red staining on cranium 108 and yellow, pink and black stains on cranium 170–174. These may be analogous to the use of ochre in Context 169 at Shubayqa 1. Red pigmentation was also noted on postcranial bones from Wadi Hammeh 27, another early Natufian site in the Jordan Valley (Edwards and Webb 2002). Several burials at the Geometric Kebaran site ʿUyun al-Hammam were associated with pieces of ochre that were included in the graves (Maher et al. 2011). Traces of red or black staining are often found in later, Pre-Pottery and Late Neolithic contexts in the Near East, with ‘ochre’ often used as a general term denoting several kinds of pigmented earths (Bar-Yosef and Alon 1988; Boz and Hager 2013b; Haddow and Knüsel 2017; Molleson, Andrews, and Boz 2005; , Moore and Molleson 2000; Erdal 2013, 2015; Özbek 1998; Rosenberg 2011; Miyake et al. 2012). The presence of ochre in the Shubayqa 1 burials raises some potentially important questions concerning the role of children in Late Epipalaeolithic societies, burial customs, status and identity.

Based on his analysis of the Natufian cemetery at el-Wad, Wright (1978) argued that – amongst other indicators – the burial of young children together with adults in group graves, and the inclusion of dentalium shell beads in child burials, implied that some kin-groups held a higher status in Natufian societies than others. This led him to suggest that the Natufian group at el-Wad ascribed rank to certain groups and that society had become more hierarchical during the late Pleistocene. Henry (1989, 209–210) relied on this data to argue that the Natufian was a socially hierarchic complex hunter-gatherer society. Byrd and Monahan (1995) evaluated Wright’s argument using additional burial data from el-Wad, Hayonim and Eynan - Ain Mallaha, and found no correlation between the inclusion of grave goods, age at death and sex of individuals, grave construction or interment type, and rejected the idea of rank and ascribed status in the Natufian. Likewise, Belfer-Cohen (1995a) argued that – apart from broad similarities – late Natufian burial customs were highly site specific, and that a generally applicable pattern in mortuary practice was difficult to define, and concluded that “...evidence for social stratification in the Natufian, inferred from the decorated burials, is actually non-existent” (Belfer-Cohen 1995a, 16). Even the evidence from el-Wad, which Wright used in his original study, has recently been re-evaluated by (Weinstein-Evron 2009), based on the rediscovery of Dorothy Garrod’s excavation archive and re-excavation of el-Wad. Kuijt (1996) also studied burial customs during the late Natufian and PPNA in the southern Levant, and argued not only that there was no solid evidence for rank or hierarchy in late Epipalaeolithic and early Neolithic societies in the region, but that these groups may have intentionally limited and controlled the “accumulation of power and authority at the individual,

kin-group, household and community level” (Kuijt 1996, 331). The more recent discovery of the burial of an older female with an unusual inventory of grave goods and evidence for elaborate funerary feast has been interpreted as evidence for the emergence of ritual practitioners or specialists in the late Natufian (Grosman, Munro, and Belfer-Cohen 2008; Munro and Grosman 2010; Grosman and Munro 2016), although this does not necessarily imply ranking or the existence of a social hierarchy as such.

Generally speaking, various studies have produced little concrete evidence for the special treatment of young children during the Natufian. Belfer-Cohen et al (1991) showed that the average frequency of child remains at early and late Natufian sites was between 16.3 – 37.8%, with proportionally more children during the early Natufian (25 – 32.3%) than in the late Natufian (12.5 – 22.2%). Curiously, they noted that smaller sites tended to have higher proportions of children than larger ones which, they argued, is the opposite of what can be expected if the burials represent a normal cross-section of individuals in a population. Belfer-Cohen et al. (1991) accorded this phenomenon to bias introduced by a mixture of taphonomy and burial practices. Hershkovitz and Gopher (1990, 24) found that children made up 23.1% of the population in a sample of 368 individuals from the Natufian, while adolescents were less often represented (9.2%). They compared this to a PPNB sample of 303 individuals in which children and adolescents were more common than in the Natufian (32.3% and 16.8% respectively). In her extensive study of Natufian human remains recovered from El Wad, Erq El-Ahmar, Eynan - Ain Mallaha, Hayonim cave, Kebara, Nahal Oren, Raqefet and Shukbah, Bocquentin (2003) found that children under five are rarely integrated in funerary contexts. In other words, adult remains dominate at all Natufian sites, while children – and especially perinates and neonates – are not common.

Although the overall sample number is small, the picture emerging from Shubayqa 1 is very different, with 80% of the burials recovered being of perinates, neonates, infants and children. This highly unusual mortality profile raises the question whether this pattern is coincidental or whether or not it reflects a specific burial practice. It is important to bear in mind that excavations only revealed one structure in each occupation phase. It is entirely possible that if an adjacent, contemporary building was excavated that the mortality profile might be very different from that established to date. Nevertheless, this still highlights that the two successive structures in Phase 5 and Phase 3 appear to have been almost exclusively ‘special zones’ for the burial of the very young. Still, this could be coincidental: it is entirely possible to think of scenarios that may have led to a quick succession of deaths of very young individuals in the groups that occupied Shubayqa 1 that necessitated repeated, rapid burials perhaps due to disease or malnutrition. At present, there is no firm evidence for the presence of disease causing this, and no widespread evidence for malnutrition. Furthermore, it has to be born in mind that the two groups of graves occurred in two distinct phases that were – according to radiocarbon dates – approximately 700 years apart, yet interments were made in the same location. The repeated burial of individuals in the same age group, in separate graves that were clearly put into the ground on separate occasions does seem to suggest that these acts were more related to a specific funerary practice whereby the successive structures or locations were somehow reserved mostly for very young children. The only exception to this pattern is Context 169. However, stratigraphically Context 169 is the earliest intact burial and the subsequent interment of young individuals may have become an established pattern only afterwards. Judging by the available evidence, we tend towards suggesting that the observed patterns may reflect a socially circumscribed pattern and specific practice. One point that should also be considered is the possibility that the place of death of an individual may have had an impact on burial location. It could be postulated that newborn babies will probably have spent most of their young lives close to living structures, whereas adults will have roamed sometimes far and wide across the landscape

foraging, hunting and collecting raw materials. It could be envisaged that, unless the death of an adult occurred close to home, perhaps the various rituals and interments took place away from habitation structures. The bodies of newborn babies and infants, if death did occur whilst some distance from the habitation sites, could be easily transported for burial.

The presence of immature individuals, some with associated pigmentation, at Shubayqa 1 suggests that a certain degree of ritual around the burial of the very young. Beck (2015) argues that the inclusion of subadults in the funerary space and the similarity of adult and juvenile funerary treatments indicates that children were included in the social fabric of settlements and that membership of a social group might have been a more important aspect of an individual's social identity than accomplishments during life or relationships with other community members. The presence of ochre in some graves does not necessarily imply, however, that these individuals were treated differently, or that they were singled out due to status or rank. The presence of ochre in some graves and its absence in others could simply be a result of differential degrees of preservation. If, as suggested, the bodies were wrapped and that some of the wrappings were painted, it is entirely possible that staining did only occur in some cases, but not in others. At the same time, the use of different types of pigments, i.e. pigments other than ochre, may also not have resulted in staining of the skeletal remains. Furthermore, there simply is no clear link between the use of ochre and possible social differences. Ochre could have been used as part of the funerary ritual for a large variety of reasons. Ochre has known antibacterial properties, for example, as well as keeping away insects and protecting from sunlight (Rifkin et al. 2015). Some of these properties may have played a role in the use of ochre in Anga (central Highlands, Papua New Guinea) mummification practices (Beckett, Lohmann, and Bernstein 2011). The association of human burials with the use of red pigments has also often led archaeologists to suggest that the use of ochre may symbolize blood during the European Palaeolithic and Mesolithic (Bradley 1998; Parker-Pearson 1999; Tilley 1996). However, as Jones and MacGregor (2002, 8-9) have argued this cannot be seen as universal. The understanding and use of different colours is highly subjective and contextual and may have signified many meanings. At this point, we are a far way from having any understanding of the use of different colours by late Epipalaeolithic societies in southwest Asia, although the use of red ochre in this instance is no doubt significant. What this significance was is, at present, difficult to establish, but the use of red ochre was no doubt closely linked to the act of preparing the dead for burial, signifying a time of passage and change.

In addition to the use of ochre on wrappings and the inclusion of ochre in one grave, there also appears to be a recurrent association between ground stone artefacts and burials at Shubayqa 1. The infant remains under the repaired floor of Structure 2 (Context 51), were found directly below cup-marked mortars (SF 275) and a quern (SF 209). Both Context (51) and (108) were placed very close to a grinding slab with clearly visible ochre-staining on the working surface (**Figure 9**). Above this paved surface, adult human remains were found in close association with a broken quern (SF 245). This quern's active surface was facing the human remains and showed traces of pigment (**Figure 4 & 10**). There are other examples of ground stone artefacts with extensive ochre staining (e.g. SF SHUB1-2013-404, **Figure 10**). Given the limited internal space and the number of both ground stones and burials, this clustering of both artifacts and human remains in Structure 2 could be a coincidental association. However, various burial contexts in the Early and Late Natufian (El Wad, Hayonim cave, Hilazon Tachtit, Jericho, Nahal Oren, Raqefet, Wadi Hammeh 27) revealed similar associations (Belfer-Cohen 1988; Dubreuil and Grosman 2009; Nadel and Lengyel 2009; Nadel and Rosenberg 2011; Rosenberg and Nadel 2014; Rosenberg et al. 2012; Weinstein-Evron et al. 2007; Weiss et al. 2008; Wright 2000). It has been suggested that ground stone tools may have been considered as more than simply utilitarian

tools, serving a more symbolic function, reflecting social interactions and conveying a set of ideas and beliefs (Jones 1996; Rosenberg et al. 2012; Rosenberg 2013; Wright 2000). Wright (2000) argues that the labour-intensive Natufian ground stone tools may have been used as elements of social rituals, for example in funerary ritual. Added to this, Belfer-Cohen (1988) suggests that the ‘ochre’ stained pestles at Hayonim cave may have been associated with burial customs and ceremonies. Earlier, we mentioned Dubreuil and Grosman (2009) analysis of ochre-stained handstones from Hilazon, which they linked to hide working. We would argue that there may have been an important link between some ground stone tools, hide working, ochre and wrapping of bodies, based on the evidence from Shubayqa 1 and from these other sites. This mirrors and reiterates a similar connection recently put forward by Boyd (2017).

It is also noteworthy that most of the ground stone artefacts associated with the burials are fragmentary (e.g. **Figure 11**) Seventy-two percent of the ground stone artefacts from Shubayqa 1 are incomplete, and all of the ground stone vessels were found only as fragments. The high number of ground stone and stone vessel fragments is intriguing. The ground stone tools at Shubayqa 1 are often made from vesicular basalt, which is less likely to fracture and more difficult to break than non-vesicular basalt. It seems improbable that these breakages are all accidental. Indeed, it seems that many are the result from deliberate acts. At the same time, at least some of these objects were used to grind ochre pigment. Chapman (2000) and others (e.g. Gamble 2007; Rebay-Salisbury 2010) have highlighted the deliberate breaking of objects and deposition of fragments as resulting from social exchanges and interactions, through which people created associations between places, events and memories (see also Brittain and Harris 2010). Broken ground stone vessels, mortars and other ground stone objects often occur as fragments in Natufian sites (e.g. Rosenberg et al. 2012; Rosenberg 2013), and it has been often argued that breakage may have been deliberate (e.g. Bocquentin 2014; Hayden 2014). Hayden (2004; Hayden et al 2013, 137) related this to the occurrence of ritual feasting events during which deliberate wealth destruction occurred, arguing that vessels, especially ones with decorations, were seen as valuable items. Others have also suggested that ground stone tools were involved in the preparation of funerary feasts (Rosenberg and Nadel 2014).

It is therefore possible to postulate a connection between human burials, the pulverizing of ochre, hide working, the wrapping of bodies in ochre-treated hides or textiles, food processing and consumption, and the deliberate breaking of ground stone tools at Shubayqa 1 with each other. Ground stone tools were apparently involved in preparing mineral pigment to be used in the funerary process, as well as food. The tools were then broken and placed at or near the graves, although not inside. These acts – ochre grinding, hide working, food preparation, wrapping of the dead, burial, food consumption, and deliberate breakage of objects – can be thought of as performances centered on dealing with grief and re-affirming social ties, identities and roles (Butler 1993; Fowler 2002, 2003, 2010). We can think of the inclusion of ochre and the breaking and deposition of ground stone tools near graves as citations, which referenced other locales, events and people. Through the breaking of objects and the use of ochre in graves identities were created, affirmed and negotiated by the inhabitants of Shubayqa 1 during what one can assume to have been an emotionally challenging, difficult period of time. The use of ochre, in particular, which was imported to the Black Desert from areas where limestone dominates the landscape (probably further south and southwest in the Azraq Oasis area), referenced distant locales and events, which tied people into a broader social network and their social landscape. These funerary practices then enchain people with the social landscape through referencing other places and events, as well as people, and tied them into a social fabric that went far beyond the Qa’ Shubayqa.

## **CONCLUSION**

The human remains from Shubayqa 1 add considerable new detail to the treatment of very young children in Late Epipalaeolithic Natufian mortuary contexts in the Levant. The evidence suggests that perinates, neonates and infants were buried in skin or cloth wrappings, some of which had been painted with ochre. Individuals were buried beneath stone-paved floors on separate occasions re-using the same burial space. These pavements and structures appear to have been in continuous use after the remains were interred. Even very young individuals were therefore treated similarly to adults in that they received formal burial, although none of the Shubayqa 1 remains are clearly associated with grave goods. However, we have highlighted close connections between human remains, wrapping of the body, ochre and ground stone tools at Shubayqa 1, mirroring patterns described at other Natufian sites in the southern Levant. The use of ochre to decorate the dead was previously reported for adult burials from Azraq 18, a site situated in the same region as Shubayqa 1 and broadly contemporary with the earlier occupations at Shubayqa 1. This may potentially indicate cultural links and affinities between the two sites. Overall, these results indicate that Late Epipalaeolithic Natufian burial customs may be characterized by a more diverse set of practices than previously thought. Different Natufian groups inhabiting the Levant appear to have taken comparable, yet in their detail subtly different, approaches to the treatment of the dead. This evidence also shows that drawing out generalizations concerning status, social differentiation, emerging inequality or social hierarchies is challenging due to this variable record. Detailed taphonomic analysis of well excavated sets of human remains is necessary in order to reveal the subtle differences in burial practices apparent at different Natufian sites, and more archaeo-anthropological analysis is warranted to gain further detailed understandings of Late Epipalaeolithic funerary practices and their meanings.

## **ACKNOWLEDGEMENTS**

We are grateful to the Department of Antiquities of Jordan for granting permission to excavate at Shubayqa 1. We would also like to thank the local community in Safawi for their hospitality and support over the many years that we have worked at Shubayqa. We are grateful to Scott Haddow and Brian Boyd for comments on an earlier draft of this paper, and to Joe Roe for preparing the map in Figure 1. All mistakes, errors and omissions are our own.

## **FUNDING DETAILS**

Excavations at Shubayqa 1 were supported by a Danish Council for Independent Research Culture and Communication postdoctoral grant (#11-116136) and by a Danish Council for Independent Research Sapere Aude: DFF-Research Leader award (DFF-4001-00068B). Additional financial support was received from the Danish Institute in Damascus and the H.P. Hjerl Mindefondet for Dansk Palæstinaforskning. Emmy Bocaege's work was supported by an Initiative d'Excellence (IDEX) postdoctoral fellowship at the University of Bordeaux and a British Academy Fellowship at the University of Kent.

## REFERENCES

- Al-Qahtani, S. J., Hector, M. P., and H.M. Liversidge. 2010. Brief communication: the London atlas of human tooth development and eruption. *American Journal of Physical Anthropology* 142 (3): 481-490.
- Arensburg, B., and O. Bar-Yosef. 1973. "Human remains from Ein Gev I, Jordan Valley, Israel." *Paléorient* 1 (2): 201-202.
- Banning, E. B. 2011. "So Fair a House: Göbekli Tepe and the Identification of Temples in the Pre-Pottery Neolithic of the Near East." *Current Anthropology* 52 (5): 619-660.
- Bar-Yosef, O. 1998. "The Natufian Culture in the Levant. Threshold to the origins of agriculture." *Evolutionary Anthropology* 6 (5): 159-177.
- Bar-Yosef, O. and D. Alon. 1988. "Nahal Hemar Cave: The Excavations." *Atiqot* 18: 1-30.
- Bar-Yosef, O. and A. Belfer-Cohen. 2000. "Early sedentism in the Near East: a bumpy ride to village life." In *Life in Neolithic farming communities. Social organization, identity, and differentiation*, edited by I. Kujit, 19-62. New York: Kluwer Academic.
- Barrett, J. C. 1989. "Time and tradition. The rituals of everyday life." In *Bronze Age Studies*, edited by H. A. Nordstrom and A. Knape, 10-11. Stockholm: Statens historiska museum.
- Barrett, J.C. 1991. "Towards an archaeology of ritual." *Sacred and profane*: 1-9.
- Beck, J. . 2015. "Part of the family: age, identity and burial in Copper Age Iberia." In *Theoretical approaches to analysis and interpretation of commingled human remains*, edited by A.J. Osterholtz, 44-73. Heidelberg, New York, Dodrecht and London: Springer International Publishing.
- Beckett, R. G., U. Lohmann, and J. Bernstein. 2011. "A field report on the mummification practices of the Anga of Koke Village, Central Highlands, Papua New Guinea." *Yearbook of Mummy Studies* 1: 11-17.
- Belfer-Cohen, A. 1988. "The Natufian Graveyard in Hayonim Cave." *Paléorient* 14 (2): 297-308.
- Belfer-Cohen, A. 1991. "The Natufian in the Levant." *Annual Review of Anthropology* 20: 167-186.
- Belfer-Cohen, A. 1995a. "Rethinking social stratification in the Natufian culture: the evidence from burials." In *The Archaeology of Death in the Ancient Near East*, edited by S. Campbell, 9-16. London: Oxbow.
- Belfer-Cohen, Anna. 1995b. "Rethinking social stratification in the Natufian culture: the evidence from burials." In *The archaeology of death in the ancient Near East*, edited by Campbell, S. and A. Green, 9-16, Oxford: Oxbow Books
- Belfer-Cohen, A., L. A. Schepartz, and O. Bar-Yosef. 1991. "New biological data for the Natufian populations in Israel." In *The Natufian Culture in the Levant*, edited by Bar-Yosef, O. and F. R. Valla, 411-424. Ann Arbor, Michigan: International Monographs in Prehistory.
- Belfer-Cohen, Anna, and Erella Hovers. 1992. "In the eye of the beholder: Mousterian and Natufian burials in the Levant." *Current Anthropology* 33 (4): 463-471.
- Betts, A. V. G. 1998. *The Harra and the Hamad. Excavations and Surveys in Eastern Jordan, Volume 1*. Sheffield: Sheffield Academic Press.
- Bocquentin, F. 2003. "Pratiques funéraires, paramètres biologiques et identités culturelles au Natoufien: une analyse archéo-anthropologique." PhD diss., University of Bordeaux 1.
- Bocquentin, F. 2007. "A Final Natufian Population: Health and Burial Status at Eynan-Mallaha." In *Faces from the Past: Diachronic Patterns in the Biology of Human Populations from the Eastern Mediterranean. Papers in honour of Patricia Smith*, edited by M. Faerman, L. K. Horwitz, T. Kahana and U. Zilberman, 66-81. Oxford: British Archaeological Reports.
- Bocquentin, F., T. Cabellos, and N. Samuelian. 2013. "Graves in context: field anthropology and the investigation of interstratified floors and burials." In *Natufian Foragers in the Levant: Terminal Pleistocene Social Changes in Western Asia*, edited by O. Bar-Yosef and F.R. Valla, 185-192. Ann Arbor: International Monographs in Prehistory.

- Bocquentin, F. and A. Garrard. 2016. "Natufian collective burial practice and cranial pigmentation: A reconstruction from Azraq 18 (Jordan)." *Journal of Archaeological Science: Reports* 10:693-702. doi: <https://doi.org/10.1016/j.jasrep.2016.05.030>.
- Boyd, B. 1995. "Houses and hearths, pits and burials: Natufian mortuary practices at Mallaha (Eynana), Upper Jordan Valley." In *Archaeology of Death in the Ancient Near East*, edited by S. Campbell and A. Green, 17-23. Oxford: Oxbow.
- Boyd, Brian. 2018. "Ecologies of fiber-work: animal technologies and invisible craft practices in prehistoric southwest Asia." *Quaternary International* 468, 250-261.  
Doi: <https://doi.org/10.1016/j.quaint.2017.06.050>
- Boz, B., and L. Hager. 2013a. "Living above the dead: intramural burial practices at Çatalhöyük." In *Humans and Landscapes of Çatalhöyük: Reports from the 2000-2008 seasons volume 8*, edited by I. Hodder, 413-440. London and Los Angeles: Monumenta Archaeologica
- Boz, B., and L.D. Hager. 2013b. "Living above the dead: Intramural burial practices at Çatalhöyük." In *Humans and Landscapes of Çatalhöyük: Reports from the 2000-2008 Seasons*, edited by I. Hodder, 413-440. London and Los Angeles: British Institute at Ankara and Cotsen Institute of Archaeology Press.
- Bradley, R. 1998. *The significance of monuments: on the shaping of human experience in Neolithic and Bronze Age Europe*. London: Routledge.
- Brittain, M and O. Harris. 2010. "Enchaining arguments and fragmenting assumptions: reconsidering the fragmentation debate in archaeology." *World archaeology* 42 (4): 581-594.
- Buikstra, J.E. and D.H. Ubelaker. 1994. *Standards for data collection from human skeletal Remains*. Fayetteville: Arkansas Archaeological Survey
- Butler, J. 1993. *Bodies that matter: on the discursive limits of sex*. New York, London: Routledge.
- Byrd, B. F., and C. M. Monahan. 1995. "Death, mortuary ritual and Natufian social structure." *Journal of Anthropological Archaeology* 14: 251-287.
- Chapman, John. 2000. *Fragmentation in archaeology*. London: Routledge.
- Croucher, Karina. 2012. *Death and dying in the Neolithic Near East*. Oxford University Press.
- Dubreuil, L., and L. Grosman. 2009. "Ochre and hide-working at a Natufian burial place." *Antiquity* 83: 935-54.
- Edwards, P., and S.G. Webb. 2002. "The Natufian human skeletal remains from Wadi Hammeh 27 (Jordan)." *Paléorient* 28 (1): 103-123.
- Erdal, Y.S. 2013. "Life and Death at Hakemi Use." In *Interpreting the Late Neolithic of Upper Mesopotamia*, edited by Nieuwenhuys, O.P., R. Bernbeck, P.M.M.G. Akkermans and J. Rogasch, 213-223. Brepols: Turbhout.
- Erdal, Y.S. 2015. "Bone or flesh: defleshing and post-depositional treatments at Körtik Tepe (southeastern Anatolia, PPNA Period)." *European Journal of Archaeology* 18 (1): 4-32.
- Fazekas, I.G. and Kósa, F., 1978. *Forensic fetal osteology*. Budapest: Akadémiai Kiadó.
- Fowler, C. 2002. "Body Parts. Personhood and materiality in the earlier Manx Neolithic." In *Thinking Through the Body: Archaeologies of Corporeality*, edited by Y. Hamilakis, M. Pluciennik and S. Tarlow, 47-70. New York: Kluwer Academic.
- Fowler, C. 2003. *The Archaeology of Personhood: An Anthropological Approach*. London: Routledge.
- Fowler, C.. 2010. "Relational personhood as a subject of anthropology and archaeology: comparative and complementary analyses." In *Archaeology and Anthropology: Understanding similarities, exploring differences*, edited by D. Garrow and T. Yarrow, 137-59. Oxford: Oxbow Books.
- Gamble, C. 2007. *Origins and Revolutions: human identity in earliest prehistory*. New York and Cambridge: Cambridge University Press.
- Garrod, D. A. E. 1932a. "Excavations at the Wady el-Mughara (Palestine), 1931." *Quarterly Statement of the Palestine Exploration Fund* 64: 46-51.
- Garrod, D.A.E.. 1932b. "A new Mesolithic industry: the Natufian of Palestine." *The Journal of the Royal Anthropological Institute of Great Britain and Ireland* 62: 257-269.



- Garrod, D. A. E., and D. M. Bate. 1937. *The Stone Age of Mount Carmel*. Oxford: Clarendon Press.
- Goody, Jack. 1977. "Against ritual: loosely structured thoughts on a loosely defined topic." *Secular ritual* 25: 35.
- Goring-Morris, A. N. and A. Belfer-Cohen. 2003. "Structures and Dwellings in the Upper and Epi-Palaeolithic (ca 42-10k BP) Levant: Profane and Symbolic Uses." In *Perceived Landscapes and Built Environments. The cultural geography of Late Palaeolithic Eurasia.*, edited by S. A. Vasil'ev, O. Soffer and J. Kozlowski, 65-81. Oxford: British Archaeological Reports.
- Grosman, L., N. D. Munro, and A. Belfer-Cohen. 2008. "A 12,000-year-old shaman burial from the southern Levant (Israel)." *Proceedings of the National Academy of Science of the United States* 105 (46): 17665-17669.
- Grosman, L., and N. D. Munro. 2016. "A Natufian Ritual Event." *Current Anthropology* 57 (3): 311-331.
- Haddow, S., and C.J. Knüsel. 2017. "Skull retrieval and secondary burial practices in the Neolithic Near East: recent insights from Çatalhöyük, Turkey." *Bioarchaeology International* 1 (1-2): 52-71.
- Haddow, S.D., B. Betz, M. Milella, E.M.J. Schotsmans, C.J. Knüsel, and S.V. Moore. 2016. "Chapter 5 - Human Remains". In *Çatalhöyük 2016 Archive Report by members of the Çatalhöyük Research Project*, edited by S.D. Haddow, 87-114.  
[http://www.catalhoyuk.com/sites/default/files/media/pdf/Archive\\_Report\\_2016.pdf](http://www.catalhoyuk.com/sites/default/files/media/pdf/Archive_Report_2016.pdf)
- Haddow, S.D., C.J. Knüsel, B. Tibbet, M. Milella, and B. Bety. 2015. "Chapter 5 Human Remains". In *Çatalhöyük 2015 Archive Report by members of the Çatalhöyük Research Project*, edited by S.D. Haddow, 85-101.  
[http://www.catalhoyuk.com/sites/default/files/media/pdf/Archive\\_Report\\_2015.pdf](http://www.catalhoyuk.com/sites/default/files/media/pdf/Archive_Report_2015.pdf)
- Hayden, B. 2004. "Sociopolitical organization in the Natufian." In *The Last Hunter-Gatherers in the Near East*, edited by C. Delage, 236-308. Oxford: British Archaeological Reports.
- Hayden, B., Neil, C. and J. Shanshe. 2013. "What was brewing in the Natufian? An archaeological assessment of brewing technology in the Epipalaeolithic." *Journal of Archaeological Method and Theory* 20 (1): 102-150.
- Henry, D. O. 1985. "Preagricultural sedentism: the Natufian example." In *Prehistoric Hunter-Gatherers: The emergence of cultural complexity*, edited by Price, T.D. and J.A. Brown, 365-384. Orlando, Fla: Academic Press.
- Henry, D. O. 1989. *From foraging to agriculture: the Levant at the end of the Ice Age*. Philadelphia: Philadelphia University Press.
- Hershkovitz, I., and A. Gopher. 1990. "Paleodemography, burial customs, and food-producing economy at the beginning of the Holocene: A perspective from the southern Levant." *Mitekufat Haeven: Journal of the Israel Prehistoric Society*:9-47.
- Hodder, I. 1982. *Symbols in action. Ethnoarchaeological studies of material culture*. Cambridge: Cambridge University Press.
- Jones, A., and G. MacGregor. 2002. "Introduction: Wonderful Things - Colour Studies in Archaeology from Munsell to Materiality." In *Colouring the Past. The Significance of Colour in Archaeological Research*, edited by A. Jones and G. MacGregor, 1-21. Oxford, New York: Berg.
- Jones, T.L. 1996. "Mortars, pestles and division of labor in prehistoric California. A view from Big Sur." *American Antiquity* 62 (2): 243-264.
- Kaufman, D. 1987. "Excavations at the Geometric Kebaran site of Neve David, Israel." *Quartär* 37-38: 189-199.
- Kaufman, D., and A. Ronen. 1988. "Le sepulture Kabarienne-Geometrique de Neve David, Haifa, Israel." *L'Anthropologie* 91: 335-342.
- Kuijt, I. 1996. "Negotiating equality through ritual: a consideration of late Natufian and Pre-Pottery Neolithic A period mortuary practices." *Journal of Anthropological Archaeology* 15: 313-336.
- Kuijt, I. 2002. "Keeping the peace: Ritual, skull caching and community integration in the Levantine Neolithic." In *Life in Neolithic farming communities. Social organization, identity and differentiation*, edited by I. Kuijt, 137-164. London: Kluwer Academic/ Plenum.

- Lengyel, G., and F. Bocquentin. 2005. "Burials of Raqefet Cave in the context of the Late Natufian." *Mitekufat Haeven: Journal of the Israel Prehistoric Society* : 271-284.
- Maher, L. A., J. T. Stock, S. Finney, J. J. N. Heywood, P. T. Miracle, and E. B. Banning. 2011. "A Unique Human-Fox Burial from a Pre-Natufian Cemetery in the Levant (Jordan)." *PLoS One* 6 (1):e15815.
- Maher, L. A., T. Richter, D. Macdonald, M. D. Jones, L. Martin, and J. T. Stock. 2012. "Twenty thousand-year-old huts at a hunter-gatherer settlement in eastern Jordan." *PLoS one* 7 (2):e31447.
- Miyake, Y., O. Maeda, K. Tanno, H. Hongo, and C.Y. Gündem. 2012. "New Excavations at Hasankeyf Höyük: A 10th millennium cal. BC site on the Upper Tigris, Southeast Anatolia." *Neo-Lithics* (1/12): 3-7.
- Molleson, T., P. Andrews, and B. Boz. 2005. "Reconstruction of the Neolithic People of Çatalhöyük." In *Inhabiting Çatalhöyük, Reports from the 1995–99 Seasons*, edited by I. Hodder, 280-299. Oxford: Oxbow Books.
- Moore, A. M. T., and T. Molleson. 2000. "Disposal of Death." In *Village on the Euphrates: From Foraging to Farming at Abu Hureyra*, edited by A. M. T. Moore, G.C. Hillman and A.J. Legge, 277-299. Oxford: Oxford University Press.
- Munro, N.D., and L. Grosman. 2010. "Early evidence (ca. 12,000 BP) for feasting at a burial cave in Israel." *Proceedings of the National Academy of Sciences* 107 (35): 15362-15366.
- Nadel, D. 1995. "The visibility of prehistoric burials in the southern Levant. How rare are the upper Palaeolithic/ early Epipalaeolithic graves?" In *The Archaeology of Death in the Ancient Near East*, edited by Campbell, S. and A. Green , 1-8. Oxford: Oxbow.
- Nadel, D., A. Lambert, G. Bosset, F. Bocquentin, D. Rosenberg, R. Yeshurun, L. Weissbrod, A. Tsatskin, N. Bachrach, M. Bar-Matthews, A. Ayalon, Y. Zaidner, R. Beeri, and H. Greenberg. 2012. "The 2010 and 2011 seasons of excavation at Raqefet Cave." *Journal of the Israel Prehistoric Society* 42: 35-73.
- Nadel, D., and G. Lengyel. 2009. "Human-made bedrock holes (mortars and cupmarks) as a Late Natufian social phenomenon." *Archaeology, Ethnology and Anthropology of Eurasia* 37 (2): 37-48.
- Nadel, D., and D. Rosenberg. 2011. "Late Natufian Nahal Oren and its satellite sites: some regional & ceremonial aspects." *Before Farming* 3: 1-16.
- Özbek, M. 1998. "Human Skeletal Remains from Aşıklı, a Neolithic village near Aksaray, Turkey." In *Light on top of the black hill: studies presented to Halet Cambel*, edited by G. Arsebük, M.J. Mellink and W. Schirmer, 567-579. Istanbul: Ege Yayınları.
- Parker-Pearson, M. 1999. *The Archaeology of Death and Burial*. Stroud: Sutton.
- Perrot, J., D. Ladiray, and O. Soliveres-Massei. 1988. *Le Hommes de Mallaha (Eynan) Israel*. Paris: Association Paléorient.
- Rebay-Salisbury, Katherina. 2010. "Cremations: fragmented bodies in the Bronze and Iron Ages." In *Body Parts and Bodies Whole: Changing Relations and Meanings*, edited by K. Rebay-Salisbury, M. L. S. Sørensen and J Hughes, 64-71. Oxford: Oxbow Books.
- Richter, T. 2017a. "The Late Epipalaeolithic and Early Neolithic in the Jordanian Badia: Recent Fieldwork around the Qa' Shubayqa." *Near Eastern Archaeology* 80 (2): 30-37.
- Richter, T. 2017b. "Natufian and Early Neolithic in the Black Desert, eastern Jordan." In *Quaternary of the Levant. Environments, Climate Change and Humans*, edited by Y. Enzel and O. Bar-Yosef, 715-722. Cambridge, UK: Cambridge University Press.
- Richter, T., A. Arranz Otaegui, Michael House, A. Rafaiah, and L. Yeomans. 2014. "Preliminary Report on the Second Season of Excavation at Shubayqa 1." *Neo-Lithics* 14 (1): 3-10.
- Richter, T., L. Bode, M. House, R. Iversen, A. Arranz, I. Saehle, G. Thaarup, M. L. Tvede, and L. Yeomans. 2012. "Excavations at the Late Epipalaeolithic Site of Shubayqa 1: Preliminary Report on the First Season." *Neo-Lithics* 12 (2):3-14.

- Richter, T., J. Stock, L. Maher, and C. Hebrons. 2010. "An early Epipalaeolithic sitting burial from the Azraq Oasis, eastern Jordan." *Antiquity* 84 (323): 321-334.
- Richter, T., A. Arranz-Otaegui, L. Yeomans, and E. Boaretto. 2017. "High Resolution AMS Dates from Shubayqa 1, northeast Jordan Reveal Complex Origins of Late Epipalaeolithic Natufian in the Levant." *Scientific Reports* 7 (1):17025. doi: 10.1038/s41598-017-17096-5.
- Rifkin, R. F., L. Dayet, A. Queffelec, B. Summers, M. Lategan, and F. d'Errico. 2015. "Evaluating the Photoprotective Effects of Ochre on Human Skin by In Vivo SPF Assessment: Implications for Human Evolution, Adaptation and Dispersal." *PLOS ONE* 10 (9): e0136090. doi: 10.1371/journal.pone.0136090.
- Rosenberg, D. 2013. "Not just 'another brick in the wall'? The symbolism of groundstone tools in Natufian and early Neolithic southern Levantine constructions." *Cambridge Archaeological Journal* 23 (2):185-201.
- Rosenberg, D., D. Kaufman, R. Yeshurun, and M. Weinstein-Evron. 2012. "The broken record: The Natufian groundstone assemblage from el-Wad Terrace (Mount Carmel, Israel)—Attributes and their interpretation." *Journal of Eurasian Prehistory* 9 (1-2): 93-128.
- Rosenberg, D., and D. Nadel. 2014. "The Sounds of Pounding." *Current Anthropology* 55 (6): 784-812.
- Rosenberg, M. 2011. "Demirköy." In *The Neolithic in Turkey: New Excavations & New Research*, edited by M. Özdoğan, N. Başgelen and P. Kuniholm, 79-81. Istanbul: Arkeoloji ve Sanat Yayınları.
- Scheuer, L. and S. Black. 2000. *Developmental Juvenile Osteology*. London: Academic Press.
- Tilley, C. . 1996. *An Ethnography of the Neolithic*. Cambridge: Cambridge University Press.
- Valla, F., and F. Bocquentin. 2008. "Les maisons, les vivants, les morts: le cas de Mallaha (Eynan), Israël." In *Proceedings of the 5th International Congress on the Archaeology of the Ancient Near East*, edited by J. Córdoba, M. Molist, C. Pérez, I. Rubio and S Martínez, 521-547. Madrid: Universidad Autonoma de Madrid.
- Watkins, T. 1992. "The beginning of the Neolithic: searching for meaning in material culture change." *Paléorient* 18 (1): 63-75.
- Weinstein-Evron, M. 2009. *Archaeology in the Archives: Unveiling the Natufian Culture of Mount Carmel, American School of Prehistoric Research Monograph Series*. Boston: Brill.
- Weinstein-Evron, M., D. Kaufman, Bachrach N., G. Bar-Oz, D.E. Bar-Yosef Mayer, S. Chaim, D. Druck, Gromanyaroslavski I., Hershkovitz I., N. Liber, D. Rosenberg, A. Tsatskin, and L. Weissbrod. 2007. "New excavations at the el-Wad terrace, Mount Carmel, Israel." *Mitukefat Haven: Journal of the Israel Prehistoric Society* 37: 37-134.
- Weiss, E., Mordechai E. Kislev, Orit Simchoni, Dani Nadel, and Hartmut Tschauner. 2008. "Plant-food preparation area on an Upper Paleolithic brush hut floor at Ohalo II, Israel." *Journal of Archaeological Science* 35 (8): 2400-2414.
- Wright, G. A. 1978. "Social differentiation in the early Natufian." In *Social Anthropology*, edited by C. L. Redman, M. J. Berman, E. V. Curtin, W. T. J. Langhorne, N. H. Versaggi and J. C. Wanser, 210-224. New York: Academic Press.
- Wright, Katherine I. 2000. "The social origins of cooking and dining in early villages of western Asia." *Proceedings of the Prehistoric Society* 66, 89-121.

## Figure Captions

Figure 1: Location of the Qa' Shubayqa in the Levant, and detailed view of the Qa' Shubayqa showing the locations of Late Epipalaeolithic and Early Neolithic sites in the study area

Figure 2: Plan of Phases 3 and 5 showing the locations of burials and positions of individual graves and remains.

Figure 3: Overview of Structure 2 in Phase 3

Figure 4: Overview of Phase 5

Figure 5: Broken quern (SF- 245) associated with disarticulated remains of an adult (Context 36) lying on top of another quern that was installed in the pavement of Structure 2

Figure 5: a) Primary disturbed burial of an infant (Context 51); b) Primary disturbed burial of a neonate (Context 85); c) Primary undisturbed burial of a child (Context 96); d) Primary disturbed burial of a neonate (Context 112); e) Primary burial of a perinate (Context 104); f) Primary burial of a neonate (Context 108); g) Primary burial of a neonate (Context 136); h) Ochre staining underneath cranium of Context 136; i) Primary disturbed burial of an infant (Context 189); j) Primary burial of an infant (Context 175) overlying the remains of an adult (Context 169)

Figure 7: Adult cranium (Context 175; probably belonging to adult burial Context 169) showing lines and spots of red pigment; a) close-up of striations; b) close up of red pigment spot

Figure 8: Distribution of ochre traces on neonate burial Context (108), with examples of stained bones shown on the right. 1a-4a: images of bones with normal saturation, 1b-4b: images of ochre-stained bones with enhanced saturation.

Figure 9: Quern SF-209 found in association with Context 36: a) close-up of ochre-stained area; b) close-up of the same ochre-stained area with saturation enhancement

Figure 10: SF SHUB1-2013-404. Grinding slab with extensive red ochre staining on work surface that was installed in the pavement of Structure 2 in immediate vicinity of burial Context (51) and (108); a) shows a close-up of the ochre-stained area, b) shows the same area with saturation enhancement

Figure 11: Fractured basalt vessel with impact scar suggesting deliberate breakage

## Table Captions

**Table 1:** List of all human remains from Shubayqa 1