NEW INSIGHTS INTO LATE NATUFIAN BEDROCK FEATURES (MORTARS AND CUPMARKS)

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Abstract

It has been suggested since the beginning of prehistoric research in the Levant, that the Natufians used stone mortars for the processing of cereals and/or other vegetal resources, though direct evidence is still lacking. A recent detailed study of more than 100 bedrock mortars and cupmarks indicates that, a) they are found in many Late Natufian sites, regardless of their size and ecological setting, b) the variety of dimensions and types is wide, c) in some cases flint cores and stone objects were buried in them, d) some specimens seem to have been deliberately pierced through their bottom, e) in some cases a stone was firmly lodged into the shaft, f) it seems that certain types could not have served for food processing, or at least do not offer a convenient setting for processing floral material, nor to extract the processed substance from the shaft, and g) at least at one site these features appear to be associated with human burials. We suggest that the new data regarding the Natufian production and use of bedrock features should not be viewed solely in the technological and production spheres. Rather, we tentatively propose that by the Late Natufian, the manufacture of some large/deep stone holes may have had an additional social or even symbolic role.

Key words: bedrock features, mortars, cupmarks, Natufian.

INTRODUCTION

Dramatic changes in subsistence, settlement patterns and social organization took place during the Natufian period (ca. 15,000–11,500 cal.BP), accumulating in the establishment of the first Levantine semi-sedentary / sedentary settlements. Archaeologically visible are changes in domestic architecture, burial practices, art manifestations, tool manufacture and the use of raw materials. It is unclear whether the beginnings of agriculture should be assigned to this period or to the succeeding Pre-Pottery Neolithic A period (PPNA), but the range of changes did finally lead to the establishment of the first Neolithic villages (e.g., Bar-Yosef, 2002; Belfer-Cohen, 1991; Byrd and Monahan, 1995; Garrod, 1957; Garrod and Bate, 1937; Hardy-Smith and Edwards, 2004; Hayden, 2004; Perrot et Ladiray, 1988; Valla, 1995; Weinstein-Evron, 1998).

During the Natufian, a wide range of technological innovations took place. One important sphere where the new technologies are archaeologically well documented is the use of stone for dwelling construction, production of groundstone (henceforth = stone) implements, and especially the manufacture of bowls, portable mortars/ cupmarks, pestles, etc. – the latter group being one of the hallmarks of the period (e.g., Belfer-Cohen, 1988; Belfer-Cohen and Hovers, 2005; Rosenberg, 2004; Wright, 1991, 1992). The Natufians even transported heavy basalt objects for tens of kilometers as part of their exchange system (Weinstein-Evron et al., 1999, 2001).

Though the stone industry has been the focus of several studies (Dubreuil, 2004; Dubreuil and Grosman 2009; Rosenberg, 2004; Wright, 1991, 1992), the bedrock features (mortars, cupmarks, etc.) have not been described or analyzed until recently (see Nadel and Lengyel, 2009; Nadel et al.,...
western Jordan (Fig. 1). It is the aim of this paper to address the wide variety of Natufian bedrock features, negating common knowledge (not always specifically stated) regarding all of them as one category used for food preparation or storage. Rather, we suggest these were utilized during the Late Natufian for a variety of tasks, reflecting a range of activities not solely restricted to the realm of economy, but also, possibly, representing aspects of the social and maybe even the symbolic spheres.

**THE NATUFIAN BEDROCK FEATURES**

The production of stone implements such as mortars and pestles began in the Levant before the Natufian, though on a very small scale (see Wright, 1991). The number of types and the total number of specimens increase abruptly by the Early Natufian. As for specimens carved into bedrock, the phenomenon seems to begin during the Early Natufian with only a handful of known examples (Garrod and Bate, 1937: 11; Goring-Morris, 1998) and only by the Late Natufian do the numbers and types of bedrock feature increase substantially.

Though hundreds of Natufian bedrock-cut holes/cavities are known today (Eitam, 2005; Goring-Morris, 1999; Nadel and Lengyel, 2009; Nadel et al., 2008, 2009a), their study is only beginning to be established. Even a comprehensive terminology has not been developed until recently. The commonly used terms are mortars (for large specimens) or cupmarks or cupholes (for small specimens), and they are not always appropriate as they do not cover the entire typological range documented in Natufian and later sites (see Nadel and Lengyel, 2009; Nadel et al., 2009a, b).

Thus, a more neutral term was suggested recently, Human-made Bedrock Hole (henceforth HBH, see Nadel and Lengyel, 2009) or bedrock features (Nadel et al., 2009a), for the entire range of bedrock types (for sake of convenience, we still use the terms ‘cupmark’ for round specimens 10–20 cm deep, and ‘mortar’ for the deeper and usually narrow specimens). A preliminary type list for bedrock features is provided hereby, with bedrock features counts from Raqefet (cave and terrace) as an example (Table 1; see also Figs 2–7).
To day there are hun dreds of known Natufian HBHs, from a wid e geo graphic ical range (Fig. 1). The man u fac ture of the large ones must have been costly, in terms of in vested time, en ergy and rel e vant carv ing tools; and yet their past func tions are not clear. Al though com monly re ferred to as tools used in food prep a ra tion by the Natufians, no di rect ar chae o log i cal ev i dence for such use of these bed rock fea tures is yet avail able.

The as so ci a tion of HBHs and sim i lar por ta ble types with Natufian graves is also known from the be gin ning of re search (Belfer-Co hen, 1988; Bocquentin, 2003; Byrd and Monahan, 1995; Garrod and Bate, 1937; Nadel and Lengyel, 2009).

Typologically, the larg est va ri abil ity of HBHs is doc u men ted for the  Lat e Nat ufian pe ri od, in clud ing tiny holes (some times only 2–3 cm across), deep and nar row shafts (5–10 li ters in volume), and huge deep and wide types (>20 li ters in volume) (Figs 2–7). By the PPNA, most of the Natufian types dis ap pear and one type, a rel a tively small cav ity—the com monly termed ‘cup mark’—domi nates; it is also present in slabs set on many dwell ing floors (See Rosenberg and Nadel, in press for in-depth sum mary).

The lim ited avail able data re gard ing the Natufian bed rock fea  tures is some what f rus trat ing, as they may be a ma jor source of in for ma tion con cern ing past Natufian tech no logy, economy or social life; or even reflect the Natufian shift to in ten sive plant-food pro cess ing, as a major step to wards insipent ag ri cul ture (Bar-Yosef, 2002; Dubreuil, 2004; Weiss et al., 2006; Wright, 1993, 1994). Indeed, if at least some of these Natufian stone de vices were used for food pro duc tion in gen er al, and grain pro cess ing in par tic u lar, they should be rig or ously stud ied (see Bel fer-Co hen and Hov ers, 2005;  Dubreui l, 2004;  Go pher and Orelle, 1995; Nadel and Lengyel, 2009; Nadel et al., 2008, 2009a, b; Rosenberg, 2004; Wright, 1991, 1992, 1993).

The late Natufian bed rock fea tures in con text

The first detailed study of Late Natufian HBHs was initiated with the renewed excavations at Raqefet cave (Fig. 1). The two seasons of exca va tions revealed a Late Natufian grave yard and over 80 bed rock features (more than 50 in the cave, and over 30 ad di tional speci mens carved into the terrace bed rock in front of the cave en trance (Lengyel and Bocquentin, 2005; Lengyel et al., 2005; Nadel and Lengyel, 2009; Nadel et al., 2008, 2009b).

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Cave</th>
<th>Terrace</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Round shallow holes, 2-5 cm across and 2-5 cm deep, width:depth = +1</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>B</td>
<td>Round shallow holes, 5-10 cm across, 2-5 cm deep, width:depth&gt;1</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>C</td>
<td>Round holes (cupmarks), usually bowl-like in shape, 10-15 cm across, 5-10 cm deep, width:depth = +1</td>
<td>13</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>D</td>
<td>Round holes, usually bowl-like in shape, 15-30 cm across, 5-30 cm deep, width:depth = +1</td>
<td>22</td>
<td>15</td>
<td>37</td>
</tr>
<tr>
<td>E</td>
<td>Round, deep and narrow cylinders (mortars), 10-20 cm wide along most of the shaft and very narrow at the bottom, 20-80 cm deep, width:depth&lt;1</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>F</td>
<td>Round, deep and narrow cylinders, funnel-shaped, 10-20 cm wide along most of the shaft and very narrow at the bottom, 20-80 cm deep, width:depth&lt;1</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>G</td>
<td>Round or oval, deep and wide cylinders, wider than 20 cm, 20-80 cm deep.</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>H</td>
<td>Oval shallow features, width:depth&gt;1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I</td>
<td>Elongated features, including short &quot;channels&quot;, width:depth&gt;1 (The specimen here is connected to a cupmark and not counted separately)</td>
<td>*1</td>
<td>*1</td>
<td>2</td>
</tr>
<tr>
<td>J</td>
<td>Composite sets, of a pair (or more) combined together</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>Varia (specimens that do not fit any of the above categories)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>54</td>
<td>31</td>
<td>85</td>
</tr>
</tbody>
</table>
Fig. 2.  
A. Vertical photo of the central part of chamber 1 in Raqefet cave at the end of excavations, with bedrock features in center, and narrow burial cavity (locus 1) on right (scale bar 50 cm).  
B. A close-up view showing the presence of small carved holes near the large mortars (center of photo, arrow scale 20 cm)
Our second key source of data is the site of Rosh Zin, situated in the Negev desert (Fig. 1). The excavations at the site revealed 18 bedrock mortars (Henry, 1976), and our renewed work documented the presence of seven additional bedrock features (Nadel et al., 2009a).

It is of special importance to note that in some Late Natufian sites there are large numbers of specimens, with Saflulim (more than 150, Goring-Morris, 1999) and Huzuk Musa (more than 80, Eitam, 2005; 2008; Rosenberg et al., n.d.) being especially rich. In other sites only a handful of specimens were found (e.g. el-Wad Terrace (dated to the Early Natufian), Eynan, Hayonim cave/terrace, Jericho (not Late Natufian by the flint assemblage, but the large stone mortars appear to be Late Natufian), Nahal Oren, Upper Besor 6, Wadi Mataha and others). In some contemporaneous sites no such bedrock features were documented, either due to lack of rock exposures or to other reasons. The details presented below are organized by the main issues we believe are relevant, and not as a catalogue of sites.

**The typological variability**

At Raqefet cave and terrace, 85 HBHs were found so far (with additional ‘portable’ specimens – most of which were directly associated with burials). The typological variability is indeed high (Table 1), and certain types were not discussed in previous Natufian site reports. For example, there are 12 (14% of the total) small bedrock cavities, only a few cm across and less than 5 cm deep (Figs 2–4; Nadel and Lengyel, 2009; Nadel et al., 2008, 2009a, b). Interestingly, there are no distribution patterns that are size-dependant. Thus, the largest HBH at the site (C-XXIII, 80 cm deep) has near it a variety of small HBHs, including the smallest at the site (Fig. 2). An additional large specimen is located within a 2.5 meter-long deep...
Fig. 4.  A. Plans and sections of various bedrock features at Raqefet (note the different scales); B. Plans and sections of various bedrock features at Raqefet (note the different scales); C. Plans and sections of various bedrock features at Raqefet (note the different scales)
Fig. 4 continued
bedrock cavity that was used for burial (locus 1, Fig. 3). The deep narrow specimens, with nearly vertical or funnel-like shafts, as well as the variety of cupmarks are also spread with no apparent distribution pattern, as there are isolated specimens as well as various concentrations.

At Rosh Zin, the 25 bedrock documented features are found on flat limestone rock exposures. Here, too, there are several types, ranging from small shallow cavities to deep narrow shafts (Figs 5, 6). The largest concentration, too, includes a range of types juxtaposed to one another. A very interesting array of types is found at the site of Huzuk Musa, with conspicuous large funnel-like specimens – 60–80 cm deep, with a wide opening and a very narrow shaft. At other sites, at least according to the limited available published data, the typological range is narrow and apparently does not include types that are not described here.

Two observations should be stressed. First, several examples of short shallow ‘canals’ running perpendicular to the rim of the HBH are documented at Raqefet and at other sites. Second, there appears to be a pattern where adjacent to some large HBHs there are small shallow holes (e.g. Raqefet, Rosh Zin and Huzuk Musa). This is also true for the largest ‘boulder mortar’ at Raqefet, which has a small carved hole on the flat top – near the rim.

**Buried objects**

A variety of Natufian objects and human remains were found within preserved bedrock features, and they are grouped here into four main categories.

**Stones set on edge**

A pair of juxtaposed HBHs at Raqefet cave (C-I and C-II) was part of an unusual complex (Fig. 7). It included a large angular stone set on edge on the western rim of C-I. A child’s parietal bone fragment (5 cm in diameter) was found lying horizontally within the fill and may have been buried there (Lengyel et al., 2005). Inside C-II, one of the largest bedrock features exposed at Raqefet, four flat stones were set on edge, parallel to each other. Two of them are conjoinable fragments of one stone (Fig. 7B). The four stones had to have been buried deliberately, in order to remain as found.

The practice of placing on edge flat / elongated stones is common at Raqefet cave. Noteworthy, it was repeatedly done at the concentration of burials in locus 1 (see Lengyel and Boc-
quentin, 2005, Figs 3, 8; Nadel et al., 2009b). Among the several relevant specimens, two cases are pertinent here. The first is a couple of conjoinable large limestone blades, set on edge with their dorsal plains facing each other (total length ca. 45 cm, Fig. 8A, B). In other words, after the long symmetrical object was broken, the two parts were deliberately set in the burial area in the
Fig. 6.  A. Plans and sections of various bedrock features from Rosh Zin of shallow type; B. Plans and sections of various bedrock deeper cupmarks from Rosh Zin with deeper cupmarks
Fig. 6 continued
Fig. 7.  A. Plan and three sections of the C-I/C-II complex at Raqefet cave; B. Photo of the complex during excavations. Note the stone on edge above C-I and the flat stones set on edge within C-II
above-described manner. The second is a flat slab with a shallow round hole carved on its smooth face, again set on edge (Fig. 8C). Thus, the burial of stone objects within C-II follows the pattern observed in the Raqefet burial customs, in two manners: the setting of objects on their narrow edge, and the placing of two parts of the same original item parallel to each other. In this regard, Garrod reported from el-Wad that “A rough lump of limestone was firmly wedged into basin 2, and two blocks of the tabular variety into basin 3” (Garrod and Bate, 1937: 11; note that her “basins” are bedrock mortars).

Flint cores

Flint cores are numerous in the burials at Raqefet. During the exposure of many of the skeletons, cores were observed on and adjacent to most skulls and bodies. In the C-I/C-II complex more than 70 cores were found in a small volume. When compared to the flint assemblage from the largest bedrock mortar – where only one core was found – one wonders whether this is a random phenomenon or a direct reflection of past behavior (Nadel and Lengyel, 2009).

Cases from other sites are worth mentioning. At Nahal Oren, a high-quality long pyramidal core was found at the bottom of a small conical ash-pit within the graveyard (Nadel et al., 1997). At Rosh Zin, a flint core was set at the bottom of bedrock mortar 17 (Henry, 1976: 337). The mortar was set near a large pavement with a monolith. Several unique objects, including five large symmetrical pyramidal cores, were found there. Henry suggested that these finds were part of ritual activity (Henry, 1976: 319–320, fig. 11-7). Flint cores and lumps were also placed in mortars at el-Wad cave (Garrod and Bate, 1937: 10, 11) and one case of a flint lump was reported from Jericho (Kenyon, 1957: 218).
Fig. 8. Locus 1 at Raqefet cave during excavation. A. Close-up view of locus 1, with human skeleton on right, cupmark at the bottom, and a variety of stone implements set on edge. B. The two conjoinable pieces of a large limestone blade (center). C. The same area after removal of the stone implements, exposing a slab with a shallow cavity set on edge.
**Isolated pebbles**

There are several cases where one stone pebble was found within a deep shaft. Usually, there was one specimen in the shaft – with no other smaller or larger stones. Furthermore, the stones fit the contour of the shaft, as if chosen according to shape and dimensions. In some cases there are crude ‘flaking’ scars on the pebble. There is one example for such ‘cork’ stones from Raqefet cave (Fig. 9) and five from Rosh Zin (Fig. 10).

At Raqefet we found lunates and even cereal phytoliths deep in the shaft – under the sealing stone (Rosen, personal communication). When first found at Rosh Zin, Henry reported that “exhausted mortars, hewn through into nonlithic substratum, were rejuvenated by the positioning of a quartzite cobble in the shaft to seal again the bottom of the mortar” (Henry, 1976: 337). This may be incorrect, as in some cases the stones are not near the bottom of the shaft or in a perforated shaft, and the top of these stones are still angular – and not rounded from continuous work within the mortars (Nadel *et al.*, 2009a). The issue of perforated shafts is further discussed in the next section.

There are additional examples of isolated stones set inside deep shafts at Raqefet, though not blocking the entire diameter of the shaft like a cork. Also, a red stone was set in a small cupmark inside the cave and in a large cupmark on the terrace. As mentioned above, Garrod reported that at el-Wad: “a rough lump of limestone was firmly wedged into Basin 2, and two blocks of the tabular variety into Basin 3”. At Wadi Mataha, there are several bedrock mortars, one of which contained Natufian objects such as a basalt pestle (Janetski and Chazan, 2004: 164; Johnson *et al.*, 1999).

**Human burials**

Raqefet cave is currently the only place where direct evidence for human interments within large bedrock mortars is known. Here, a deep large bedrock mortar was hewn into a natural depression, later used for repeated burials (locus 1). The remains of a human skeleton (Homo 9) were found at the top of the mortar, with the ribs within the rim contour (Figs 3 – bottom left, 8C – top). Though the skeleton is far from complete, it represents an *in situ* primary burial.

**The perforated bedrock mortars**

At Rosh Zin there are at least five cases where the shafts of deep narrow bedrock mortars penetrate through the limestone layer (which is 30–50 cm thick in many of the rock exposures, Figs 10, 11). Where possible to clean under, it became apparent that the bottoms of these shafts were not accidentally broken from repeated heavy-duty work in the mortars (as suggested by Henry, 1976: 337).

Furthermore, in three cases there was a stone deliberately inserted in the shaft. Once the stone was removed, the mortar was cleaned and the pierced bottom reached. In one case a deeper bedrock layer, several centimeters below the pierced shaft, had a smooth shallow cavity exactly below the shaft (Fig. 11 specimen I), with no breaks or cracks in it. In all observable cases the bottom of the shaft is round, widening in a very regular manner. In simple words, these examples do not appear to be the result of over-working the deep mortars, or of natural breakage. Rather, our observations strongly suggest that the manufacturers knew the thickness of the local bedrock, and yet continued to produce new deep mortars – with a regular symmetrical pierced base. The reason for hewing a perforated shaft is unclear, but it strongly implies that these were not used as pounding or storage utensils, at least in the last stages of their utilization.

As the perforated mortars are intriguing, we also examined several pierced portable mortars from Nahal Oren and Raqefet, and re-evaluated published specimens from several additional sites. All are deep narrow objects, made on large boulders and thus known as ‘boulder mortars’ or ‘pipe mortars’. Considering the details from both the pierced Rosh Zin bedrock mortars and the perforated ‘boulder mortars’ from the Beqaa sites, el-Wad, Hayonim terrace, Jericho, Nahal Oren (Fig. 12), Raqefet and Eynan, the phenomenon is not random and appears to encompass both large bedrock and portable specimens. The mutual characteristics include intentional modification of the pierced bases and narrow shafts, which are sometimes ‘twisted’. Furthermore, many were found in association with special features such as burials and stone pavements (see also Valla, 2009).
Fig. 9. A. Plan and sections of a deep narrow mortar (C-XVI) from Raqefet cave, note the location of the inserted pebble. B. Close-up view of shaft with top of pebble in situ
DISCUSSION

Large-scale manufacture of Human-made bedrock holes became common during the Late Natufian, with deep narrow specimens and smaller and/or shallower examples being the dominant types. During the proceeding PPNA, the almost exclusive type was the relatively small and shallow cupmark, frequently found on slabs set on house floors (Rosenberg and Nadel, in press).

During the PPNB, when there is evidence for wide-scale agriculture based on domesticated cereals and legumes (Bellwood, 2005; Lev-Yadun et al., 2000), bedrock and portable cupmarks / mortars become rare in the southern Levant, and flat or somewhat concave grinding types are prevalent.

The ecological setting of Late Natufian sites with HBHs is wide, and they are found in Mount Carmel (el-Wad, Nahal Oren and Raqefet caves, 

Fig. 10. Plans and sections of two perforated bedrock mortars from Rosh Zin
Fig. 11. A. Plans and sections of five bedrock mortars with inserted pebbles from Rosh Zin; B. Close-up view of shaft with top of pebble in situ
as well as other sites), in the Lower Jordan Valley (Huzuk Musa and Jericho), in the Negev (Rosh Zin, Saflulim and adjacent sites, Upper Besor 6) and in mountainous southern Jordan (Wadi Mataha). Thus, there appears to be no ecological limitations on their production, and as yet, there is no clear typological correlation to geographical locations.

However, regarding the natural landscape and the modification of it by the Late Natufians, three non-perishable landmarks (Boyd, 2006) are apparent. One is the stone-built dwellings; another is the graveyards, with the cleared areas and built graves (including large stones and boulder mortars set vertically with their tops above ground). The third includes the manufacture of Human-made bedrock holes, in caves, on cave terraces and on open-air bedrock exposures. The three altered the landscape and remained visible for years. Could the Late Natufian bedrock features, as well as certain graveyards, represent past landscape (or even territorial) markers - with an emphasis on caves? (see Boyd, 2006; Goring-Morris and Belfer-Cohen, 2002; Grosman, 2003).

In terms of typological categories, the smallest specimens are not the early manufacture or utilization stage of the larger ones, as they form distinct categories in terms of size – and not a continuum of dimensions. Naturally, the wide variety of types seemingly represents a wide range of utilizations. These may have included food and mineral processing as well as storage. Flint quar- rying was also suggested for some of the PPNA bedrock features (Grosman and Goren-Inbar, 2007). Interestingly, in most sites, there is no correlation between the number of bedrock features and that of the recovered stone pestles (at Raqefet there are at least 85 HBHs and ca. 5 stone pestles).

Fig. 12. Bottom view of a perforated ‘boulder mortar’ from Nahal Oren, showing the round regular hole, with no breaks typical of an exhausted / accidentally broken implement.
Nonetheless, food preparation is the most common documented use of mortars and cupmarks, with similar techniques being used for millennia all over the world (e.g., Adams, 1999; Basgall, 1987; Kluckhohn, 1971, among many). In the Levant, it has become common to assume, though not always clearly stated, that the Natufians were processing cereals or acorns in stone mortars (e.g., Bar-Yosef, 2002; Goring-Morris, 1987: 439; McCroriston and Hole, 1991; Rosenberg, 2008; Wright, 1991) – without ever studying the relevant details of the bedrock features or the similar portable specimens.

The diversity of the Late Natufian bedrock features calls for a new consideration of their past utilization. In most cases they do not appear to be a part of a workshop or a production area (food or minerals) for several reasons. A) Some specimens are tiny (volume < 5 cubic cm). B) Several features are located on steep rock surfaces, uncomfortable for work. C) If the deep narrow mortars functioned in material processing, working in them – and especially extracting the worked products – would have been very difficult. D) Several features were used for burying selected objects such as stones set on edge, flint cores and in one case even a human corpse. E) The insertion of a pebble into some deep shafts changed their use – or even took them out of use. Indeed, at least during one stage of their history the specimens of categories D and E were apparently not part of a production or processing activity.

Furthermore, specific attention should be directed at the perforated bedrock and boulder mortars. These are always relatively deep and narrow, and all are made of limestone. Some of these have a somewhat twisted shaft, and most do not have straight inner walls representing careful smoothing during production, or continuous pounding activities. Again, they have no ecological or site-size correlations.

So, what were the bedrock features used for? Some of the cupmark types may have been used in food processing. Other/utilizations such as quarrying seem very unlikely in light of the virtual absence of flint nodules in many of the sites where bedrock features were found. Also, usually they do not form a pattern of postholes as suggested for Jericho (see Kenyon and Holland, 1981: 272, Plate 145a, b). We cautiously suggest that at some sites, like Raqefet, where certain bedrock features were associated with human burials, these were related to burial and/or commemoration rites. It is possible that certain specimens were used in several ways, before, during or after their incorporation into the cult of the dead.

The association of stone implements such as mortars and pestles with the dead is rarely documented for pre-Natufian sites (e.g., Neve David in Kaufman, 1989), but is common in Natufian sites such as el-Wad cave and terrace (Weinstein-Evron, 1998, 2009; Garrod and Bate, 1937), Eynan (Perrot and Ladiray, 1988; Valla et al., 2004), Hayonim cave (Belfer-Cohen, 1988) and terrace (Valla, 1995; Valla et al., 1989; Valla et al., 1991), Raqefet cave and terrace (Nadel and Lengyel, 2009; Nadel et al., 2008, 2009b) and Saadi II (Schroeder, 1991). As Natufian mortars and cupmarks, both complete but more commonly broken, are frequently found directly associated with burials, it is not a far leap to suggest that some of the bedrock features were hewn into the floor in order to be associated with a burial, or maybe to represent it if the burial itself was elsewhere.

To conclude, our analysis of bedrock features suggests that treating them as one category, supposedly representing food processing, is erroneous – and using this bulk of stone features as reflecting intensive food processing may be misleading in terms of reconstructing Late Natufian economy. The wide typological variety and characteristics of these features seem to reflect a complex range of utilization and histories. Furthermore, some of these probably had nothing to do with food production at any stage of their utilization, as their forms or dimensions are not similar to ethnographic records (e.g., Adams, 1999; Basgall, 1987; Kluckhohn, 1971). In particular, the narrowness of some specimens, the curved or ‘twisted’ profile of a few, the buried objects (some of which appear in very similar ways within graves), the inserted isolated pebbles, the ‘pierced mortars’ (see also Valla, 2009), the incorporation of similar portable types within burials – all suggest that we should also explore the venue of their incorporation within the social and symbolic realms, beyond their mere treatment as functional objects.
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