In a recent issue of this journal, Gargett (1999) addresses once again the question of the validity of Middle Paleolithic (MP) hominid skeletal remains as a result of intentional burial by conspecifics. The aim of his article is “to see if natural processes can be ruled out as an explanation for preservation of the hominid remains” in MP sites (Gargett, 1999:28). Responding to criticisms on his previous work on the same subject (Gargett, 1989), Gargett examines several case studies from recently excavated sites, against expectations derived from studies of natural processes as agents of burial. He concludes that natural agents satisfactorily explain the state of the hominid remains in these sites (Gargett, 1999:28). Acceptance or rejection of Gargett’s claims bears directly on the wider issue of the behavioral and cognitive abilities of MP hominids and on the understanding of the agents that brought them about (Gargett, 1989; Gilead, 1989; Lindly & Clark, 1990; Belfer-Cohen & Hovers, 1992; Hayden, 1993; Noble & Davidson, 1993; Hovers et al., 1995; Mellars, 1996; Mithen, 1996; Hovers, 2000).

Among the sites Gargett (1999) discusses in his more recent paper is the Amud Cave, Israel, where in 1992 we excavated the articulated partial skeleton of a Neandertal infant (Rak et al., 1994; Hovers et al., 1995). Our evaluation of the state of preservation of this specimen (Amud 7) in the wider context of the highly fragmentary state of faunal remains in the excavated deposit led us to conclude that the infant had been intentionally buried (Rak et al., 1994; see Defleur et al., 1999 on an opposite case, where hominid remains bear characteristics similar to those of the faunal residues).

Gargett (1999:69–71) finds our claim to be weakly supported when judged against his criteria for the exclusion of natural (i.e., not hominid-mediated) agents potentially responsible for the preservation of the Amud 7 skeleton. In this paper, we respond to Gargett’s critique of the Amud 7 case. We re-evaluate the case for intentional burial of Amud 7 using Gargett’s (1999) own categories of evidence: (a) protection of the corpse; (b) depositional environments; (c) preservation of the corpse (i.e., completeness and degree of articulation); and (d) burial gifts. We present those observations, which Gargett (1999:47) views as basic tools for inferring the taphonomic histories of the individual case studies, and show that purposeful burial is indeed the more likely hypothesis to explain this specimen’s “excellent preservation” (Gargett, 1999:71).
A. Protection of the corpse (Gargett, 1999:33–35)

Gargett identifies the sole, unequivocal criterion for the identification of an intentional burial as: “an artificial stratum containing the remains, created at the time of interment”. The new stratum “must be distinct from those upon which, or within which, it occurs, and from those accumulating above it and the original surface” (Gargett, 1999:33). Of course, such unequivocal evidence may be unexpected even in recent, let alone ancient, contexts (Gargett, 1999:34), so usually the archaeologist must be content with more equivocal inferences from appreciation of the processes of site formation and their impacts on skeletal preservation (see below).

Gargett (1999:70) is correct in stating that no evidence was found for a burial pit or new stratum in the case of Amud 7. The Middle Paleolithic sediments in Amud Cave are visually homogenous, having derived from calcitic ashes (Hovers et al., 1996) of local anthropogenic origin. Indeed, historical (Bronze Age) pits penetrating the Middle Paleolithic strata could in many cases be differentiated from the surrounding sediment only by the presence of pottery or of imported river cobbles (Chinzei, 1970; Hovers et al., 1991). In the case of Amud 7, the skeleton was found in a natural niche in the bedrock of the cave’s north wall (Rak et al., 1994), so a distinct “burial stratum” would not necessarily be expected. This is, therefore, an instance where one needs to fall back on probabilistic inferences in order to evaluate natural vs. intentional burial as the most parsimonious explanation.

B. Depositional environments (Gargett, 1999:35–38)

Several depositional features and processes can account for exceptional preservation of skeletal material, as Gargett (1999) discusses. For instance, natural topographic low spots, acting as sediment traps, are conducive to protection of carcasses due to a rapid rate of burial relative to surrounding high spots. In addition,

“[d]elicate bones, as well as articulation between bones, will tend to survive better if they are protected from disturbance byFortuitous location in out-of-the-way places [e.g., against cave walls], or if they are buried by rockfall” (Gargett, 1999:38). Sudden rockfall, notably in tectonically active areas, might have been “responsible for killing and preserving a hominid” in some cases (Gargett, 1999:35).

Hypothetically, Amud 7 could have entered the archaeological record due to any, or a combination, of these processes. However, scrutiny of the cave’s sediments suggests that this was not the case. The niche in which the skeleton was situated is shallow and open, and the bedrock surface on which the infant’s bones were found slopes away from the niche. Evidently, this is not the configuration of a topographic “low spot”, in which carcasses are trapped accidentally and sediments accumulate rapidly. The “excellent preservation” of Amud 7 (Gargett, 1999:71) cannot, therefore, be attributed to natural burial in a topographic low spot.

Gargett (1999:80) asserts that “All of the natural niches in which MP hominids have been found occur in regions with active tectonism, and most co-occur with evidence for rockfall”.

Since Amud 7 was found in a natural niche (and in a tectonically active area at the margin of the Dead Sea Rift), this statement presumably pertains to this skeleton (see also Gargett, 1999: Figure 9). However, the possibility of a quick natural burial due to rockfall can be ruled out as an explanation for the preservation of the skeleton. While there is evidence for intermittent rockfall throughout the sequence of Amud Cave, there are no collapsed boulders of any size in
the proximity of the skeleton, which was found in fine-grained ashy silts. This renders unlikely scenarios of the infant’s accidental death and instantaneous burial due to roof collapse.

Given that the Amud 7 skeleton is not a random collection of bones (see below), its location against the wall cannot be considered the result of a fortuitous process of collection and accumulation by hydraulic agents. In addition, there is no evidence that suggests its disturbance by carnivores (Hovers et al., 1995:52). Indeed, previous and current archaeozoological studies show the paucity of carnivores in the faunal assemblages, indicating that their role in the accumulation and modification of bones in the MP strata of Amud Cave was at best insubstantial (Takai, 1970; R. Rabinovich, in preparation). Hence, it is unlikely that the infant’s location in the cave was due to spatial patterning by carnivores, of the type identified by Gargett (1996) among cave bears. In light of the foregoing evidence, unless a case can be made that the infant was, while still living, placed in the niche by a conspecific, or had crawled up into it under its own power, it seems to us more likely that its corpse was placed there intentionally. Gargett accepts that

“[w]ith respect to Amud 7’s location in a natural niche, it would be impossible to rule out purposeful behaviour, regardless of whether or not it has been purposefully buried”

(1999:71). The evidence presented here suggests that purposeful behavior is the more likely of the two explanations.

C. Preservation of the remains (Gargett, 1999:35–41)
The location of Amud 7 in close proximity to the cave’s wall raises the possibility of its having lain exposed, but undisturbed (e.g., by trampling), due to its out-of-the-way location. Under such circumstances, burial might be expected to be gradual, with opportunity for random loss of some skeletal elements. The latter is Gargett’s favored explanation (1999:71) as to why the skeleton “fared less well” relative to other specimens in natural niches (Gargett, 1999:80). There are two components to this explanation: a diachronic one, involving the rate of sediment deposition at the particular spot, and a spatial one, relating to the degree to which hominid and/or nonhominid inhabitants of (or visitors to) the cave used this spot.

Gargett (1999:36) has discussed the problem of assessing the rate of deposition of sediments in caves, which is highly variable over time and from spot to spot within a given cave. Thus, whether Amud 7 was buried gradually by natural processes (as discussed above, rapid burial by natural processes is not likely in this particular case), or rapidly by human interment is a moot point; it is impossible to say. It is possible to evaluate, albeit crudely, the other component of the argument for gradual burial, namely, that the skeleton was found in an out-of-the-way spot in the cave.

The ungulates found in the MP faunal assemblage at Amud are not cave dwellers, and would have been brought into cave mainly as part of the dietary systems of either hominids or carnivores. The rarity of large carnivores in the cave’s MP faunal assemblages leaves hominids as the major agent of disturbance of a gradually decomposing corpse. This contention is supported by the almost complete lack of damage caused by large carnivores to faunal bones, whereas hominid-induced marks amount to 1–2% in the various stratigraphic units (Rabinovich, in preparation). An explanation of a gradual, natural burial in an out-of-the-way place would be supported if hominid activity (as reflected by quantities of artefacts, hearths, anthropogenic faunal residues) was less intensive in the area of the skeleton relative to other parts of the site. By the same token, if it were the topographic
configuration of the niche that reduced human activity in the area, the same types of finds would be less frequent in the sediment column overlying the skeleton, relative to contemporaneous sediments in other parts of the site.

Bands and cemented chunks of anthropogenic ashes in undisturbed stratigraphic units occur in close proximity to the skeleton of Amud 7. In fact, one such massive chunk of cemented ashes comes to within a few centimeters from the niche in which the skeleton was found. Their extent in the vicinity of the skeleton does not differ from that observed in (geologically) contemporaneous sediments in other parts of the cave. Our preliminary (as yet unpublished) data on the quantities of lithic and faunal residues suggest that the area where the skeleton was found does not differ substantively from other areas in the cave. This implies similar intensity of hominid activity (although not necessarily the same type of activity) at the time of burial and subsequent to it. Thus, the location of Amud 7 in the niche would not necessarily have protected the corpse from trampling and other activities, as Gargett (1999:71) argues. Nor does the overall spatial patterning of anthropogenic features support the hypothesis that the skeleton’s preservation is due simply to its being in a remote or inaccessible part of the cave. Given the openness of the niche and the occurrence of laterally and temporally continuous human activity, the placement of the corpse in the niche, in itself most likely an intentional act, would not have protected the skeleton had it lain exposed for a long time.

Gargett emphasizes the incompleteness of Amud 7 and the fact that parts of the skeleton are disarticulated in support of a scenario of gradual burial by natural processes. In doing this, he fails to appreciate that postdepositional taphonomic processes are as likely to have disturbed the skeleton after purposeful burial took place as after natural burial, whether quick or gradual. Once buried by any process, bones are subject to a variety of agents that transform and destroy them (e.g., Bocek, 1986; Weiner & Bar-Yosef, 1990; Marean, 1991; Weiner et al., 1993; Armour-Chelu & Andrews, 1994; Marean & Berino, 1994). There is no reason to assume that intentional burial would prevent postdepositional processes from operating in the ground. There are many examples in the recent archaeological record of heavily damaged skeletons in uncontested, purposive burial contexts. For example, in the Natufian graves of Eynan, in northern Israel, skeletal preservation varies widely, notwithstanding the fact that all the individuals were purposefully buried. Examples range from complete skeletons to isolated distal limbs (e.g., Perrot et al., 1988; Figure 10, H6a, H6b, H8; Figure 13, H95; Figure 15, 22). In the cited cases, the damage cannot be attributed to active human interference (e.g., re-opening of the graves) and is due solely to various natural postdepositional processes. A more dramatic example dates to the Byzantine period in Rehovot-in-the-Negev. Homo I, a single burial found in a clear grave with an inscribed tombstone, is represented only by a partial skeleton (Hershkovitz et al., 1988). From our experience, these examples represent the norm rather than the exceptions. They demonstrate that the incompleteness of skeletons cannot refute intentional burial. The missing bones in these cases have no bearing on the degree of articulation of the elements that are present in the burial, i.e., which remain anatomically and topographically in situ. This is precisely the condition of the Amud 7 skeleton. Gargett (1999) contends that the breakage and distortion of the Amud 7 cranium and face occurred while the head was exposed, and finds this more consistent with gradual burial in an out-of-the-way place. However, the same type of preservation is observed in confirmed burials of recent
Homo sapiens of comparable developmental age (YR, personal observation). This ought not to cause surprise, given the loose connections between the braincase elements and the cartilaginous components which underlie the facial skeleton in the living newborn. Moreover, it is unreasonable to expect that the paper-thin bones of the calotte of Amud 7, still not fused to each other, would sustain the weight of the overlying sediment to the same degree that the denser elements, such as the mandible and postcranial bones, did. The calotte’s frail bones simply collapsed into the cranial cavity, whereas, when excavated, the mandible was still articulated with the base of the skull, i.e., the mandibular condyle resided within the glenoid fossa of the temporal bone.

Based on the stereoscopic photograph published by Rak et al. (1994: Figure 2), Gargett (1999:70) contends:

“... the cranium is not, strictly speaking, articulated. Instead, it appears to be lying on the occipital condyles on the more or less horizontal bedrock. In other words, it has been rotated through 90° in the coronal plane. If indeed this individual had been placed on its right side and then buried—as the excavators assert, its head should not be in the place it was found. That is, of course, unless the head was purposely twisted at right angle to the body while being prepared for burial.”

In fact, the occipital condyles did not rest on the bare bedrock, but on the articulated cervical vertebral column that was forcefully angulated (before rigor mortis set in?). It is precisely this configuration, attributed by Gargett to gradual burial, that implies an intentionally excavated pit (somewhat smaller than the supine body), into which the infant’s corpse was forced. This explains also the “differential distortion” of the calotte’s bones.

Gargett (1999:71) is reluctant to invoke considerable microscale variability of the postdepositional disturbance process as an explanation for the differential preservation of some bones and not others. Such variability no doubt existed in the case of Amud 7. It is not clear why Gargett considers “permutations of postdepositional disturbances” to be less likely as explanations for the preservation of Amud 7 than permutations of depositional processes. As shown by the archaeological examples cited above, such processes occur in many cases. Field observations and micromorphological analyses show that at Amud Cave (as in most Levantine sites) there is evidence for the activities of burrowing animals of various sizes (from porcupines to earthworms; see Rabinovich & Horwitz, 1994, and references therein; Goldberg & Bar-Yosef, 1998). Micromorphological analyses of soil samples from the immediate proximity of the skeleton show that arthropods and earthworms caused bioturbation in this part of the cave. Such activities would explain why some bones are missing or broken, whereas the remaining ones are in their proper anatomical placement, often in articulation.

In sum, using Gargett’s own taphonomic criteria, the placement of the Amud 7 corpse in the niche due to natural causes is unlikely. The skeleton was not found in a topographic low spot, and despite its location in a niche in the cave wall, this was apparently not an “out-of-the-way” location, judging by archaeological traces of hominid activity in that part of the cave. We conclude that the more likely scenario is that the corpse was placed in the niche intentionally. Now, from the state of preservation and articulation of the Amud 7 remains, either one of the alternative hypotheses is permissible, taken on its own. However, the “natural process” explanation of these taphonomic attributes of the skeleton makes sense only if one accepts that the corpse arrived in the niche by other than human agency and was then gradually buried. Given that this is the less likely scenario, as we have argued above, the state of preservation and articulation of Amud 7 are more consistent with intentional burial than with any other mechanism.
D. Burial gifts (Gargett, 1999:33, 70)

In our original paper on Amud 7, we wrote that the claim of intentional burial was

"enhanced by the discovery of a red deer . . . maxilla leaning against the pelvis of the buried hominid"

(Rak et al., 1994:314; emphasis added). Gargett (1999:31) asserts that the question of a burial gift is irrelevant to the issue at hand, namely the identification of Amud 7 as a purposive burial. However, Gargett (1999:70) inappropriately conflates two points, the physical association between the red deer maxilla and the skeleton, and the uniqueness/rarity of the maxilla in the excavated sample. The first is relevant only because it drew attention to the possibility of causal association between the two finds. However, physical proximity (in this case, the red deer maxilla was lying on top of the infant’s pelvis; Rak et al., 1994: Figure 2) was not put forth as the basis for identifying the maxilla as a grave offering. Nowhere was it suggested, for example, that the large flint burin resting against the occipital bone (Rak et al., 1994; Figure 2) is a grave goods. In the same vein, we never argued that the co-occurrence of the maxilla and the hominid constituted primary evidence for purposive burial of Amud 7.

The interpretation of the maxilla as a burial gift rests on two independent observations. One is the logically prior identification of Amud 7 as a burial. The second reason is that the maxilla is, in fact, unique in the entire excavated sample. Gargett inexplicably misses this point, which was emphasized by Hovers et al. (1995:56):

“The almost complete red deer maxilla that was found lying on the pelvis of the infant Amud 7 is . . . the only . . . such specimen retrieved from the site, notwithstanding the abundance of deer remains that occur as dietary residues”

(see also Rak et al., 1994:314).

Gargett asserts that the red deer maxilla’s preservation is not unexpected under the depositional scenario that he proposes for Amud 7. This contention does not hold since the argument for a gradual burial is weak, as discussed above. Moreover, had fortuitous natural processes been responsible for the red deer maxilla’s preservation, one might expect more bones of the same quality of preservation in that area of the cave. This would be a reasonable expectation also if bone accumulation near the wall resulted from indiscriminant cleaning operations of the habitable areas of the cave, of the type suggested for the wall accumulation at Kebara Cave (Bar-Yosef et al., 1992; Meignen et al., 1998). In fact, the majority of other animal bones in the vicinity of the skeleton (and maxilla) were highly fragmentary, as elsewhere in the cave. This suggests that the red deer maxilla was placed there and protected intentionally. Because it was found in intimate contact with the skeleton, which on independent lines of evidence was recognized as an intentional interment, the most likely explanation for the association is that the red deer maxilla constituted a burial gift.

Archaeologists working in cave sites are (sometimes painfully) aware of the inherently variable processes of taphonomy, and the enormity of the task of reconstructing taphonomic history. For this reason they tend to consider rigorous excavation techniques and detailed observation a basic phase of their research. Indeed, a whole new methodology of anthropologie de terrain, which relies on meticulous excavation techniques and detailed documentation coupled with taphonomic tools, focuses on exactly the issues discussed here (Nilsson, 1998, and references therein). It is unclear yet whether such work will establish new criteria against which the appearance of MP hominin burial can be tested directly. Until that happens, probabilistic approaches must be used. Gargett (1989, 1999) deserves credit for prompting us to rethink the issue of MP burial. However, in the specific case
of Amud 7, the inferences that natural processes are responsible for burial of the Amud 7 skeleton are not well supported in light of the evidence from the Amud excavation itself. The inference of an intentional burial, on the other hand, offers the least unlikely series of permutations, and is therefore the most parsimonious explanation for the occurrence of Amud 7 in the archaeological record.

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References


