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An incised shell object from Baradostian (Early Upper Palaeolithic) layers in Shanidar Cave, Iraqi Kurdistan

Abstract

Shanidar Cave contains one of the most important Palaeolithic archaeological sequences in West Asia. During renewed excavations of Baradostian (Upper Palaeolithic) layers in the cave, an incised land-snail shell fragment was recovered. A natural cause seems unlikely and it does not appear likely to reflect palaeoeconomic functions. It is suggested tentatively that this may have been made during manufacture of a composite artefact designed for visual display. Although Upper Palaeolithic ornaments are often reported, composite ornaments of this period are rather unusual.

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2 layers in Shanidar Cave, Iraqi Kurdistan

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21

22 Keywords: Shanidar; Upper Palaeolithic; Baradostian; Land snail; Shell artefact;

23

24 Highlights:

25 An incised shell fragment from the Upper Palaeolithic of Shanidar Cave

26 Baradostian – Upper Palaeolithic - equivalent to the Aurignacian

27 Natural causes or subsistence activity unlikely

28 Possibly from manufacture of multi-component item for visual display

29

30 An incised shell object from Baradostian (Early Upper Palaeolithic)
31 layers in Shanidar Cave, Iraqi Kurdistan

32

33 **Abstract**

34 Shanidar Cave contains one of the most important Palaeolithic archaeological sequences in
35 West Asia. During renewed excavations of Baradostian (Upper Palaeolithic) layers in the
36 cave, an incised land-snail shell fragment was recovered. A natural cause seems unlikely
37 and it does not appear likely to reflect palaeoeconomic functions. It is suggested tentatively
38 that this may have been made during manufacture of a composite artefact designed for
39 visual display. Although Upper Palaeolithic ornaments are often reported, composite
40 ornaments of this period are rather unusual.

41 **Introduction**

42 The initiation of the Upper Palaeolithic in Europe and parts of the Middle East is widely seen
43 as a major discontinuity, where material culture changed in response to population
44 turnover, as Neanderthals were replaced by anatomically-modern humans (e.g. Bar-Yosef
45 2002; Mellars 2006). In these regions, one of the cultural changes which seem to have
46 occurred after this transition is the fairly widespread appearance of items of material
47 culture which are not directly linked to palaeoeconomic functions. This material culture,
48 often known as 'art' and 'adornment' is widely thought to have had ritual and/or culture-
49 expressive functions and to have indicated 'behavioural modernity' in the producing groups
50 (e.g. McBrearty and Brooks 2001; Bolus and Conard 2001; Bar-Yosef 2002). Similar material
51 culture is also associated with the precursor anatomically modern human populations in
52 Africa (e.g. McBrearty and Brooks 2001; Bouzougar et al. 2007; Marean 2015). Although a
53 number of objects have been claimed to reflect similar capacities in Neanderthals (e.g.
54 Zilhao 2010, Finlayson et al. 2012; Douka and Spinapolice 2012) these instances are rare and
55 in some cases are argued to be likely to reflect sedimentary mixing, as has been argued for
56 the Chatelperronian of the Grotte du Renne and other sites (e.g. Higham et al. 2010).

57

58 This paper describes an incised shell object from near the base of Baradostian (Early Upper
59 Palaeolithic) layers in Shanidar Cave, Kurdish Iraq. The cave (N36° 50', E44° 20'), in the High
60 Zagros Mountains at an elevation of ~745 m above sea level, was first excavated in the mid
61 to late 1950s by Ralph Solecki (1955, 1963). He found a sequence of layers characterised by
62 different lithic industries. At the base of the sequence he found layers characterised by
63 Mousterian artefacts, from which he recovered the skeletal remains of ~10 Neanderthals.
64 These were overlain by layers containing artefacts he assigned to the Baradostian, an Upper
65 Palaeolithic industry which is held to be the local facies-equivalent of the Aurignacian (Otte

66 and Kozłowski 2011, Tsanova 2013) and which is associated with remains of anatomically
67 modern humans at Eshkaft-e Gavi and Warwasi (Scott and Marean 2009, Tsanova 2013).
68 The layers containing Baradostian artefacts at Shanidar are then overlaid by an
69 Epipalaeolithic cemetery and later layers. The focus of Solecki's work was initially the
70 Neanderthal-bearing layers, and later the Epipalaeolithic cemetery. The layers containing
71 Baradostian material were given relatively less attention. Although Solecki screened his
72 excavated sediment, his mesh size seems to have been too coarse to recover many small
73 objects, as our excavation of one of his spoil heaps yielded much small cultural material.

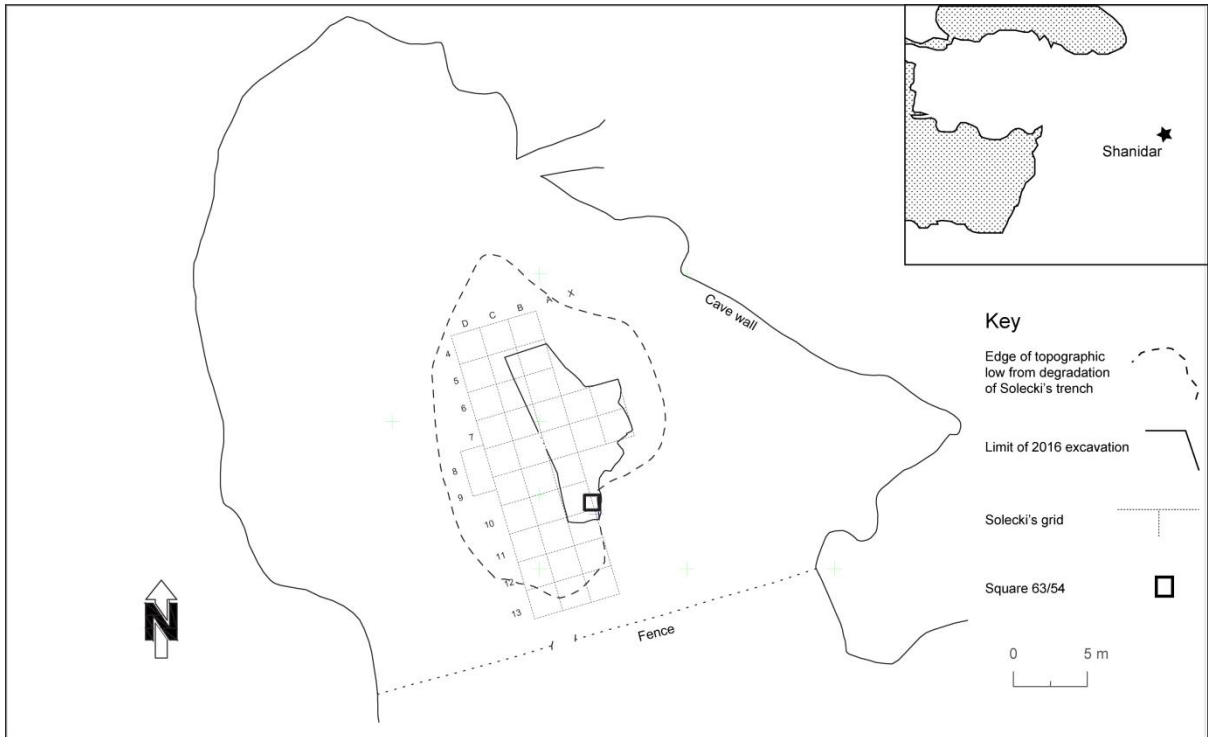
74

75 **Materials and Methods**

76 Since 2014, a team led by Graeme Barker, Tim Reynolds and Chris Hunt has been re-
77 evaluating the deposits of Shanidar Cave, with intensive sampling and limited single-context
78 excavation of the deposits adjoining Solecki's old trench through the complete stratigraphic
79 sequence, so far down to ~9 m below the cave floor (Reynolds et al. 2016). All excavated
80 sediment has been wet-sieved and floated by context and square using a flotation machine.

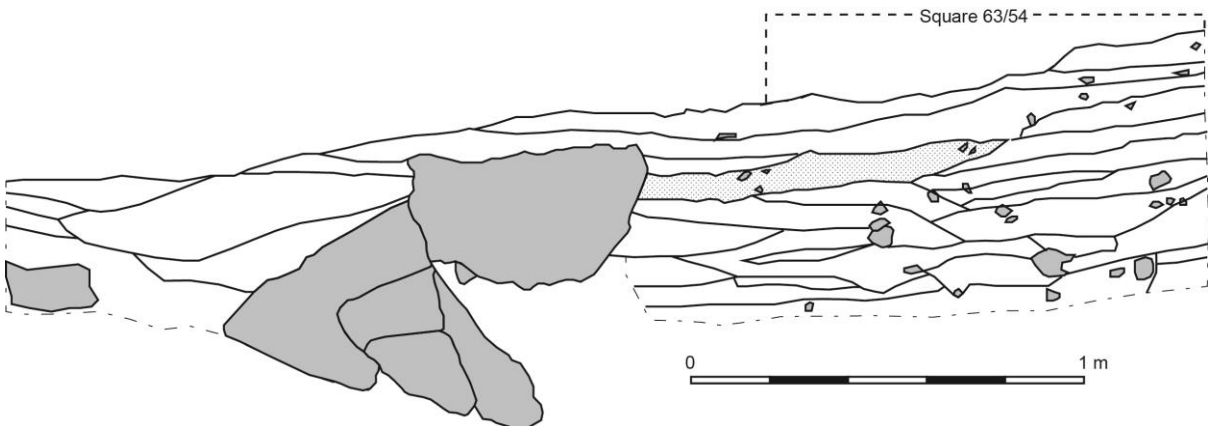
81 The land snail object (Object 245) described here comes from context 3107 in square 63/54
82 (Figs. 1, 2) and was sorted from the heavy residues from the flotation machine for this
83 context. This and adjacent contexts also yielded fragmentary animal bone, land mollusc
84 shell and lithic artefacts of Upper Palaeolithic aspect which can be assigned to the
85 Baradostian.

86 All mollusc remains were identified under low-power binocular microscopes. A Meiji zoom
87 (4-50x) stereomicroscope with a Luminera Infinity 1-3C digital imaging system was used to
88 image the object.



89

90 Fig. 1. Plan of the renewed excavation in the cave, showing the location of square 63/54.



91

92 Fig. 2. Section drawing of the baulk on the east side of square 63/54 showing the location of
 93 context 3107 (stippled). Rocks are shaded grey

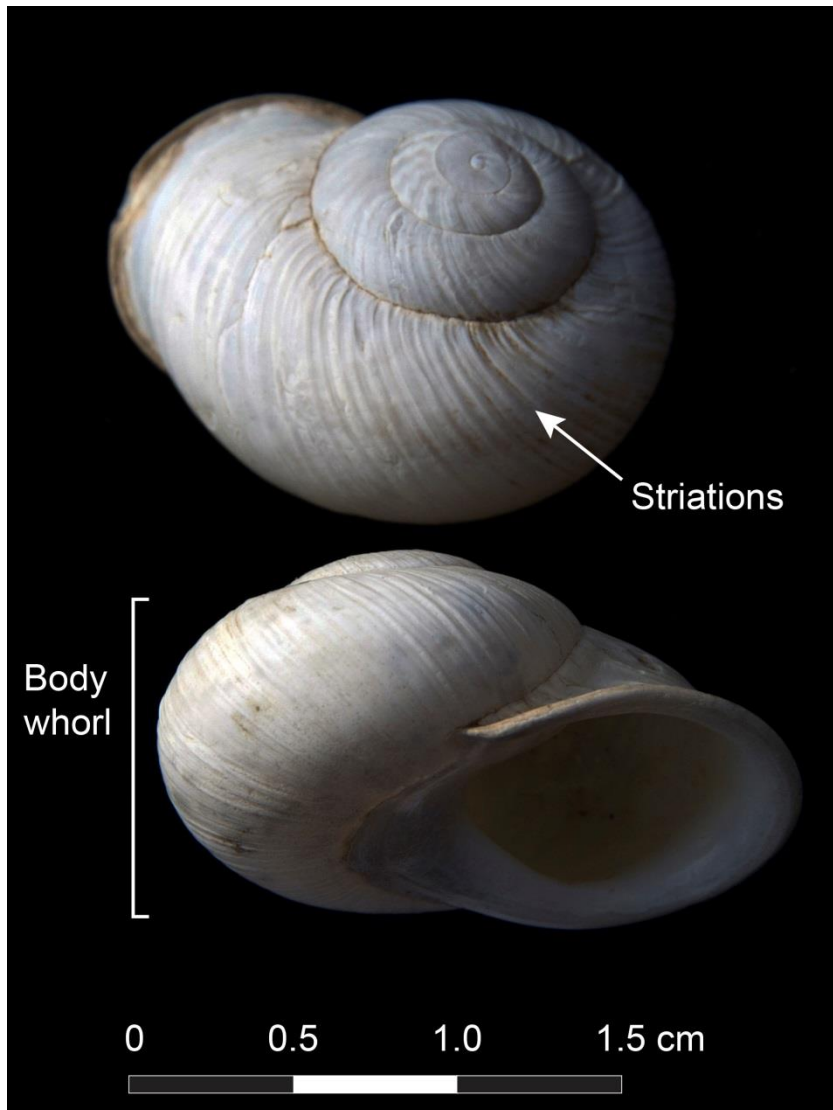
94

95 **The shell object**

96 This is an approximately rectangular fragment from the body whorl of a large land snail shell
 97 that can most probably be assigned to the helicid genus *Assyriella* (Fig.3). It measures 9.2 x
 98 4.6 mm, and is 0.8-1.1 mm thick. The side which was the internal surface of the original
 99 shell (Figs. 4, 5) bears five sub-parallel straight incisions running normal to the long axis of
 100 the object, spaced approximately equidistant along the rectangle. Traces of two further
 101 sub-parallel incisions are preserved at the ends of the piece, where it appears that they

102 guided the snapping-off of the ends of the fragment. A further incision is at one end of the
103 object, running at approximately 30° to the sub-parallel set of incisions. Another very
104 shallow incision is apparent running approximately at right angles to the group of sub-
105 parallel incisions. The incisions have V-shaped cross sections and appear to have been made
106 by a very sharp point with a smooth triangular section. There is slight edge-rounding,
107 suggesting some form of transport of this fragile and friable object by mudflow or running
108 water.

109



110

111 Fig. 3. *Assyriella* sp. showing body whorl and striations



112

113 Fig. 4. Internal surface of the original shell showing set of sub-parallel incisions. Scale in
114 microns.



115

116 Fig. 5. Internal surface of original shell at high magnification, showing detail of incisions.
117 Scale in microns.

118

119 The external face (Figs. 6, 7) shows three natural striations running down the long axis of the
120 piece. These are cut at right-angles by twelve sub-parallel incisions, which have the effect of
121 dividing the striations into a set of approximately rectangular prominences. These are very
122 rough in aspect and show traces of pitting and corrosion (Fig. 7). Whether this is a natural
123 taphonomic pattern or the result of corrosion by some applied material is at present
124 uncertain, but the pattern of corrosion is not replicated on the other thousands of shell
125 fragments from the same species so far found in the cave.



126

127 Fig. 6. External surface showing natural striations cut at right angles by twelve subparallel
128 incisions. Scale in microns

129



130

131 Fig. 7. Close-up of incisions on original exterior face of the shell running across the natural
132 striations, also showing surface pitting and corrosion. Scale in microns.

133

134 **Discussion**

135 There is no natural process known to the authors which would lead to the very regular
136 incisions on the interior face and the less regular incisions on the external face of the object.
137 Although we cannot exclude fully the possibility that a fragment of shell was raked by the
138 sharp claws of some burrowing animal, this does not account for the morphology of the
139 exterior surface of the piece. Moreover, the careful single-context excavation of this area
140 did not show evidence for animal burrowing although there were occasional signs of root
141 penetration. The slight edge-rounding is consistent with limited transport from the place of
142 manufacture, probably by the mass-movement processes that emplaced context 3107.

143 It seems rather unlikely that the morphology of the object results from food production.
144 Although land snails were consumed throughout the Late Pleistocene (e.g. Lubell 2004;
145 Hutterer et al. 2010; Rabett et al. 2011; Hill et al. 2015), including in Layer B at Shanidar
146 (Lubell 2004) most land snails of the size of *Assyriella* seem to have been consumed with
147 minimal damage to the shell (e.g. Lubell et al. 1976; Rabett et al. 2011) or with simple
148 piercing by a thorn, lithic point or the consumer's canine tip to break the suction and enable
149 the animal to be sucked wholesale from the shell (e.g. Hutterer et al. 2011, 2014; Hill et al.
150 2015; Hunt and Hill 2017). The pattern of incisions on this fragment is unlike the patterns of
151 damage associated with shell piercing.

152 The shell fragment is too small and weak to have had a role in processing other materials. It
153 is rather unlikely that it was used as an anvil for cutting soft materials using a stone artefact,
154 because of the weakness of the land snail shell. We can therefore suggest tentatively that
155 this piece, if humanly formed, did not have a palaeoeconomic or technological function.
156 The use of land snail shell in non-subsistence behaviour is unusual, but reported from
157 Holocene sites at Mount Carmel in Israel, and in the Middle Palaeolithic of Porc-Epic Cave in
158 Ethiopia. At both localities the operculae of pomatid landsnails were pierced to make beads
159 (Mienis 1990; 2003; Assefa et al. 2008).

160 In the case of the land snail fragment from Shanidar, it is possible that the bright white shiny
161 interior of the *Assyriella* shell was attractive and therefore used in some sort of decorative
162 or ornamental context. The grooving on the interior face might suggest that the fragment
163 was to be broken into little chips along the grooves. The rough grooving and corrosion on
164 the external surface might suggest preparation for and the application of some sort of
165 slightly corrosive substance, possibly an adhesive. In turn, this might suggest that this piece
166 was perhaps part of the manufacture of some perishable composite artefact, presumably
167 for visual display of some sort. It is perhaps worth noting that the area upslope from where
168 the object was recovered is close to the mouth of the cave and thus would have had
169 excellent natural illumination for detailed manufacturing work.

170 The Aurignacian is widely associated with the manufacture of items for personal
171 ornamentation (e.g. Kuhn et al. 2001; White 2007). The Baradostian is also associated with
172 this practice, as pierced shells and teeth have been reported from Yafteh Cave (Otte et al.
173 2007). The suggestion that this incised shell fragment from Shanidar was for visual display is
174 thus consistent with our understanding of Aurignacian and Baradostian behaviour.

175 Although Aurignacian and Baradostian technology is characterised by the manufacture of
176 composite artefacts, such as the use of blade/bladelet-based technology associated with
177 armatures (e.g. Tsanova 2013), most of their personal ornaments are not composite. This
178 find is therefore rather unusual, since it appears to be part of a composite object for visual
179 display.

180

181 **Conclusion**

182 New excavations at Shanidar Cave in layers characterised by Upper Palaeolithic Baradostian
183 technology have recovered an incised fragment of land snail shell. This object seems
184 unlikely to result from natural causes, or human consumption, or from use in the
185 manufacture of other technology. It is possible, however, that it was manufactured as part
186 of a composite object for visual display. Although composite lithic technology is one of the
187 marks of Upper Palaeolithic industries such as the Baradostian, it is rather unusual for
188 composite ornamental pieces of this period to be found.

189

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197

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