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Nadaouiyeh Aïn Askar, an example of Upper Acheulean variability in the Levant

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ABSTRACT

The site of Nadaouiyeh Aïn Askar is situated in The El Kowm oasis, located in the centre of modern Syria, presents an Acheulian sequence covering approximately the span between 550 ka and 325 ka ago. At least 32 levels of Acheulian occupations can be discerned that can be integrated into seven distinct cultural phases of hand axe traditions. Surprisingly, the oldest occupations discovered *in situ* present the most refined hand axes. The basic evolution goes from highly refined and standardized to less elaborate and more schematic and irregularly manufactured bifaces but not in straight lines. A common feature of all Acheulian groups from Nadaouiyeh Aïn Askar is the strong predominance of the façonnage concept for tool fabrication combined with a nearly complete absence of retouched flakes. The different archaeological units present a strong originality, each with diagnostic features differentiate from the others, demonstrating a strong cultural versatility. Such change can be far-reaching and swift. The variability encountered in Nadaouiyeh Aïn Askar stands for an acute dynamic of technological and particular stylistic changes within the Acheulian, contrarily to what usually is expected regarding this period.

1. Introduction

The site of Nadaouiyeh Aïn Askar is part of the dense cluster of wetlands that make the oasis of El Kowm, located in the geographic heartland of modern Syria (Fig. 1). The concentration of many natural springs within an arid environment attracted game and humans from afar throughout the Pleistocene (Jagher and Le Tensorer, 2011; Jagher et al., 2015). Human presence in El Kowm dates back to about 1.8 my (Le Tensorer et al., 2015) and continued continuously throughout the Pleistocene until today. Particular geological conditions on the local spring sites eventually created extremely deep stratigraphies, in many cases several tens of metres deep, each covering a long sequence of human history through all periods of the Palaeolithic (Besançon et al., 1982; Le Tensorer and Hours, 1989; Le Tensorer et al., 2001; Jagher and Le Tensorer, 2011; Jagher et al., 2015). Such a well-documented Palaeolithic record of open air sites in a continental environment is exceptional and is the most complete archaeological record within a single landscape of the Middle East.

Nadaouiyeh Aïn Askar was discovered in 1978 by the team of Jacques Cauvin (Cauvin et al., 1979) and was subject of a limited sounding in 1982 revealing the potential of the site (Hours et al., 1983). Between 1989 and 2003 excavations were conducted by the Institute of Prehistory of the University of Basel in close cooperation with the Directorate General of Antiquities and the University of Damascus (e.g. Le Tensorer et al., 1997; Jagher et al., 1997; Jagher, 2000, 2011) (Fig. 2). The deeply stratified open air site is located on a natural spring, flowing at least for the major part of the Middle Pleistocene, when discharge at this place ebbed in favour of close-by wells. The upwelling water from a deep artesian aquifer created a vertical karst system that regularly collapsed, creating extensive sinkholes at the surface. These depressions not only offered natural shelters for humans against the incessant wind in the open landscape but also permitted the accumulation fine grained sediments, rapidly covering and protecting the archaeological remains. The particular conditions in Nadaouiyeh Aïn Askar eventually resulted in a complex and interlaced stratigraphy, with a cumulated sediment column of more than 33 m, including 32 Acheulean levels and traces of later occupations (Jagher, 2011). The excavations revealed an important multiphase Acheulean occupation including the discovery of 12,415 hand axes and bifacial tools (Fig. 3). The bulk of the collection comes from one single erosional

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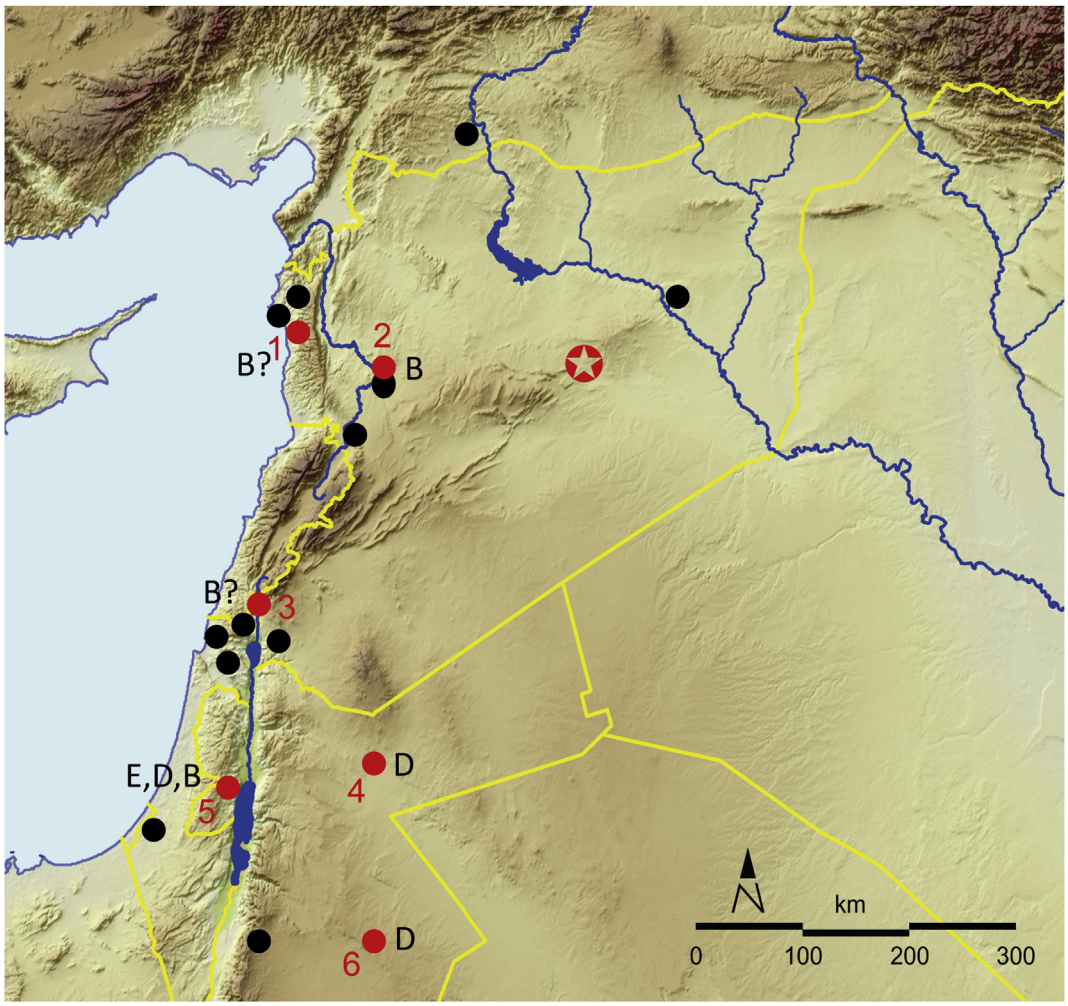

Fig. 1. Map of the Middle East with the localisation of Nadaouiyeh Aïn Askar (star) and sites mentioned in the text; 1 Roudo, 2 Gharmachi, 3 Ma'ayan Baruch, 4 Azraq, 5 Umm Qatafa, 6 Al Jafr. Letters refer to the Acheulean facies of Nadaouiyeh Aïn Askar (see text).

level, where artefacts from different periods were washed together. Additionally, a rich palaeontological material was collected, reflecting human subsistence and adaption to an arid environment (Reynaud, 2011; Jagher et al., 2015).

During the lower phase, the stratigraphy is dominated by limnic and paludal accumulations that were deposited under changing conditions (Jagher, 2000; Pümpin, 2003; Kalbe et al., 2016). In the upper part, additionally to limnic deposits, the stratigraphy is influenced by clastic deposits from an increased erosion of the local surroundings, as a low spring mound rose a few metres above the surrounding landscape, with degradation nearly outbalancing build-up that almost completely obliterated the original geomorphological structure.

The oldest elements of the archaeological record comprise hand axes of clearly Middle Acheulean style that is only known from isolated artefacts out of their original context. The bulk of the prehistoric record in Nadaouiyeh Aïn Askar is the complex of Levantine Upper Acheulean levels, divided by their geological context into six distinct facies. The presence of the Yabrudian and the Early Middle Palaeolithic (i.e. Hummalian – Wojtczak, 2011) and the classical Levalloiso-Mousterian of the Levant is confirmed in dislocated layers in the infilling of a later dolina (Hauck, 2010). The sequence is topped by a massive deposit sealing the site, inclosing in its upper part a perfectly stratified late Acheulean settlement.

The chronology of Nadaouiyeh Aïn Askar relies on analogies, as no direct dating is yet available. Potentially the Upper Acheulean can be as old as Gesher-Benot-North (i.e. 660 ka) when considering the flint hand axes from this site (Sharon et al., 2010; Sharon, 2011, pers. comm.). The end of this period coincides with the transition to the Yabrudian around 325 ka (Mercier and Valladas, 2003; Mercier et al., 2013). Older claims for this transition are suggested, but have yet to be substantiated (Gopher et al., 2010; Mercier et al., 2013). The current age model for Nadaouiyeh Aïn Askar includes the period between roughly 550 ka as maximum age for the deepest *in situ* levels and 325 ka with the appearance of the Yabrudian.

2. Lithic industry

Additionally to previous studies (Le Tensorer, 2006; Jagher, 2011) the database of the Nadaouiyeh Aïn Askar hand axes has been revised for this paper and omitted materials included, permitting a higher resolution on a firmer statistical base (this database is available as supplementary material to this paper). Formal tools are almost completely restricted to artefacts made by façonnage. Retouched flake tools are extremely rare compared to the numbers of core-tools (Table 1). Special attention was given to the edge preservation to avoid an arbitrary inflation of the numbers in this category. In a general trend flake tools become slightly more

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