# Middle Devensian sediments at Sandy Quarry and speculation on the provenance of a handaxe find

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*SUMMARY*

*This paper reports the recent find of a flat-butted cordate (or 'bout coupé') handaxe on a reject heap at Sandy Quarry, a sand and gravel quarry near the River Ivel. Handaxes of this type are typically found either in undatable surface contexts, or in Middle Palaeolithic sites associated with Neanderthal activity in Britain during Marine Oxygen Isotope Stage 3 (MIS 3; 59,000–27,000 years BP). Neanderthals were the sole human occupants of Britain for perhaps the first twenty five millennia of this period. This find therefore adds to the growing knowledge of Neanderthal activity and its extent in southern lowland Britain before the onset of the Last Glacial Maximum. Previous studies of the Middle Devensian sediments at Sandy Quarry were made by Gao et al. (1998), who dated organics that occured below and within the lower part of the main body of sand and gravel at ~30,000 years BP, which is a broadly similar timeframe to that of inferred Neanderthal activity in southern Britain. Newly exposed sections at Sandy Quarry reveal a broadly similar sequence of Middle Devensian sediments as previously found, with the major exception being far more extensive organic and silty sediments below the main body of sand and gravel that are indicative of a large backswamp area. Such an environmental setting was found at Lynford Quarry in Norfolk, the Neanderthal Middle Palaeolithic butchery site where forty-seven such handaxes were excavated. The handaxe from Sandy Quarry was found to be in a fresh condition with relatively sharp edges and minimal damage, which indicates that the handaxe had not been transported a great distance by fluvial action and was possibly deposited in the low energy backswamp area of the ancient floodplain.*

## INTRODUCTION

The sand and gravel at Sandy Quarry, north of Biggleswade (Fig. 1), were originally laid down by the River Ivel during the Middle Devensian period, at least 29,000 yrs BP (Gao *et al*. 1998). The River Ivel is a north-flowing tributary of the River Great Ouse and the quarry is presently located less than 1km west from the modern river (Fig. 1). In the past, however, the River Ivel was larger and flowed through the area that is now being quarried (Gao *et al*. 1998).

A handaxe was recently found at Sandy Quarry on a reject heap — where less marketable, 'oversize' rocks are stored — and is of the type usually termed *bout coupé* (although Roger Jacobi prefers the term 'flat-butted cordate') (Fig. 2). Such handaxes are typical of those used by Neanderthals in Britain during the late Middle Palaeolithic, before the onset of the last glacial stage (White and Jacobi 2002), a climatic period 59,000–27,000 yrs BP termed Marine Oxygen Isotope Stage 3 (MIS 3). This is the first handaxe found at Sandy Quarry although it is not an isolated case for the region, since several such handaxes have been found in Cambridgeshire from similarly aged gravels of the Great Ouse at Little Paxton, Fenstanton, Meadow Lane (St. Ives), Willingham, Over, Fen Drayton and Hemingford Grey (references in White and Jacobi 2002) and also from Bedford (Roe 1981; Tyldesley 1987; Wymer 1999). These finds provide an opportunity to better understand a period or phases of Neanderthal activity on lowland floodplain areas of southern Britain during MIS 3 (*e.g*. Schreve 2006).

This paper provides a description of recently exposed Middle Devensian sediments at Sandy Quarry (Fig. 3), and, although the handaxe was found on a reject heap, an attempt is made, based on the condition of the handaxe and the sedimentology of the deposits, to speculate on its likely provenance.

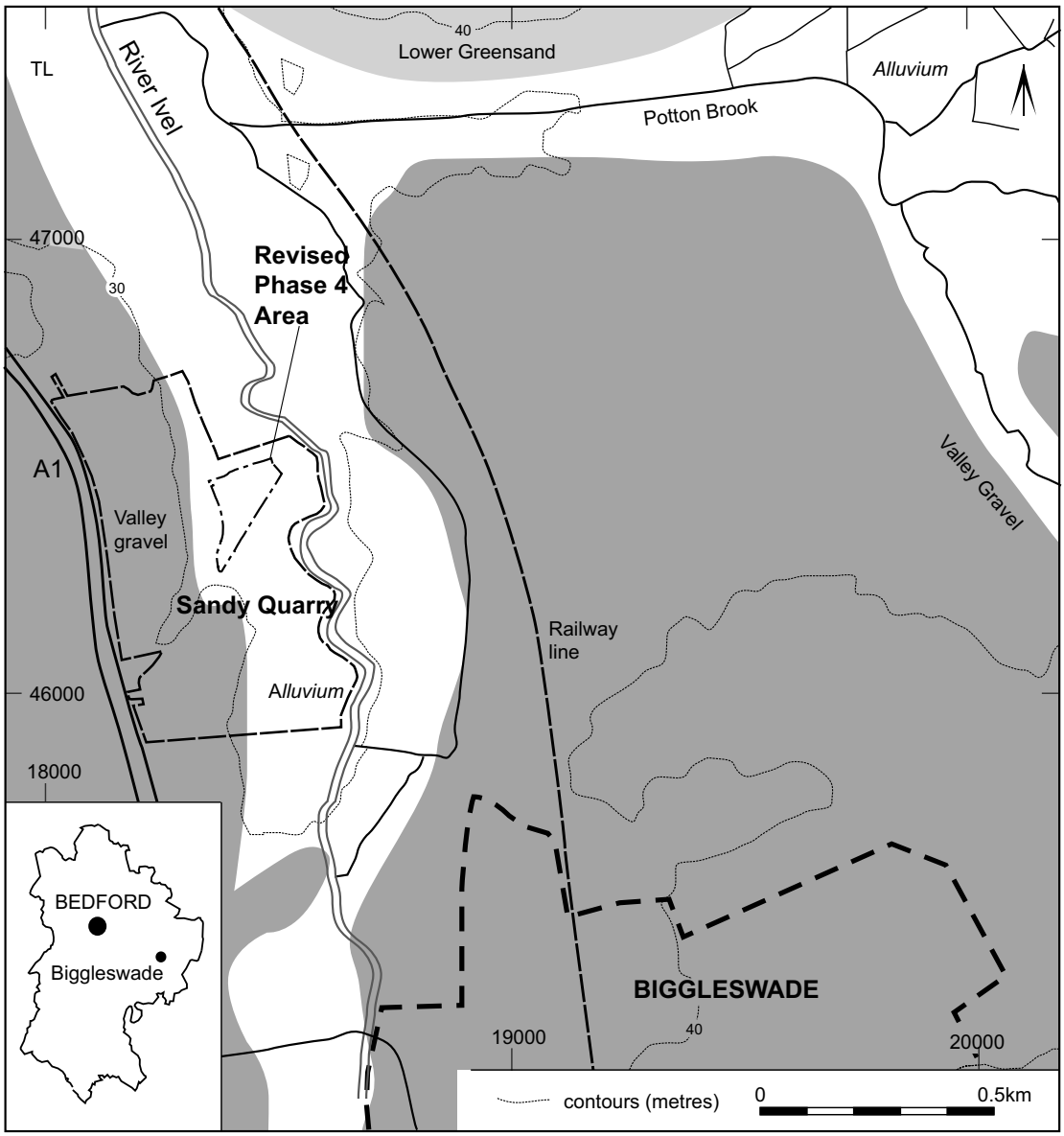


Figure 1: Location of Ivel Farm, Sandy Quarry. The handaxe was found from a reject heap of gravels excavated from the Revised Phase 4 area

## PREVIOUS STUDIES OF THE MIDDLE DEVENSIAN DEPOSITS AT SANDY

Previous studies of the Middle Devensian sediments at Sandy Quarry have been made in detail by Gao *et al*. (1998). They described a sedimentary sequence around 4m thick, consisting of three lithological units (Fig. 4) that were seen recently in newly exposed section faces in Sandy Quarry. At the base is Unit 1, a sand, overlain by sand and gravel of Unit 2, followed by silts and clay of Unit 3.

Unit 1, over 1m thick, is a grey sand that is probably derived from erosion of the Lower Greensand bedrock. Unit 2, 2.5–3m thick, consists largely of a brownish gravel. The Unit 2 gravel is


Figure 2: Flat-butted cordate handaxe found on the reject heap at Sandy Quarry in August 2006 by Andrew Brown. Note the sharp edges indicative of minimal abrasion during and after deposition. There is small but very fresh damage to one of its corners and to its tip

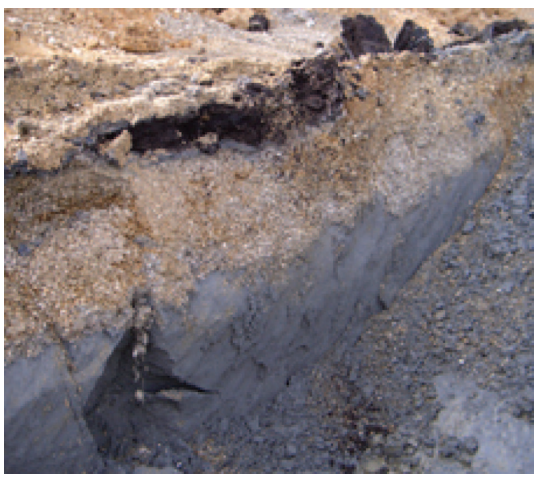

Figure 3: The silty black organic layer (*c*. 20cm thick in this photograph) close to the base of Unit 2. These extensive organics are likely to be the remains of a large backswamp area. It is possible that the handaxe was originally deposited in these sediments

clast-supported and mainly massive in structure — typically resembling the bedform of bars and sheets in a braided river. The gravels are dominated by flint, derived from erosion of the Anglian till (laid down by the Anglian ice sheet around 450,000 yrs BP). Layers of cross-bedded sand occur within the gravels that probably represent infills of small channels. Also occasionally present within the gravels are silt beds that contain organic detritus and molluscan shells (Fig. 4). The fine-grained nature of the silts indicates sediments deposited in slow-moving or still conditions, probably in temporarily abandoned channels of a floodplain (Williams and Rust 1969). Unit 3, an orange-brown silty clay up to 0.5m thick, is a recent floodplain sediment (Edmonds and Dinham 1965). Its uppermost part includes 25cm of modern soil (Gao *et al*. 1998).

It is from the organic materials of Unit 2 that Gao *et al*. (1998) obtained radiocarbon ages of 34,055 yrs BP and 29,250 yrs BP (Fig. 4). They also reconstructed the environmental conditions for these time periods. From the lower organic channel, they found many species of plant macrofossils, molluscs and insects that are typically found in colder climates at the present day. Fossil beetles were used to reconstruct the temperature at Sandy, with the warmest month between 8˚C and 11˚C and the coldest between –10˚C and –28˚C. Conditions were therefore harsh in Sandy around 30,000 years ago and like the tundra of arctic Russia at the present day (Gao *et al*. 1998).

## THE HANDAXE FIND

The handaxe was found by quarryman Andrew Brown in August 2006 on a gravel reject heap, and was subsequently passed on to the contracting archaeological unit at Sandy Quarry, Albion Archaeology. The handaxe was in a relatively sharp and 'fresh' condition with minimal rounding

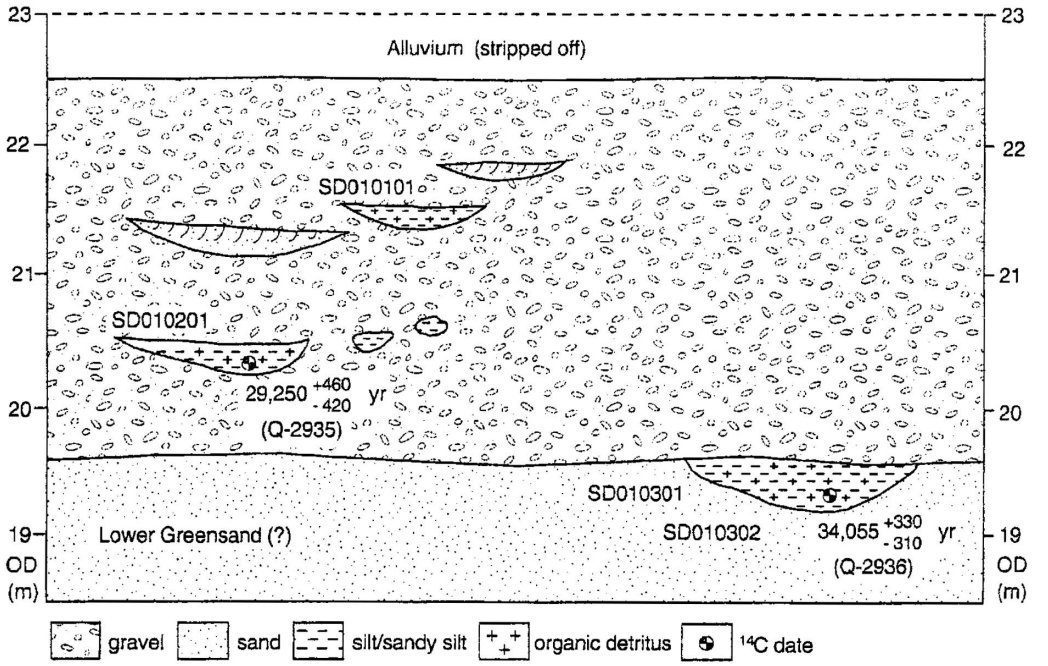


Figure 4: Schematic section of Middle Devensian sediments with radiocarbon dates in Sandy Quarry, from Gao *et al*. (1998)

of edges and little evidence of patination (the discolouration that occurs to the surface of lithic objects due to weathering over time) (Fig. 2). One of the basal corners and tip have been damaged and lost due to very fresh breaks, which are likely to have been inflicted in the mechanical gravel sorter. The reject heap on which the handaxe was found derived from the Revised Phase 4 area of Sandy Quarry (Fig. 1). The exact provenance of the handaxe from the Middle Devensian sequence within the Revised Phase 4 area is the main subject of the remainder of this paper.

## REVISED PHASE 4 AREA OF SANDY QUARRY: DESCRIPTION OF THE NEWLY EXPOSED MIDDLE DEVENSIAN SEQUENCE

Subsequent visits were made by the authors in September and October 2006 to view the exposed section faces of the Revised Phase 4 area. The aim was to observe and describe the Middle Devensian sediments exposed, compare them to those described by Gao *et al*. (1998) and speculate from which deposits the handaxe was likely to have come.

The deposits observed were thus (from the base upwards):

Homogeneous sand, at least 1m thick, bluish grey in colour. Due to the homogenous grain size this was interpreted as being produced by sorting in a river. The bluish grey colour indicated possible gleying due to waterlogged conditions, or maybe locally reworked Lower Greensand bedrock (Gao *et al*. 1998).

Yellowish brown, flint-dominated, clast-supported, rounded to angular, medium gravel, *c*. 3m thick. Towards the base of the gravel were extensive beds of silt, *c*. 20–50 cm thick, containing fibrous (plant macrofossils) organic materials and small mollusc shells. These organic beds appeared to be patchy but overlay Unit 1 for almost the whole area of Revised Phase 4, *c*. 200m$^2$ (Fig. 1). In some places they lay directly above Unit 1, in others there was up to 50cm of fine gravel between Unit 1 and the organic beds (Fig. 3). Layers of cross-bedded sand also occurred within the gravels. In sections to the southeast of the site, more poorly sorted gravel with degraded fibrous, organic material was observed. In one section to the north of the site, *c*. 1m below the top of the Unit 2 gravel, were layers of sand with a

contorted structure. In a section to the northeast of the site, indurated beds of sand, *c*. 3–5cm thick, were observed in the very upper parts of the gravels, that fizzed vigorously with 10% HCl acid.

## DISCUSSION

The broad sequence of deposits exposed had very similar sedimentary properties – and are thus inferred to be the same units – as those also described from Sandy by Gao *et al*. (1998). There are, however, some exceptions: a) the organic layers in the lower parts of the Unit 2 gravel were far more widespread in the Revised Phase 4 area, perhaps representing a larger backswamp area of the former river; b) Unit 3 was not present since it had been stripped away for quarrying; c) the poorly sorted gravel with degraded organics probably represents a fast-flowing section of the river that had ripped-up organic deposits from underneath and incorporated them within the gravel; d) contorted beds were present in the Unit 2 gravels that are typical of involutions caused by the seasonal melting of frozen ground in a cold periglacial climate; e) the indurated beds of sand in the upper gravel layers are carbonate-rich calcrete, possibly formed under local conditions during the Holocene (*cf*. Strong *et al*. 2006).

The relatively fresh and sharp condition of the handaxe found at Sandy (Fig. 2) indicates that it had not been transported a great distance by fluvial action. We speculate that it is unlikely that the handaxe originally derived from the main body of gravels, since there is little evidence for abrasion, rolling and rounding of its edges, as would be expected in a high-energy braided river. In addition, greater patination would perhaps be expected for a handaxe deposited in sand and gravel due to increased water seepage. Rather, it is more likely that the handaxe originally came from the silty layers of Unit 2, that represent slow-moving water perhaps in a backswamp area of the river (Fig. 3). These silts would have provided greater protection from weathering and reduced patination. The swampy area may have acted as a natural trap for large mammals, as has been speculated for the famous site at Lynford in Norfolk. At Lynford, forty-seven bout coupé handaxes were found alongside a rich assemblage of animal remains from organic sediments dated to MIS 3 (Schreve 2006) and in a similar sequence below river gravels as at Sandy.

However, no further lithic artefacts or large mammal remains were found from subsequent visits to the Revised Phase 4 area at Sandy Quarry. Inspections were also made of the reject heaps by the authors, but no further artefacts were found.

## CONCLUSIONS

This paper reports the recent find of a flat-butted cordate (or 'bout coupé') handaxe from Sandy Quarry, a sand and gravel quarry, which is typical of handaxes found from sites associated with evidence for Neanderthal activity in Britain during MIS 3. This find adds to the growing knowledge of Neanderthal activity and its extent in southern lowland Britain before the onset of the Last Glacial Maximum. Previous studies by Gao *et al*. (1998) from Sandy Quarry dated organics that occurred below and within the lower part of the main body of sand and gravel at ~30 ka, which is a broadly similar timeframe to that of inferred Neanderthal activity in southern Britain.

Newly exposed sections at Sandy Quarry have been described, and reveal a broadly similar sequence of Middle Devensian sediments as previously found from the studies of Gao *et al*. (1998), the major exception being far more extensive organic and silty sediments below the main body of sand and gravel, indicative of a large backswamp area. Such an environmental setting was found for the famous Neanderthal butchery site at Lynford Quarry in Norfolk.

The handaxe from Sandy Quarry was found to be in a fresh condition with relatively sharp edges and minimal damage, which indicates that the handaxe had not been transported a great distance by fluvial action. We speculate that the handaxe was originally deposited in the low energy silts of the inferred backswamp area. These silts would have provided greater protection from weathering (reduced patination), whereas if the handaxe had been deposited in the main body of the river gravel, it would have been more susceptible to abrasion, rolling and rounding of its edges.

Subsequent visits to Sandy Quarry did not produce any further handaxe finds and work at the quarry has now ceased. However, it is possible that MIS 3 archaeology and animal remains could be revealed in any organic deposits found beneath or within the Middle Devensian sand and gravels during a watching brief on any future quarrying along

the River Ivel, with the potential for another discovery akin to Lynford.

## ACKNOWLEDGEMENTS

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