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Introduction

During June 2006 an intervention was made on the valley slope at Whaydale (NGR SE880625) to assess the nature of sediment deposition and land use in this valley as part of a PhD entitled 'Human activity and landscape change on the Yorkshire Wolds'. The location and timing of the fieldwork at Whaydale took advantage of a concurrent excavation at Burdale under the auspices of Yorkshire Wolds Research Project and the Viking and Anglo-Saxon Landscape and Economy project, both based at the University of York.

Aerial photos taken of Burdale in 2004 revealed extensive settlement evidence (Dave Mcleod pers. comm.) but the site was also known to metal detectorists who had been illegally excavating for a number of years on the site and surrounding areas. Preliminary field investigations, including field walking and magnetometry, revealed evidence for settlement and an area of excavation was planned to utilise manpower from the Undergraduate Field School.

Historiography of Burdale

Burdale is situated in the northern High Wolds, along the main valley from Thixendale to Fimber at a height of 99m AOD, it is likely that current roadway follows the Roman trackway route (Hayfield 1987, 195). Burdale is mentioned in Domesday 'Ingifrith 10 bovates of land to the geld, land for 4 oxen' but the Domesday spelling of Burdale has varied somewhat from Bredale, Breddale and Bredhalle (Yorkshire Domesday 1992).

The most comprehensive archaeological survey of the area comes from the Wharram Parish survey of 1974 (Hayfield 1987). Three areas of settlement were defined around Burdale; a fourth century Roman farmstead at 185m AOD called Tunnel Top farmstead assigned from 400 unabraded pottery sherds; the Burdale Crossroad site where an agricultural cutting revealed 540 large pottery sherds ranging from the Iron Age to seventeenth century; the Burdale/ Fimber boundary farmstead at 93m AOD with a double ditched enclosure and material from the 3rd and 4th centuries AD (Hayfield 1987, 135). The identification of three sites in close association has led to the description of Burdale as 'a preferred settlement location' with a medieval vill,

described in documentary sources, occupied until the sixteenth century (*ibid* 136). Much of the current settlement evidence for Burdale lies underneath farm buildings, pasture and the railway embankment.

Construction began on the Malton to Driffield Railway Line in 1846 with the building of the Burdale Tunnel and the census of 1851 for Wharram Percy, Wharram Le Street, and Raisthorpe and Burdale recorded 489 persons, of whom half were temporary residents connected to the railway (Burton 1997,5). Bulmers Directory of 1892 describes Thixendale Parish as comprising of two townships Thixendale, and Raisthorpe and Burdale. The parish contained 3811 acres with a population in 1891 of 234 (Bulmers 1982, 719). The land was mainly used for growing barley, oats and turnips at this time, and in 1890 there were 23,000 horses for the plough, 83,000 cattle and 483,000 sheep in the East Riding.

Landscape

The solid geology is Middle Cretaceous Chalk and this is overlain by very little in the way of drift geology and a shallow calcareous soil. The thin soils of the Wolds are of the Icknield Series, a well-drained, stony loam or a silty rendzina from chalk (Matthews 1975, 106). The deeper Wolds Series soil is a well-drained brown earth from plateau drift over chalk, occurring to a depth of approximately 60cm (*ibid* 107). At Raisthorpe there are a significant number of asymmetrical, enclosed depressions that clearly represent solution collapse of the chalk but are on such a large scale that they are unique in England (Lewin 1969, 56).

The railway cutting has significantly altered the topography and slope profile of the valley bottom at Burdale. Lester Bell, tenant farmer, has stated that the springs seen today at Fimber and Thixendale were once joined together by a stream/river that ran across the field containing the Anglian settlement evidence. In the 1950s this watercourse dried up, but can be clearly seen running across the field on the Ordnance Survey map of 1890, 1:2500 (Landmark Information Group Ltd. 2004).

Background dry valley research

Chalklands are some of the most intensively studied areas of Britain however there are many aspects that are not well understood, for example, whether the erosion is incremental or pulsed, and the mechanism of local diversity and complexity in colluvium (Allen 1994,403). Despite a concentration of research, the environmental

history of the southern English chalk land is not fully understood because the majority of evidence comes from archaeological sites, predominantly based on contexts from beneath Neolithic monuments which are data poor and biased by extensive human modification (Davies and Griffiths 2005, 97). Dry valley studies in the south of England have highlighted the complex and unpredictable nature of colluvial deposition. Moreover, they have revealed the great potential of dry valley studies for archaeology, especially in identifying land-use change and buried sites. A recent synthesis of dry valley Beaker settlement sites deduces that archaeologists have generally been looking in the wrong places, concentrating on exposed valley tops rather than sheltered valley bottoms (Allen 2005, 223). This work catalogues thirty-five settlement sites on the southern chalk downlands from valley bottoms but concludes that the situation for Bronze Age and dry valley sites in the rest of Britain is unknown (*ibid* 237).

There is a significant lack of geomorphological and environmental background to the archaeology of the Yorkshire Wolds. The lack of any environmental overview especially relating to hydrology, prevents us from understanding past land use, settlement and patterns of land clearance (Fenton Thomas 2003,22).

Research aims

The aim of the 2006 season at Whaydale was to;

Characterise the sediments in a continuous and deeper section than previously possible

Increase sampling size to maximise opportunities for palaeoenvironmental evidence

To test sediments at field boundary for human interference

To relate off-site sediments to on-site profile

Method

Research at Whaydale in 2005 consisted of three test pits and four auger transects in the area of the valley mouth, abutting the field which contains evidence for multi-period settlement. The steep valley sides at Whaydale had very thin profiles so a series of small transects were put across the flat floor of the valley. In the base we found a clay loam usually to a depth of 1.5metres (the maximum of the steel auger). Organic rich sediments were found here (c.40% loss on ignition) and some bone

fragments were preserved. Very few land snails were found but artefacts from the Roman to Anglo-Saxon period were recovered, some of them were not abraded. There was a hillwash deposit of 25 cm between a Roman Samian Ware fragment and a very worn Anglo-Saxon fragment in test pit 2, but this was not replicated in any of the other test pits. Charcoal was found but was concentrated in the topsoil and subsoil, and so was a relatively recent addition.

The advantage of the excavation in 2006 was the availability of a machine and permission to excavate a large trench (12m x 3m maximum), allowing a 12 metre continuous profile of slope deposits to be examined. The excavated section was dug back for 0.5 metres in metre wide sections to allow for three-dimensional recording of artefacts and the collection of 2 kg samples from each sedimentary unit. The profiles were photographed, described and drawn in the field.

An auger survey was conducted in two transects back from the boundary fence against the Anglian settlement to assess the accuracy of aerial photographs in defining an edge to the settled area. Additionally a topographic survey was undertaken by Colin Tingey of an area of undisturbed ridge and furrow to the immediate east of the excavation site.

Results

The auger survey consisted of eighteen points and revealed a silty clay loam topsoil between 26 and 74 cm deep, a silty clay loam or clay loam subsoil with solifluction gravel reached at between 79 and 140 cm. In the central area of the transect (central part of the valley mouth) the clay loam continued to a depth of more than the extent of the auger (150cm). The topsoil was almost always underlain by a stoney layer (from earthworm activity) and there was no evidence whatsoever of any human disturbance or activity.

The excavated area, following machining, revealed a square cut feature which was filled with orange clay. This was excavated by half sectioning and appeared to be a natural feature, containing a few grains of charred barley. The lab results for the five hand excavated sections are attached (Appendix 1). There was a single piece of Anglo Saxon pottery from 28cm below the groundsurface in the subsoil. Several segments of modern metal work were found in the topsoil. Two worked flints were found at depths of 123cm and a large amount of charcoal and some charred grains from circa.130cm. There was discussion as to whether this might represent earthworm activity. The lab

results show a total of 113 landsnails from all samples. The results also show an increase in organic matter in units 5 or 6, across four sections.

An area of the main excavation site was sampled, drawn and measured (Context F1108). The lab results show a high amount of calcium carbonate, alkaline sediments, and high phosphate levels throughout. This may be related to the field being arable and the effect of artificial fertilisers.

Discussion

The most surprising discovery was that there was barely any artefactual material found. This was in the context of a range of pottery from 2005 at Whaydale and the site being a mere 180m from the excavated area, where a range of insitu finds were identified. The results of gridded, systematic fieldwalking from March 2006 revealed circa.1165 pottery sherds from all periods for the whole field, the excavation site at Whaydale was around 40m away from the field edge.

The square feature was found to contain a sediment which was clay-based with very little coarse material, very little organics, mollusc free and low phosphates. It appeared to be a very defined deposit of a *sols lessive*.

Towards the top of slope the total deposit depth onto solifluction gravel was 80cm, containing circa 40cm of hillwash deposit and with a periglacial involuted surface clearly seen. At the maximum point the deposits were 1.6m deep and contained just over 1m of hill wash material. There was noted to be a subtle colour variation and textural change within unit 5, this possibly represents an early Holocene landsurface so three micromorphology samples were taken. This result partly correlated with the increase in organics seen in the lab tests.

Conclusion

There is often useful evidence contained in ‘off-site’ locations, and this is an instance where the archaeological site record can be enhanced by such study and the environmental history better understood. The micromorphology samples need to be processed and the results of the sediment analyses and landsnail assemblages combined with those from previous work. The variation in sedimentation within a small geographical area is striking and will be further analysed in due course.

Bibliographic references

Allen,M.J. 1994 'The Landuse History of the southern English Chalkland with an evaluation of the Beaker Period using environmental data: colluvial deposits as environmental indicators' Unpublished PhD Thesis University of Southampton

Allen,MJ. 2005 'Beaker Settlement and Environment on the Chalk Downs of southern England' *Proceedings of the Prehistoric Society* 71, 219-245

Bulmers History and Directory of East Yorkshire 1892 1982 Howden : Mrs Pye Books

Burton,W. 1997 *The Malton and Driffield Junction Railway,* Halifax : Barstow

Davies,P. and Griffiths,HI. 2005 'Molluscan and ostracod biostratigraphy of Holocene tufa in the Test valley at Bossington, Hampshire,UK' *The Holocene* 15/1 97-110

Fenton Thomas,C. 2003 *Late Prehistoric and Early Historic Land-Use on the Yorkshire Wolds* BAR 350, Oxford: Archaeopress

Landmark Info 2004 Online at English Heritage

Hayfield,C. 1987 *An archaeological survey of the parish of Wharram Percy, East Yorkshire* BAR 172

Lewin,J. 1969 *The Yorkshire Wolds; a study in geomorphology*, Hull: University of Hull Occ Paper 11

Matthews,B 1975 *Soils in North Yorkshire I* Harpenden: HMSO

Yorkshire Domesday, 1992 Alecto Historical Editions, London

Appendix 1

Sample No	Colour Dry	Colour Wet	Texture	CaCO3	pH	Phos	LOI	Coarse %
A1	10YR 4/2	10YR 3/2	ZCL	0.10%	7.51	2	9.15	8.91
A2	10YR 5/3	10YR 3/3	ZCL	0.5 -1.0	8.02	1	12.98	67
A3	10YR 5/6	10YR 4/6	CL	0.5 - 1.0	8.26	2	8.48	48.93
A5	10YR 6/4	10YR 5/4	CL	2.0-5.0	8.67	5	33.67	64.7
A6	10YR 7/3	10YR 4/4	C	2.0-5.0	8.52	4	15.81	69
B7	10YR 3/2	10YR 3/1	ZCL	<0.1	7.64	1	34.78	20.4
B8	10YR 5/2	10YR 4/2	ZCL	<0.1	7.76	2	13.1	71.69
B9	10YR 4/3	10YR 3/4	CL	0.5-1.0	8.4	2	9.57	42.29
B10	7YR 5/4	7YR 4/4	C	<0.1	8.27	2	12.14	16.9
B11	10YR 6/4	10YR 4/4	CL	2.0-5.0	8.55	3	37.79	71.33
C12	10YR 4/2	10YR 3/2	ZL	0.1	7.59	4	19.92	17.74
C13	10YR 4/3	10YR 3/2	ZCL	0.5-1.0	8.17	4	17.74	67.67
C14	10YR 4/4	10YR 3/4	CL	1.0-2.0	8.32	4	13.3	50
C15	10YR 5/4	10YR 4/4	CL	0.5-1.0	8.43	3	8.2	40
C16	10YR 5/8	10YR 4/6	C	0.1	8.39	2	7.1	8.64
C17	10YR 6/4	10YR 5/4	C	2.0-5.0	8.51	5	10.62	64.7
D18	10YR 4/1	10YR 3/1	ZCL	<0.1	7.59	1	19.8	18.3
D19	10YR 4/3	10YR 3/3	ZCL	5.0-10.0	8.27	2	15.98	44
D20	10YR 4/4	10YR 3/4	CL	1.0-2.0	8.08	2	14.23	25.67
D21	7YR 5/3	7YR 3/3	C	1.0-2.0	8.04	1	8	37
D22	10YR 4/6	10YR3/6	C	<0.1	8.27	1	13.06	19.1
D23	10YR 7/3	10YR 5/3	ZC	5.0-10	8.3	2	33.25	71.53
E24	10YR 3/2	10YR 2/2	ZL	<0.1	6.65	1	69.89	19.35
E25	10YR 4/2	10YR 3/3	ZCL	0.5-1.0	7.99	2	13.96	62.5
E26	10YR 4/4	10YR 3/4	ZC	1.0-2.0	8.43	3	16.53	57.77
E27	10YR 4/4	10YR 3/4	CL	1.0-2.0	8.3	1	13.16	60.42
E28	10YR 4/4	10YR 3/4	C	0.5-1.0	8.25	1	10.41	90.68
E29	10YR 7/3	10YR 5/4	CL	5.0-10.0	6.46	2	33.17	45.37
Feature Fill	7YR 5/6	7YR 4/4	C	0.1-0.5	8.23	1	8.64	8.23
F1108/1	10YR 4/1	10YR 3/2	L	1.0-2.0	7.78	5	18.5	58.57
F1108/2	10YR 4/1	10YR 2/1	ZL	1.0-2.0	7.8	4	25.95	48
F1108/3	10YR 4/2	10YR 3/2	CL	5.0-10.0	7.83	4	18.68	73.78
F1108/4	10YR 5/2	10YR 3/2	CL	2.0-5.0	8.01	5	28.2	78.75

Soil tests Burdale 2006

General view of trench at Whaydale/ Burdale 2006