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EXCAVATION OF A NEOLITHIC HOUSE AT YARBURY, NEAR GRASSINGTON, NORTH YORKSHIRE.

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With

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INTRODUCTION

The discovery of the Neolithic house at Yarnbury was made during the Yorkshire Dales Henge Project aimed at examining the landscapes around the known Yorkshire Pennine henges at Castle Dykes and Yarnbury and the recently discovered pair of henges at Threshfield (Gibson 2014 & in prep). This project was designed to undertake geophysical survey not only over the henges themselves but also over c.15 hectares of the surrounding landscape to investigate the apparent isolation of the monuments. With the exception of Threshfield, there do not appear to be any contemporary monuments associated with these henges which is unusual in the case of such sites elsewhere (Harding & Lee 1987; Harding 2013). The situations of the Castle Dykes and Yarnbury henges are also unusual in that they sit not on the valley floor but on spurs formed by the main river and a minor tributary. Geophysical survey at Castle Dykes was undertaken in September 2015 and will be reported elsewhere along with the wider surveys at Yarnbury and Threshfield. An interim report on the latter has already been published (Gibson 2014).

Upper Wharfedale comprises a glacial valley running North-west-South-east (Atkinson 2003) then taking a dramatic turn to the East where the River Wharfe meets the Millstone Grit massif that is Rombald's Moor near Ilkley. North of this near right-angled swing is the North Craven Fault running from Malham Moor in the West to Craven Moor in the East and dividing the predominantly limestone based solid geology of the North-west from the mudstones of the South-east. Rocks of the Yoredale group (alternating bands of sandstone, shale and limestone with some chert inclusions) line the valley sides. Overlying this is a layer of Millstone Grit which characterises the hilltops of the Southern and Eastern moors.

Yarnbury (Fig 1) lies some 2km to the North-east of the village of Grassington in Upper Wharfedale and within the Southern boundary of the Yorkshire Dales National Park (SE014654). The area is known for the intense lead mining activity dating from at least the early 17th C to the late 19th C with some later small scale exploitation in the early 20th C. The landscape to the North of the henge is much disturbed by test pits, rakes and other features resulting from this activity. To the West starts the Southern end of the Lea Green rectilinear field system (Raistrick 1938) which incorporates an alignment of medium sized cairns running along a North – South orientated ridge above the East bank of and overlooking the River Wharfe and perhaps representing an ancient route-way now fossilised by the modern long distance path, 'The Dales Way'.

Significant quantities of Mesolithic, Neolithic and Early Bronze Age artefacts have also been recovered through fieldwalking in this area (Cherry 1998). These finds include fragments of polished stone axe-heads, projectile points (leaf, *petit tranchet* derivative and barbed and

tanged) scrapers, plano-convex knives as well as cores and awls. In addition, pottery comprising fragments of Middle Neolithic Impressed Ware and Beaker have also been recovered.

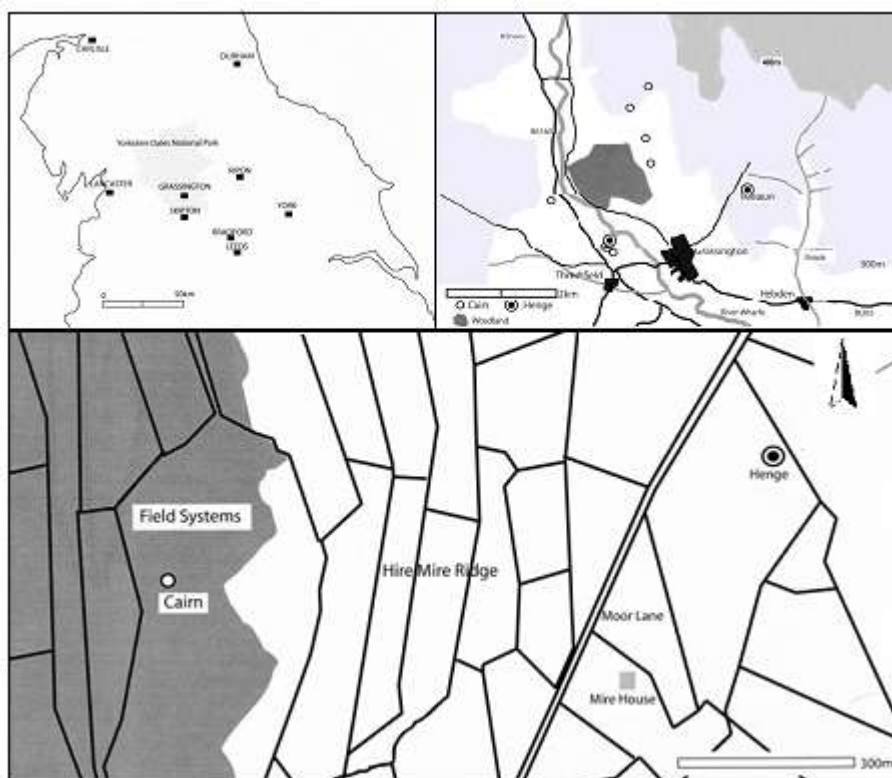


Fig 1 – Location plan of the Yarnbury henge and house.

The single-entranced circular enclosure at Yarnbury (SE014654) stands on a low local horizon on a South-east sloping spur between the Wharfe and its tributary the Hebden Brook. This ridge commands extensive views to the East round to the South and the entrance appears orientated on the land mass of Simon's Seat some 9km to the South-east. The Historic Environment Record held by the Yorkshire Dales National Park Authority lists 1 scraper, 1 core scraper, 1 barbed & tanged arrowhead, 1 fragment of a jet bead or pendant, 4 microliths and 1 blade being recovered from molehills in the field within which the henge lies (Craven Museum D3185/E/3). This clearly represents a long period of activity in the environs of the site even if that activity is episodic and on a small scale. With this in mind, however, a molehill survey was conducted over the North-eastern part of the field as part of the present project prior to the geophysical survey. Despite the large number of molehills comparatively few finds were recovered and will be reported elsewhere as part of the henge survey.

During the geophysical survey an irregular rectangular feature, measuring some 7m North-east – South-west by 8m North-west – South-east, was located by magnetometry 60m to the South-south-east of the henge (Fig 2). This appeared to be a structure defined by a bedding trench with postholes at intervals and with an entrance in the eastern corner. This entrance faces South-south-east towards the Wharfe Valley as it passes to the South of Simon's Seat. Interestingly, the henge entrance is sighted South-east, towards this massif, which marks the midwinter sunrise. Two large positive magnetic anomalies within the rectangle possibly represent burnt features such as hearths or internal postholes or pits. The structure coincided with a pre-enclosure hollow way or track (Fig 3), presumably connected with the early phases of lead mining to the North-east, which suggested that either the anomaly represented a substantial construction or that it was comparatively modern in date.

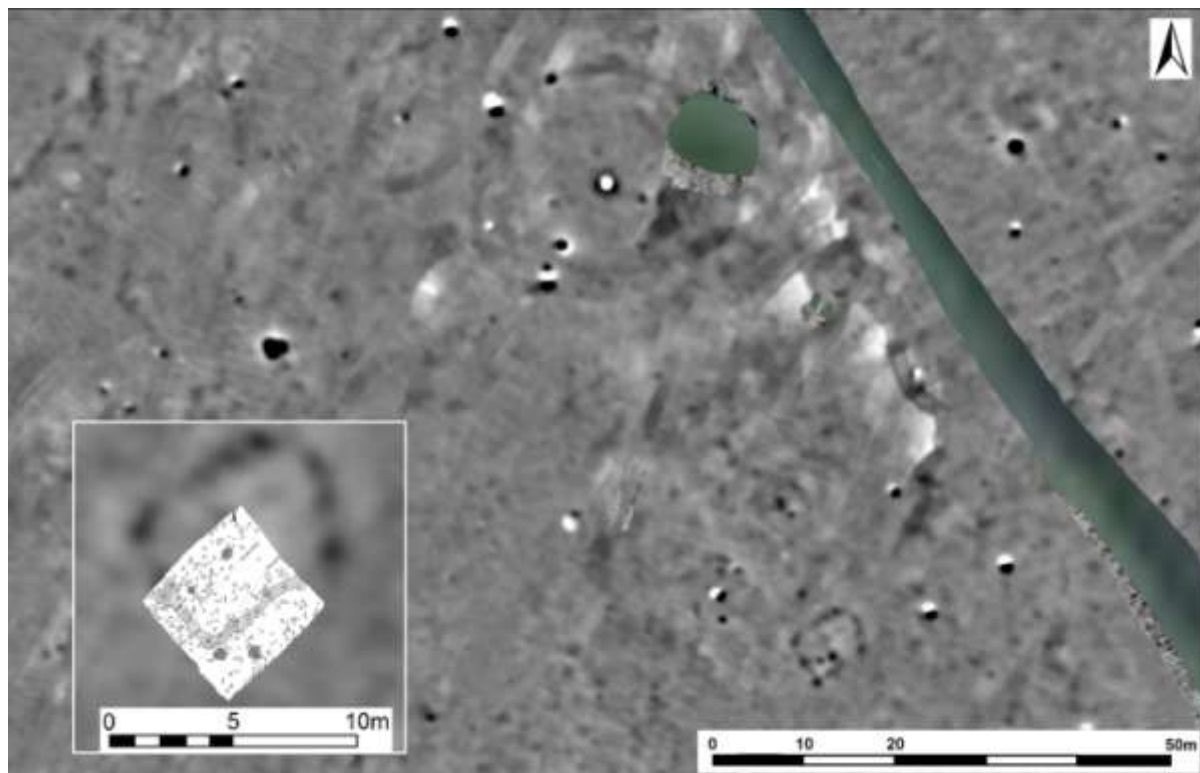


Fig 2 – Magnetometry of the Yarnbury henge and house to the South-south-east. Excavated area inset.

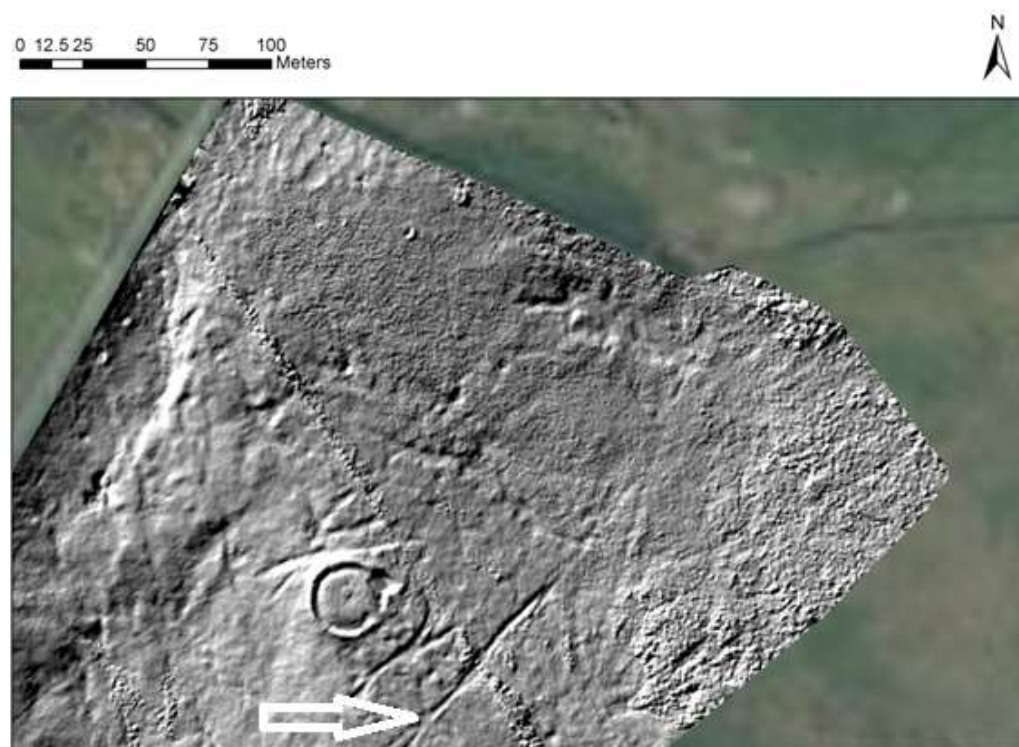


Fig 3 – topographic survey of Yarnbury henge showing the pre-enclosure hollow-ways. House site arrowed.

Comparatively modern buildings associated with either the lead mining or with agricultural activities in this area tend to be stone-built and as the structure appeared to underlie the route of the track, it suggested that it had a degree of antiquity and invited parallels with similar simple modular structures of the British and Irish Neolithic (Smyth 2014). If this comparison proved correct, then it would be of considerable local if not national importance given the paucity of Neolithic structural evidence in the Dales or the North of England generally. A small-scale sampling excavation was therefore planned to coincide with the excavation at the henge with the objective of obtaining securely stratified dating material from the site.

EXCAVATION

Excavation took place over three weeks in May-June 2014 and was run as a fieldwork course for students from the School of Archaeological Sciences at the University of Bradford with help from members of the Upper Wharfedale Heritage Group. A trench measuring 6m x 6m was opened over the Southern corner of the structure in order to sample some 25% of the building's floor plan. All excavation and reinstatement was by hand. The turf was stripped and stacked and the remaining topsoil [101] removed by trowelling. Finds from the topsoil were few but consisted of 4 chips, 12 flakes, 3 retouched pieces, 1 core, 1 blade, 2 scrapers and a leaf-shaped arrowhead (see below). Small fragments of pottery were also found during this cleaning process (see below).

The trackway [126] formed a linear zone of disturbance through the centre of the trench and was characterised by 'dirty' darker soil intermixed with rounded stones and charcoal flecks. It substantially truncated the perimeter of the structure in the South-west and the fragments of comminuted charcoal within [126] may well have been derived from the structure's floor and/or destruction. A shallow gully [118/119] appeared to form the south-eastern edge of the track but may be more apparent than real possibly representing a slightly different, downhill, soil structure. The track was very shallow over the southern corner of the bedding trench and the packing stones of posthole [107] were visible after removal of the topsoil showing through [126]. No finds were recorded from within this context. Finds on the top of [126], directly below the topsoil, comprised 2 chips, 4 flakes, 1 Mesolithic microlith and 1 thumbnail scraper possibly of Beaker affinity (see below).

Bedding Trench

The bedding trench ([cut 103, fill 104] Fig 4) was clearly visible as a slightly darker streak with intermittent patches of charcoal and occasional areas of pink burnt soil in the yellow-orange subsoil [102]. Other than where directly coinciding with the trackway, it does not appear to have suffered any significant degree of truncation as no old plough marks were noted and the area seems to have been in an area of permanent rough pasture. Packing stones were comparatively few, even in the postholes and, in the bedding trench at least, the encountered stones mainly seemed to have been accidental incorporations, perhaps derived from the naturally stony soil. The exception was in some of the postholes where substantial packing stones were present, particularly [105] which probably marks the gable support in the South-west side (see below).

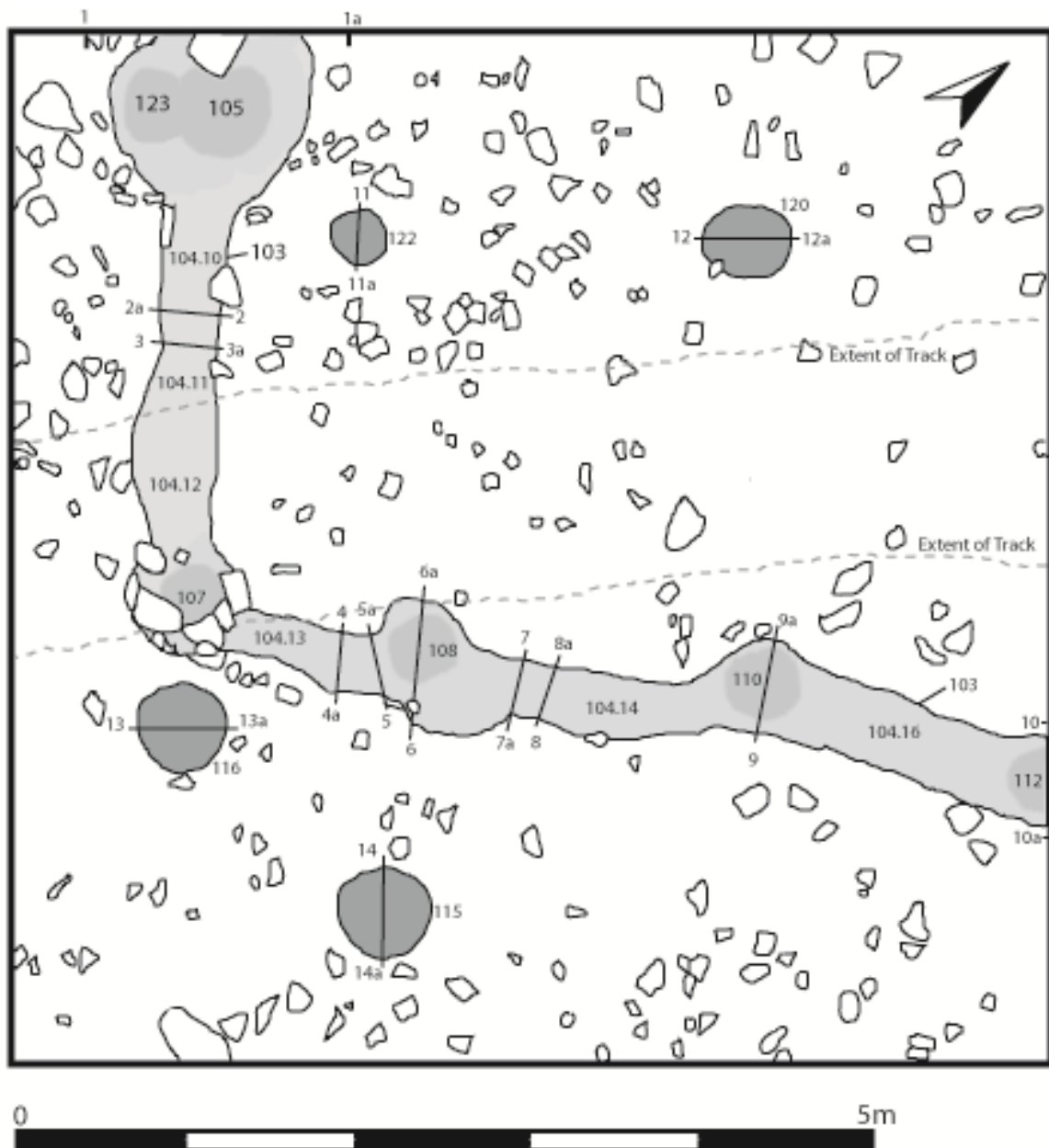


Fig 4 – Excavation plan of the structure and other features encountered in the vicinity. Contexts 123 and 105 have been projected.

Time did not permit the complete excavation of all features but sufficient sampling was undertaken of approximately 25% of the structure to allow the interpretation. The bedding trench [103] proved less substantial than the geophysical survey had suggested. It varied from 0.3m to 0.4m across and only c 0.25m deep in areas where it had not been disturbed by the track. Bedrock formed the base of the bedding trench in section 104.12 (Fig 5). With the exception of the large gable posthole [105] the trench tended to run on the outside of the postholes suggesting that the interval postholes had served as the frame for external cladding. No traces of posts or planks were noted in the fill but in section 8-8a traces of a carbonised horizontal oak pole were found (Figs 5 & 6) possibly confirming the use of framed wattle panels suggested by the charcoal report (see below).

Finds from the bedding trench were concentrated in the SW but were nevertheless few and comprised 1 chert fragment, 5 flakes, 9 small chips and 1 retouched flake (see below).

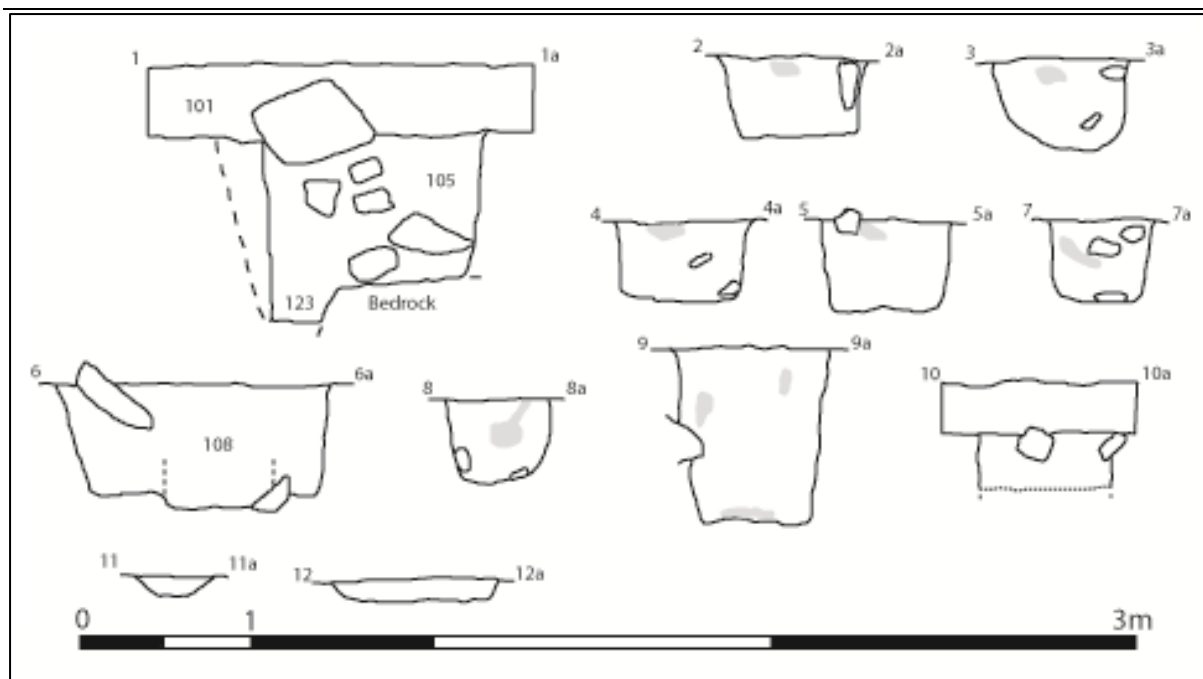


Fig 5 – Sections through the bedding trench and posthole. The section locations are identified on Fig 4.



Fig 6 – Photograph of the fragment of carbonised oak pole in section 8-8a.

The Postholes (Fig 5)

Although the positions of postholes could be inferred from the geophysical survey (Fig 2), with the exception of [105] and [107], none were immediately visible after the removal of the topsoil and it was only when the bedding trench was being investigated that they began to be detectable as bulges in the bedding trench sides. Post pipes were rarely observable

except towards the base of the excavated sections and, as mentioned above, packing stones were generally rare or absent.

Posthole [112] ran under the north-eastern section of the excavated area and was not fully excavated (Fig 5, section 10-10a). It measured 0.38m across and contained soft brown soil with fragments of oak charcoal. No post-pipe was visible in the limited section excavated but possible packing stones appeared in the upper levels. The presence of heartwood and sapwood charcoal suggests that the post was formed from an oak log. One flint flake was recovered from this context.

Posthole [110] was only encountered as the bedding trench was being emptied and was identified by its greater depth and charcoal rich fill. The posthole measured 0.45m across and was 0.5m deep below the surface of the subsoil (Fig 5, section 9-9a). The position of the postpipe, some 0.25m in diameter, was only visible in the lower fills marked by greater charcoal concentrations and a layer of charcoal defined the base. The presence of heartwood and sapwood charcoal suggests that the post was formed from an oak log. There were no finds from this context.

Posthole [108] was also represented by a bulge in the walls of the bedding trench and only recognised at a lower level by an increase in charcoal within a soft brown matrix. The feature measured 0.8m across and a packing stone in the upper fill as well as a slight depression in the base suggests a post-pipe some 0.3m in diameter (Fig 5, section 6-6a). At 0.35m deep, the feature proved comparatively shallow. The presence of heartwood and sapwood charcoal suggests that the post was formed from an oak log and roundwood hazel may suggest the remains of wattle walls. A hazelnut shell from this feature provided a radiocarbon date of 4922 ± 30 BP (SUERC-57194). There were no finds from this context.

Posthole [107] was not sectioned due to time constraints but unlike the other posts, contained a substantial number of packing stones in the upper levels (Figs 5 & 7). What appeared to be bedrock was reached at a depth of 0.40m. The presence of heartwood and sapwood charcoal suggests that the post was formed from an oak log and fragments of hazel and ash may again suggest traces of wattle walls. A hazelnut shell from this context provided a date of 4885 ± 36 BP (SUERC-54901). A flint chip and possible scraper fragment were recovered from this context.



Fig 7 – Detail of posthole [107] during excavation.

Posthole [105] proved to be the most complex and deepest feature containing a substantial number of packing stones in its fill (Fig 5, section 1-1a [105] and [123] projected). The post-pipe was recognised by charcoal flecks in contrast to the loamy packing material and suggested an original post some 0.4m in diameter. The base of the post rested on bedrock at a depth of 0.4m below the surface of the subsoil. The presence of heartwood and sapwood charcoal suggests that the post was formed from an oak log and fragments of hazel and ash may again suggest traces of wattle walls. As the packing stones were being removed, traces of a second post-pipe [123] became visible as it entered a dip in the bedrock. This was again distinguished by increased charcoal and reached a depth of 0.5m below the surface of the subsoil. The post-pipe suggested a post some 0.3m diameter and the fact that it was only visible after the remains of [105] had been removed suggested that it had been replaced by [105]: it must be stated however, that there was no evidence for any other replacement of elements elsewhere in the excavated area. It is possible that a double post stood within the bedding trench at this point but if this were the case, then it would be expected that [123] would have been visible at a higher level. The charcoal from this feature was identified as oak (including sapwood) and fragments of hazel and birch may again suggest traces of wattle walls. A flint bladelet, core fragment and serrated blade were recovered from the upper fills of [105].

Other Features (Figs 4 & 5)

Four other circular features were found in the area of excavation. Feature [122/125] was a small pit 0.3m in diameter and only 5cm deep below the surface of the subsoil [102] (Fig 5, section 11-11a). It contained charcoal flecks identified as oak and hazel, possibly alder, and including some fragments of bark. Feature [116/117] was also a small circular depression 0.4m in diameter and 10cm deep below the surface of the subsoil (Fig 5, section 13-13a). It contained a few stones and a brown loamy fill. Feature [115/124] was also a small circular depression some 0.35m in diameter by 5cm deep below the surface of the subsoil and was filled with a soft dark loam (fig 5, section 14-14a). The functions of these depressions could

not be determined from the archaeological evidence that they contained nor could their contemporaneity with the main structure be demonstrated. None contained any artefacts.

Feature [120/121] appeared as an oval patch of fire-affected soil burnt bright orange/red, measuring 0.25m NE-SW by 20cm NW-SE, and interpreted as a hearth. Burnt soil filled the hearth to a depth of 6cm (Fig 5, section 12-12a) and the burning had affected the subsoil (Fig 8). There were no finds from this feature but extremely small and scarce fragments of comminuted charcoal were observed in the fill but not recovered. The burnt subsoil was sampled for magnetic dating.



Fig 8 – Hearth feature [120/121] after sampling. The heat-affected base can clearly be seen.

THE POTTERY (Fig 9)

Eight sherds (30g) of pottery were found near the South-east corner of the excavated area during the cleaning of the subsoil. They were in a soft, black-brown friable fabric, averaging 8mm thick and with a laminated texture. The inside surfaces of these sherds were coated with a carbonaceous crust which was sampled for traces of absorbed lipids but proved negative. One of the larger sherds has traces of a slight rounded and external shoulder suggesting a Carinated Bowl with a slack carination however given the softness of the sherds, this flattening may be post-depositional. Traces of an everted neck can be seen above this shoulder. None of the sherds are decorated and no rim sherds were found. Despite the absence of rims, the fabric, the slack carination and S-shaped profile put the vessel in the traditional Carinated Bowl class and amongst the earliest ceramic tradition in Britain reaching northern Britain and Ireland sometime between 40th – 39th C BC and lasting into the 36th C BC (Sheridan 2007; Whittle *et al.* 2011). The association of this ceramic with the house is therefore entirely appropriate.

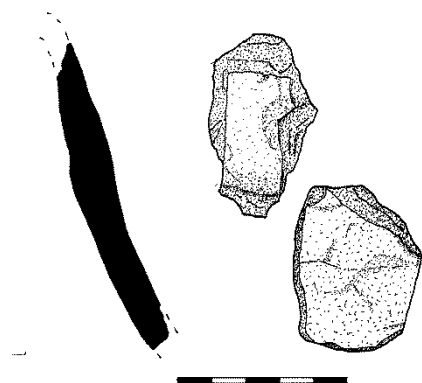


Fig 9 – The Carinated Bowl sherds from Yarnbury.

Carinated Bowl is, of course common on the chalk of Eastern Yorkshire associated with the long barrows and other contemporary monuments where radiocarbon dates, even allowing for the use of oak charcoal, place it in the early 4th millennium BC (Manby *et al* 2003, 46-7). In Northumberland, dates from short-lived samples at Coupland also suggest an early 4th millennium date (Passmore & Waddington, 2009, 175-195). The Scottish Carinated Bowls would also appear to start at least in the 39th C BC The earliest dates do tend to come from Eastern Scotland, however, and reliable dates from more central or western sites such as Biggar, South Lanarkshire, Carzield, Pict's Know, Dunragit and Holywood (all Dumfries and Galloway) suggest a start date in the early 38th C BC (Sheridan 2007, 479-492).

Further afield, in Ireland, the dates from Magheraboy, Co. Sligo, indicate that Carinated Bowl was in use well before 3600 BC and most likely from the very start of the 4th millennium if not slightly before (Danaher 2007) and early 4th millennium dates (39th C) have also been obtained from Poul nabrone, Co. Clare, (Lynch 2014). The dates for Carinated Bowl from Donegore, Co Antrim, would appear slightly later at between 3800-3600 BC (Mallory *et al.* 2011) whilst other sites such as Ballygally, Ballyharry and Mullaghbouy (all in Co Antrim) belong to the 'House Horizon' starting at the end of the 38th C BC (Smyth 2014).

There is also an increasing presence of the style in Cumberland, Westmorland and Lancashire (Manby 2007) though the assemblages remain to be precisely dated. Carinated Bowl is rare, however, in the central Pennines separating Cumbria and the Irish Sea zone from the Yorkshire Wolds. The site at Portfield to the East of the Calder-Ribble confluence is an obvious exception (Beswick & Coombs 1986) and here two oval pits produced fragments of six vessels represented mainly by rims. P1 (Beswick & Coombs, 1986, Fig 6) has a similar slack profile to the Yarnbury vessel. To the writer's knowledge, there have been no published finds of Carinated Bowl from the caves of the Yorkshire Dales (though there are anecdotal rumours) that are instead noted for their Middle and, to a lesser extent Later, Neolithic and Beaker ceramics. This absence is more puzzling given the increasing number of early Neolithic dates from the skeletal material (Leach 2015) and the increasing number of potential Neolithic long mounds being recognised in the Dales (Luke 2013). Fieldwalking too has produced Middle and Later Neolithic ceramics but no confirmed Carinated Bowl despite the chronological range (Mesolithic to Bronze Age) of some of the lithic scatters (Cherry 2014). It is expected that finds of Carinated Bowl will start to be made in the Dales as research into the Neolithic in this region increases.

WORKED FLINT AND CHERT FROM YANBURY HOUSE

by Philippa Bradley

Introduction

A total of 146 pieces of worked flint, chert and quartz and 12 pieces of burnt unworked flint were recovered from investigations at Yarnbury. The flint was recovered from the excavations of the house and the henge as well as the examination of molehills from across the site. Diagnostic forms indicate Mesolithic to Neolithic activity. The finds from the henge and molehill survey will be reported elsewhere.

Raw materials and condition

The bulk of the assemblage is flint but 17 pieces of grey and brown chert were also recovered, although not all of the latter are certainly worked. The flint is mainly good quality, mid-dark brown in colour with a thin buff cortex. A few pieces of yellow and grey flint were also recovered. The flint is probably from East Yorkshire or the Lincolnshire Wolds (cf. Henson 1985). Grey, brown and banded chert was also recovered. The quality of this material is variable with some pieces flaking fairly well, whilst others are crude. Chert occurs within the carboniferous limestones of Derbyshire and Yorkshire so a local source is probable.

The majority of the flint is in good condition with limited edge damage. Cortication is generally light and approximately 9% of the assemblage is burnt. There is limited evidence for use – a single incidence of edge gloss was recorded, probably resulting from use on silica-rich plant materials (Unger-Hamilton 1988). The damage on a few edges may have been the result of use rather than formal retouch.

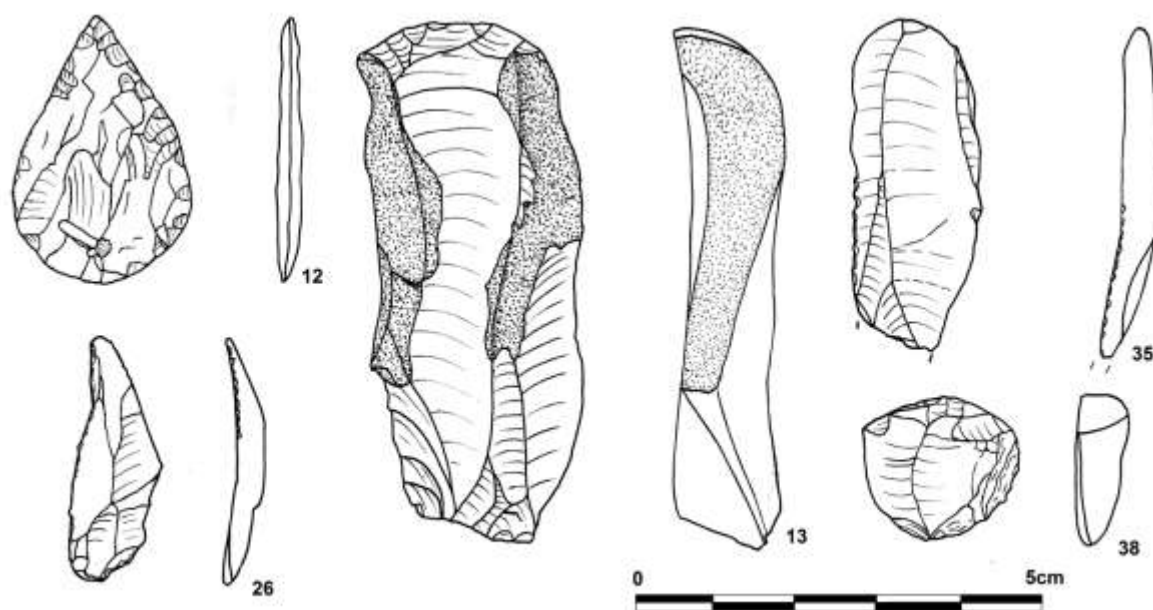


Fig 10 – Flint artefacts from the house excavations. 12 – leaf-shaped arrowhead, 13 – end scraper, 26 – Mesolithic burin, 35 – serrated blade, 38 – ‘button’ or ‘thumbnail’ scraper.

Assemblage composition

The assemblage is summarised in Table 1; all elements of the reduction sequence were recovered although there is a bias against the smaller elements such as chips and there was only 1 core fragment. Diagnostic retouched forms include a geometric microlith, finely worked leaf-shaped arrowhead and a thumbnail/button scraper. Scrapers, retouched and serrated flakes indicate domestic activities such as hide preparation and other processing tasks.

Lithics from the House (Appendix 1) (Fig 10)

Ninety pieces of flint and chert came from contexts associated with the Neolithic house. Of these, 58 pieces came from the topsoil and the top of the subsoil including the finely worked leaf-shaped arrowhead (Fig 10:12); the remainder came from the bedding trenches of the house (16 pieces and 9 pieces of burnt unworked flint), postholes (5 pieces) and other contexts (2 pieces).

The material from the bedding trench comprised debitage (flakes, chips, pieces of irregular waste), a retouched flake, a single possible scraper fragment and 9 pieces of burnt unworked flint. This material included two of pieces of chert. The flakes are mainly small and just under half of them are broken; burning was recorded on 3 flakes and a chip.

A bladelet, a core fragment and a serrated blade (Fig 10:35) were recovered from posthole [105]. A flake came from each of postholes [112] and [114]. All of these pieces are broken and one (from posthole [112]) is burnt. The core has some blade scars and had at least two platforms. One area of battering on its cortex indicates that it may have been used as a hammerstone. The serrated blade is very worn; gloss was noted on parts of both edges indicating use on silica-rich materials (Unger-Hamilton 1988). Although not particularly diagnostic, this assemblage is consistent with an early Neolithic date and it is probable that these few flints are contemporary with the use of the house and that they may have been accidentally incorporated into the fills of the postholes and bedding trench.

The bulk of the assemblage from the house was recovered from the topsoil and top of the subsoil (including the surface of the track); the latter being less productive than the topsoil. Again debitage dominated but a number of scrapers, possible scraper fragments as well as a finely worked leaf-shaped arrowhead were recovered (Fig 10:12). Some Mesolithic activity is indicated by the recovery of a geometric microlith (small scalene triangle of later Mesolithic date cf. Saville 1981, fig. 7), a burin (Fig 10:26) and a bladelet from the subsoil. A blade from the topsoil may be part of this group, as may a small 'button' scraper from the track [119] (Fig 10:38). Many of the flakes are small and squat. This may reflect the raw materials available but the lack of cores and core fragments precludes any detailed discussion. Nevertheless, larger blanks must have been available as the end scraper from the topsoil (Fig 10:13) was made on a long blank (58 mm). The arrowhead (Fig 10:12) is a very well made example, extensively retouched over both faces, comparable to Green's type 3A, (1980, 71, fig. 28). No obvious signs of firing damage were noted so this may be a chance loss. The other retouched pieces indicate domestic activities – mostly scrapers but a retouched flake may have been used for a number of processing tasks.

Discussion

Records of Mesolithic flint from the vicinity of the henge are known (HER SD996 658; SD96NE50) and larger assemblages have been recovered from nearby sites such as Grassington Moor (HER SE06NW12). The small quantity of Mesolithic material from the excavations is therefore further evidence of this activity but the small size of the assemblage precludes any further detailed discussion.

The bulk of the assemblage came from the overlying topsoil and the surface of the subsoil. Apart from the small Mesolithic element from this area, there is nothing that would be inconsistent with an earlier Neolithic date, although as noted above much of the debitage is undistinguished. A range of raw materials indicates connections to East Yorkshire, Lincolnshire and possibly Derbyshire. The assemblage from the house is essentially domestic in character being the residue of knapping and a range of processing activities. The rather scrappy nature of this material perhaps accords with the idea that the house was kept relatively clean (cf. Bradley in prep.).

Flakes	Blades, blade-like flakes	Cores	Chips	Irregular waste/tested nodules/pebbles	Retouched pieces	Burnt unworked flint	Total
61*	4	1 (frag)	16	8	13 (1 leaf-shaped arrowhead, 1 microlith, 5 misc retouch, 1 retouched flake, 3 scrapers, 1 serrated flake, 1 burin)	10	112
86	5	2	23	17	13	12	158

* includes a core tablet

Table 1: Summary Lithic Assemblage composition

CHARCOAL ANALYSIS

Dana Challinor

Introduction

Ten samples from the excavations of the Yarnbury house were assessed and found to contain variable quantities of charcoal. Most of the samples came from the bedding trench and postholes, from which 15 litres of soil per context were sampled apart from Pit [122/125] which was sampled in its entirety. The primary aim of the analysis was to characterise the taxonomic composition and nature of the wood types found in the assemblages, in order to study the utilisation of structural timbers from the construction of the house.

Methodology

An initial assessment of the flots revealed that diversity was quite low in the samples. A sample of 30 fragments, randomly selected from three sieve sizes (8mm, 4mm and 2mm) was considered adequate to characterise the charcoal assemblages. All of the sieved fractions, including the finer (2-0.5mm) fractions, were scanned at low magnification (X10-45) for the presence of non-wood charred plant remains. Only fragments of hazelnut shell were identified. This also afforded the opportunity to determine, to an extent, how dominant oak was in the samples (since oak fragments along its large rays in a distinctive manner).

The charcoal was fractured and sorted into groups based on the anatomical features observed in transverse section at X7 to X45 magnification. Representative fragments from each group were then selected for further examination using a Meiji incident-light microscope at up to X400 magnification. Data relating to the character of wood utilisation (woodland management, cropping regimes etc.) were also collected, where possible. A total of 380 fragments were examined. Identifications were made with reference to Schweingruber (1990), Hather (2000) and modern reference material. Classification and nomenclature follow Stace (1997). Identifications are provided to the highest taxonomic level possible according to the native British flora, i.e. where there is only a single native species, this is named, but where there are several native species, the genus or subfamily is given.

Results (Table 2)

The condition of the charcoal was generally good, with large (>8mm) and clean charcoal, though some of the material was encrusted with sediment. Six taxa were positively identified; *Quercus* sp. (oak), *Betula* sp. (birch), *Alnus glutinosa* (alder), *Corylus avellana* (hazel), Maloideae (hawthorn, apple, pear, rowan etc.) and *Fraxinus excelsior* (ash) (Table 2). Both oak heartwood and sapwood were recorded in most samples, and most of the oak charcoal derived from trunkwood or large branchwood as there was only rare evidence for ring curvature. No tyloses were observed in the ash fragments and there was no ring curvature noted. In contrast, much of the hazel charcoal derived from roundwood of narrow

diameter; although there were few fragments with pith and/or bark preserved, there was clear evidence for strong or moderate ring curvature. Some of the alder (but not all) also exhibited roundwood characteristics.

	Feature type	bedding trench			posthole						pit
	Context	104.10	104.14	104.15	105	123	107	108	110	112	122
<i>Quercus</i> sp.	oak	25 hs	28 hs	17 hsr	22 hsr	22 s	27 hs	26 hs	26 hs	30 hs	19 rs
<i>Betula</i> sp.	birch					1					
<i>Alnus glutinosa</i> Gaertn.	alder										
<i>Corylus avellana</i> L.	hazel	3r		13r	8r	7r	1	4r	4r		8r
<i>Alnus/Corylus</i>	alder/hazel		2								1
Maloideae	hawthorn group	2									
<i>Fraxinus excelsior</i> L.	ash						2s				
Indeterminate	bark										2
Total		30	30	30	30	30	30	30	30	30	30

h=heartwood; s=sapwood; r=roundwood

Table 2: Results of the charcoal analysis (by fragment count)

Another characteristic of the assemblage was the frequent observation of slow growth, especially in the oak from the bedding trench. This was attested by the absence of visible late wood pores (one ring comprising mainly the large pores of spring growth) and the calculation of mean average ring width of $\leq 1\text{mm/year}$.

Moderate to high levels of vitrification were recorded in occasional fragments. Vitrification refers to the glassy appearance (and possible fusion of cells) which probably relates to the condition of the wood prior to burning (Marguerie & Hunot 2007, 1421), and/or the burning process, although it is no longer considered to be commensurate with high temperatures (McParland *et al.* 2010, 2686). Insect tunnels were observed in fragments of hazel from posthole [105]. The shape of the tunnels was not particularly diagnostic, but the presence of any wood boring beetles indicates that the dead wood had been inhabited prior to burning. No such tunnels were recorded in the oak, however, which suggests that the whole building was neither infested nor substantially decayed before it was destroyed.

No charred seeds were found in any of the samples but a number of samples produced charred hazelnut shell, mostly in small quantities.

Discussion

The analysis of the whole assemblage revealed an overwhelming dominance of oak and hazel, representing almost 90%, with the other taxa combined accounting for only 10% (Fig. 11). This dominance is corroborated by ubiquity analysis, whereby oak was present in 100%, and hazel in 92% of the samples.

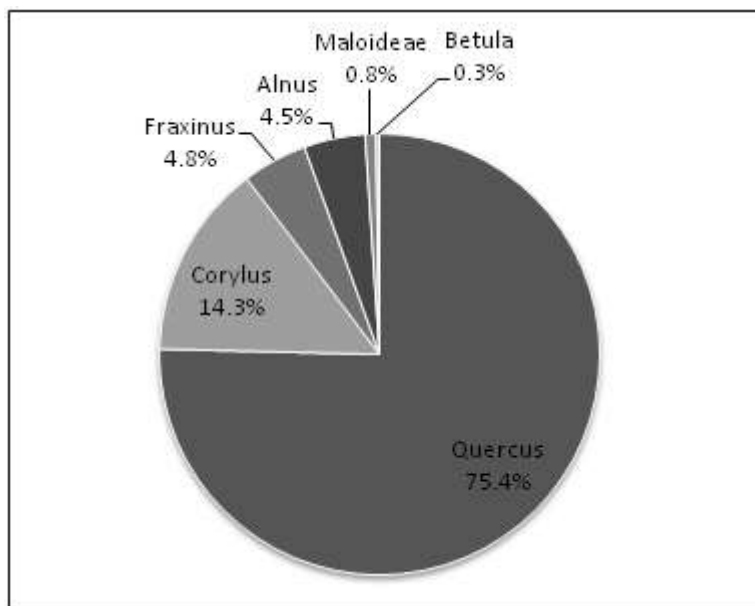


Fig 11 – Taxonomic composition of early Neolithic charcoal, based upon fragment count (N=328, excludes bark fragments).

The dominance of oak and hazel is unsurprising, given the nature of the contexts from which the samples originate (Fig 12). The geophysical survey and excavation of the Neolithic house suggested that the building had burnt down and that the charcoal from most of the samples, therefore, represents burnt structural remains. The evidence from the charcoal suggests that large oak timbers were used for the main posts, with smaller calibre hazel roundwood used for wattle panels or other infills between the main timbers. The use of mature oak is indicated by three main factors. Firstly, the presence of heartwood, that is usually laid down when the tree is more than 20 years in age (Gale 2006, 114). Secondly, the frequent evidence for slow growth (even in sapwood), since mature trees tend to grow more slowly than young ones (Thomas 2014). Thirdly, the absence of ring curvature that indicates that trunkwood (rather than branches or young coppice) had been utilised.

This does not infer that woodland management had not been practiced, but any cropping regime must have taken place on a relatively long cycle of more than 20 years. It may be, however, that the timbers had been supplied from the felling of over-storey trees, rather than the oak being regularly coppiced. Indeed, some slow-grown fragments exhibited more than 30 years growth, without or with little ring curvature. The hazel, in contrast, came from much younger trees, with no fragment exhibiting more than 10 years growth. The strong ring curvature and occasional presence of cambial edge or pith shows that stems or branches of narrow diameter had been utilised.

Any discussion of the local woodland environment is limited by the selection processes which would have influenced the taxa that were utilised. The choice of wood for structural requirements would have been more constrained and different to the selection practices for fuelwood. In any case, the site falls within a region dominated by oak-hazel woodland in prehistory (Rackham 2006, 84), and it is clear that this was exploited for the construction of the early Neolithic building. Birch and ash are both colonising taxa, which flourish in an open landscape, and alder would have grown alongside the River Wharfe or in a similar riverside habitat.

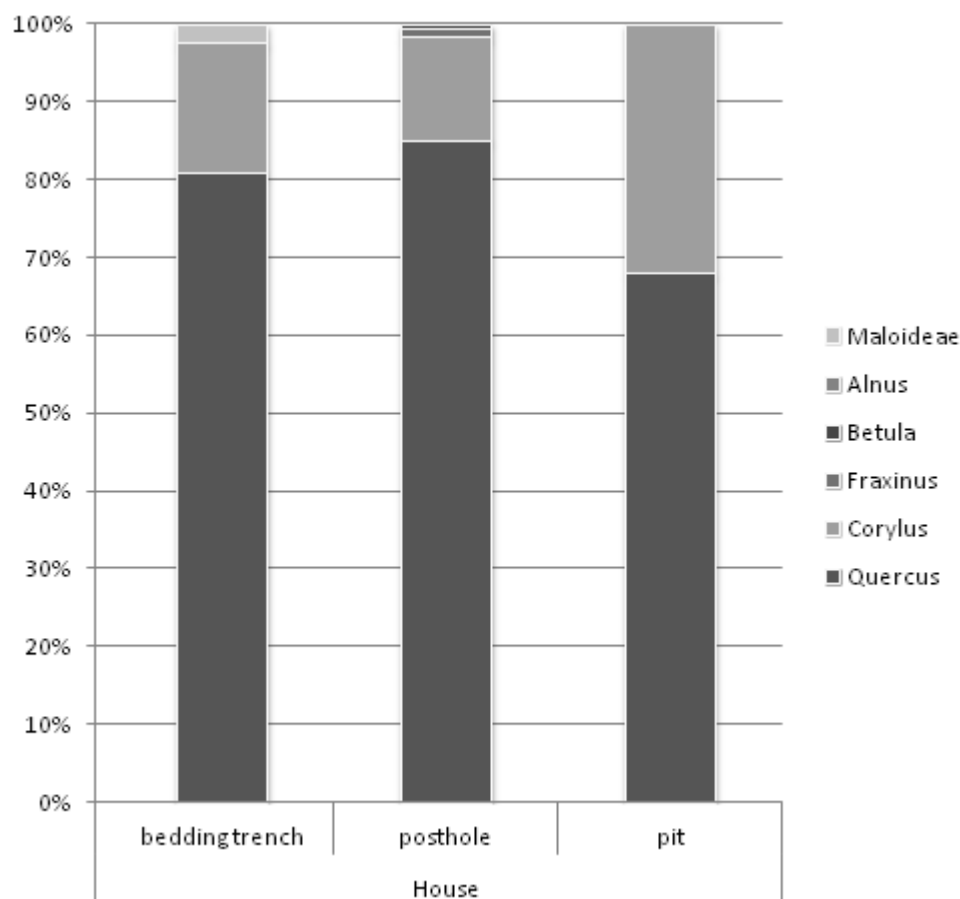


Fig 12 – Charcoal by feature type, based upon fragment count (N=328).

Conclusion

The excavation of early Neolithic buildings is rare, and the preservation of charcoal within them even rarer. The results from Yarnbury are notably consistent with the results from a burnt down Neolithic rectangular building at Lismore Fields, Buxton in Derbyshire (Challinor, forthcoming): both indicate that large oak posts, sourced from mature trees, were utilised, along with smaller hazel poles for infill panels. There was no positive evidence for woodland management at Yarnbury, and although it cannot be ruled out, it is also plausible that adequate supplies of mature oak and appropriate sized hazel stems could be readily sourced from the locally available oak-hazel woodland.

RADIOCARBON DATING

Two samples of hazelnut shell from postholes [107] and [108] were submitted to the Scottish Universities Environmental Research Centre for radiocarbon dating. The following results (Table 3, Fig 13) were obtained and have been calibrated using the University of Oxford's OxCal 4.2.4 (Bronk Ramsey 2013) using the curve of Reimer *et al.* 2013.

Date	Context	Material	Radiocarbon Age BP	68.2% Probability	95.4% Probability
SUERC-54901	107	<i>Corylus</i>	4885±36	3695 - 3644BC	3762 (2.9%) 3741BC 3732 (0.8%) 3726BC 3715 (91.7%) 3634BC
SUERC-57194	108	<i>Corylus</i>	4922±30	3708 - 3656BC	3766 - 3648BC

Table 3 – Radiocarbon dates from the Yarnbury Neolithic house.

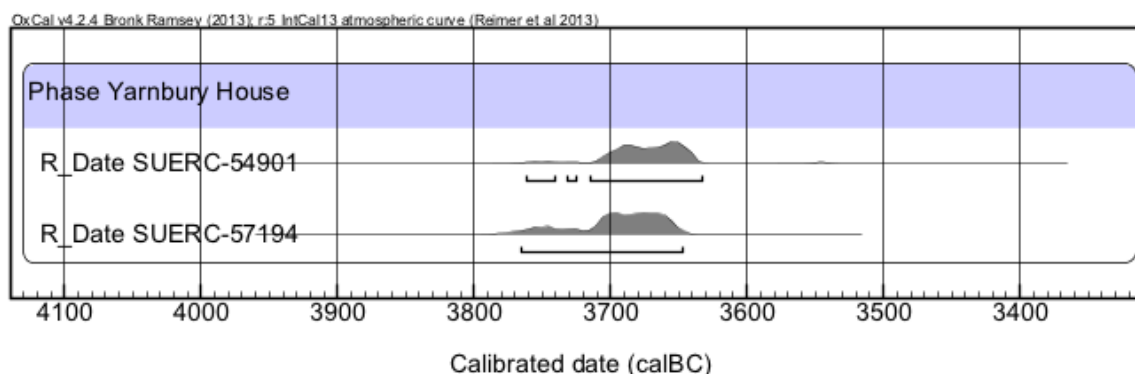


Fig 13 – Calibrated Radiocarbon determinations from the Yarnbury Neolithic house

Although from different samples, these dates are statistically similar (X2-Test: $df=1$ $T=0.518$ (5% 3.841)) and are capable of being combined to produce a date range of 3709–3646 cal BC (95.4%) and probably 3694–3656 cal BC (68.2% probability - Agreement $n=2$ $A_{comb}=117.6%$ ($A_n= 50.0%$)). Even without this combination (given the different samples) these near identical date ranges clearly place the construction and early use of the structure in the first half of the 37th Century Cal BC.

ARCHAEOMAGNETIC DATING

Cathy Batt & David Greenwood

The archaeomagnetic investigation at Yarnbury showed that context [120/121] was burnt *in situ* and retained a stable magnetisation, which is likely to be a reflection of the geomagnetic field at the time of last heating. If associated with the house, as seems likely, the hearth [120/121] predates the current British archaeomagnetic calibration curve and so attempts were made to date the characteristic remanent magnetisation recorded by AM229 using two methods: by comparison with the first European directional palaeosecular variation curve (PSV) for the Neolithic (Carrancho *et al.* 2013) and by comparison with the SHA.DIF.14k global geomagnetic field model (Pavón-Carrasco *et al.* 2014). Both these approaches have limitations as discussed below. A number of possible broad date ranges were obtained (Table 4) some of which are consistent with the archaeological evidence. The number of date ranges mainly arise from the limited amount of data for this period altogether, and the fact the much of what there is is located a significant distance from the UK. As more UK data are added for this period to the UK archaeomagnetic calibration curve it will become possible to improve the reliability and precision of archaeomagnetic dating in this period. The data from Yarnbury, with the associated radiocarbon dates, will contribute to the improvement of this dataset.

Detailed magnetic measurements and a description of the methodology are available in electronic form on request.

Archaeomagnetic Lab ID	AM229
Feature	Hearth (lower burned horizon)
Location – latitude	54.084°N
Location – longitude	358.02°E
Site magnetic variation	-2.12°W
No of samples (taken)	20

No of samples (used in final result)	17
AF demagnetization used	7.5 to 20mT
Mean declination at site	-4.0°
Mean inclination at site	64.1°
Alpha-95 (α_{95})	3.3°
Age ranges (Carrancho et al. 2013)	4133BC – 3768BC 2881BC – 2215BC 2046BC – 1901BC 1748BC – 1591BC
Age ranges (Pavón-Carrasco et al. 2014)	4104BC – 3764BC 3535BC – 3404BC 3236BC – 3106BC 2779BC – 2357BC 2244BC – 1787BC 1726BC – 1608BC
Archaeological date range	c. 3800BC based on typology of structure

Table 4: Summary of archaeomagnetic information for AM229

DISCUSSION

The Yarnbury house has been dated by radiocarbon and archaeomagnetism to the 1st half of the 37thC cal BC. The archaeomagnetic date is important as it is one of the first to be obtained from the British Neolithic and, with supporting radiocarbon dates from short-lived samples, will help establish regional archaeomagnetic dating for this period. The structure is one of an increasing number of small, irregularly rectangular timber structures dating to the earlier Neolithic. Smyth (2014) has documented over 90 such houses in Ireland belonging to an equally narrow chronological period and in 1996 Darvill recorded the then known Neolithic houses in England and Wales, whilst Barclay (1966) undertook a similar task for Scotland. More houses have since come to light in Britain, principally as a result of developer funded archaeology such as Whitehorse Stone, Kent (Booth *et al.*, 2011), Parc Bryn Cegyn, and Llanfaethlu, Gwynedd (Kenney 2009; Rees & Jones 2015), and the halls of Claish, Stirling (Barclay *et al.* 2002), Crathes, Aberdeenshire (Murray *et al.*, 2009) and Lockerbie Academy, Dumfriess and Galloway (Kirby 2011). The data have been admirably summarised by Smyth (2014) and need little elaboration here.

Comprising negative features, and occasionally flimsy, these buildings are unlikely to survive in areas of intensive arable agriculture (Gibson 2003) and we rely on protected contexts for their preservation. The structures beneath cairns such as Gwernvale, Brecknock or Ascot-under-Wychwood, Oxfordshire (Britnell & Savory, 1984; Benson & Whittle 2007; Morigi *et al.*, 2011, 232) or below hillwash and alluvium such Whitehorse Stone, Kent, (Booth *et al.*, 2011) or Yarnbury, Oxfordshire (Morigi *et al.*, 2011) being cases in point. The long established pastoral economy in large parts of Ireland also provides such protection. As a result our distribution of such sites is always likely to be skewed by such factors as preservation and detection as well as by the propensity of large-scale developer funded excavation.

The Early Neolithic houses so far discovered in Britain and Ireland have been rectangular, often irregularly so, and usually under 10m in length although there are some notable exceptions such as the 'halls' of Claish, Balbridie and Crathes which belong to a smaller

group of buildings over 12m long. Yarnbury fits perfectly within the smaller size cluster (Fig 14). Apical ends and extensions are also encountered such as at Claish and Lockerbie or at Balleygalley 1 in Antrim (Simpson 1996). The walls of these early Neolithic structures generally comprise bedding trenches or individual postholes though the method of construction does not seem to affect their dimensions with large and small structures being found in both major techniques (Fig 15). Many houses, including at the smaller end of the size spectrum, have internal postholes or bedding trenches suggesting internal partitions (Smyth 2014, 28-29) and, from the magnetometry evidence, this would seem to also be the case at Yarnbury (Fig 2) though the excavation did not reach this far into the structure. The layout of the Yarnbury structure very much resembles the three structures from Ballintaggart, Co Down (Smyth 2014, 28) which have bedding trench wall construction and two internal posts dividing the long axis into two more or less equal parts (Fig 16). This internal division is also notable in the stone-built houses at the Knowe of Yarso, Orkney (Barclay 1996, 68) which also fall within the smaller cluster (Figs 14 & 16). Their stone-built walls give the two conjoined Knowe of Yarso buildings a very different superficial appearance to the timber constructions but in size and internal lay-out they bear a strong comparison.

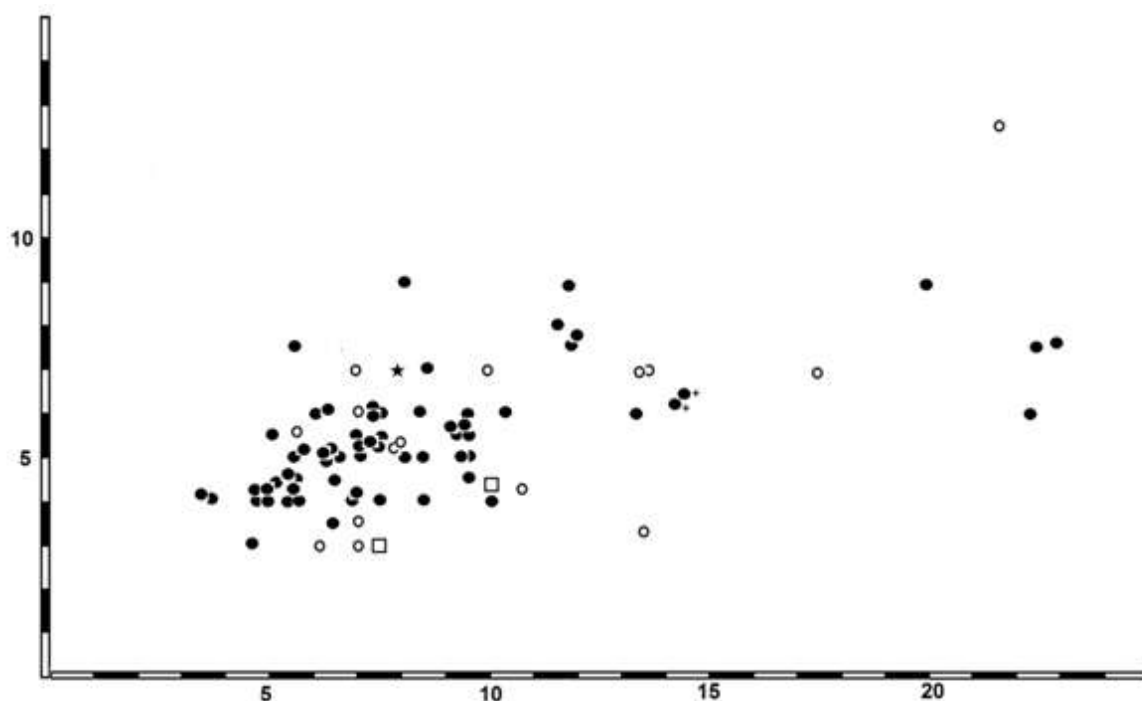


Fig 14 – Dimensions of Early Neolithic Houses. Filled circles = bedding trench construction, open circles = posthole construction, square = stone-built, star = Yarnbury. + = ground plan incomplete.

Despite the preponderance of bedding-trench-defined sites over post-defined structures, there are instances where the two techniques are combined as, for example, at Lockerbie Academy, White Horse Stone and, to a lesser extent, at Claish. This may be in part due to agricultural attrition as the two exterior wall techniques do not seem to be so combined in Ireland. Despite this observation, Smyth (2014) has pointed out that construction techniques within the bedding trenches are varied. Large structural posts are encountered at the vast majority of sites with the intervening spaces filled with a variety of plank walling, smaller postholes or wattle and daub panelling as seems to have been the case at Yarnbury. Some sites, such as Kishoge, Co. Dublin, for example, had areas of linear plank walling, post construction and plank uprights and that at Barnagore, Co. Cork, combined post and stake uprights, wattle and daub and planking (Smyth 2014, 36). Smyth suggests that the different wall construction techniques may well be deliberate to distinguish different areas of the

structures though no unequivocal spatial patterning is observable. In the excavated section of the Yarnbury structure, the carbonised wood remains suggest substantial post (log) uprights with wattle fill. Furthermore, the posts appear to be on the inside of the bedding trench suggesting (but by no means proving) that wattle was attached to the outside of the posts presenting a fairly uniform external appearance. It is worth noting that no traces of daub or fired clay were recovered from the excavated area however the burning of the house seems to have been localised (in the area of section 8-8a) and does not seem to have been intensive in which case the heat may not have been intense enough to convert the daub to ceramic.

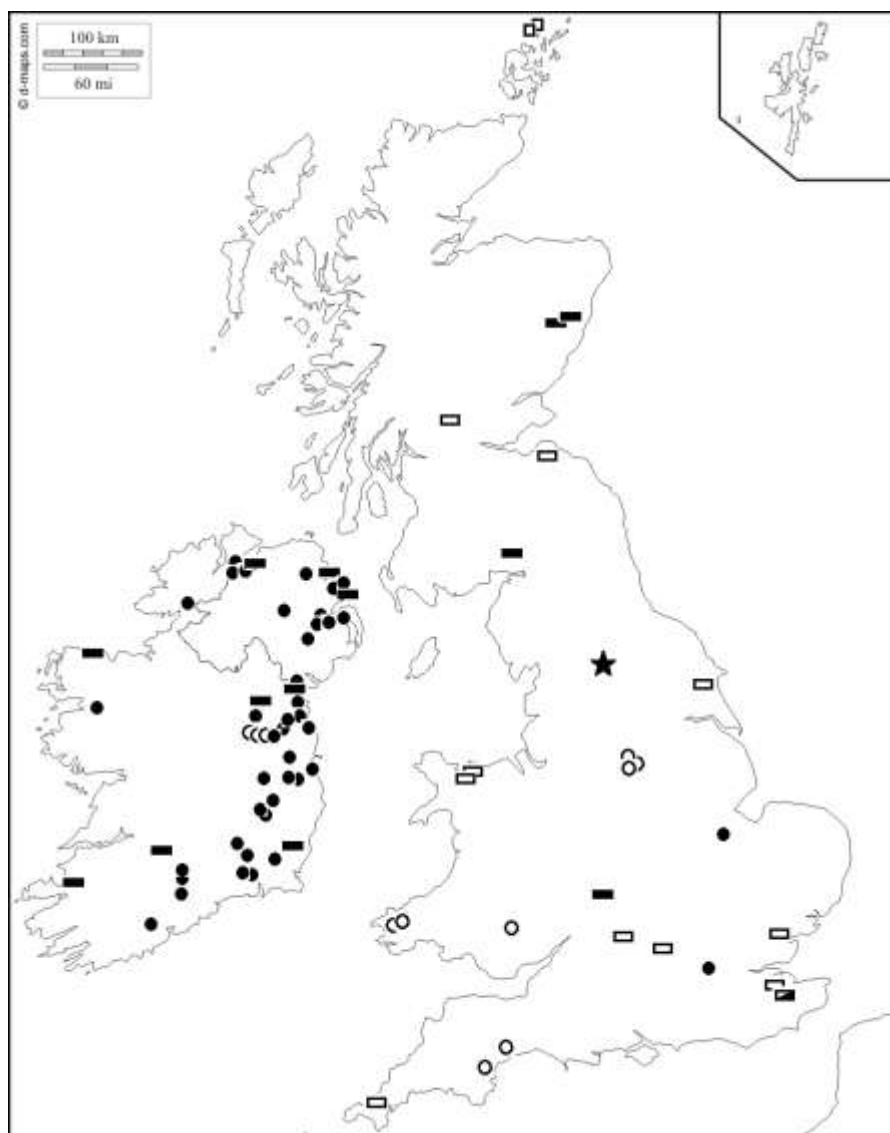


Fig 15 – Early Neolithic Houses based largely on Smyth 2014 and Darvill 1996 with additions. Filled symbols = bedding trench construction, open symbols = posthole construction. Circles = structures < 12m long, rectangles = structures > 12m long. Star = Yarnbury.

When discussing roofing, Smyth again notes that various arguments have been proposed for roof construction based on the size and packing of postholes, the presence of external (presumed) eave supports and the positioning of some internal posts. The post packing argument is pertinent for Yarnbury as the corner post [107] and the presumed gable post [105/123] were the only postholes to have contained substantial amounts of packing material

suggesting that they may well have been load-bearing. The greater depth of [105/123] and the duplication of the post may well suggest greater height and that the roof was indeed pitched.

Regarding the distribution of early Neolithic structures, those so far discovered in Britain tend to be larger than the majority of Irish examples and they also favour post-hole construction (Fig 15). We should, perhaps, not read too much into this apparent structural difference as it may reflect available resources, geology, later land-use or, indeed, a combination of the three. For example, short lengths of bedding trench are also found as part of structures constructed mainly from postholes such as at Gwernvale or Parc Bryn Cegin and White Horse Stone also combines both construction techniques. It is more in the arrangement of internal partitions that these large structures bear closer similarities (Fig 16) once again combining posthole and bedding trench techniques as, for example, at Claish, Crathes, Lockerbie Academy, Lismore Fields Buidlings I and II, Derbyshire (Garton 1991) and Campsie, Derry (McGonigle 2013).

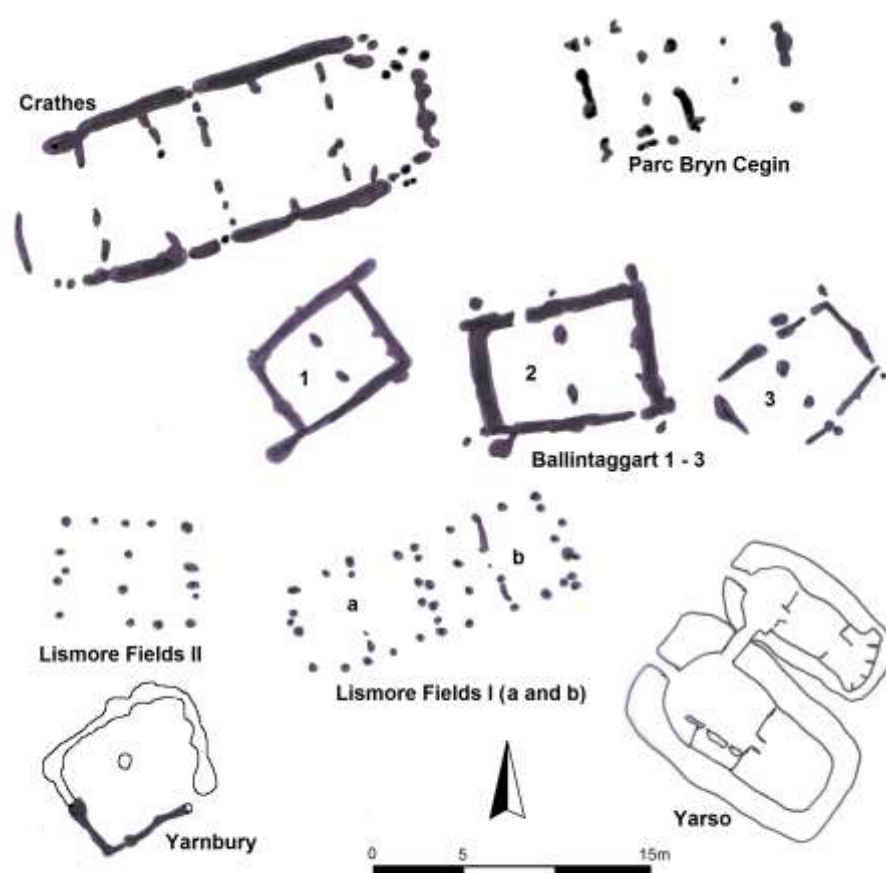


Fig 16 – Yarnbury and comparable sites mentioned in the text. Crathes after Murray et al. 2009, Bryn Parc Cegin after Kenney 2009, Ballintaggart after Smyth 2014, Lismore Fields after Garton 1991, Yarso after Barclay 1996.

Lismore Fields Building I is worthy of note as it appears to be formed of two mirrored components each component similar in ground plan to the smaller Building II (Fig 16). The central row of postholes that form the short axis of Building 1 also appear to be duplicated: the only apparent duplication at the site. It may well be that this structure in fact comprises two similar and smaller structures placed end to end as originally suggested by the excavator (Garton 1991). This may represent two structures of slightly different date, an extension to an existing building or a tradition of modular construction. A similar scenario has

been considered for White Horse Stone which also appears to have two mirrored halves though in this case there does not appear to be the duplication of the central postholes. Fig 16 clearly shows the similarity in modular construction encountered in these early structures. Ostensibly different in scale, the Crathes Hall nevertheless seems to represent an elaboration or duplication of smaller structures such as Ballintaggart 2. The illustrated structures also appear to have central aisles respected by internal partitions (Fig 16) and this may also be the case at Yarnbury. Made of stone, the Yarso houses also seem to follow this plan with internal cross-partitions respecting central access points to the internal rooms.

The dating of the Irish structures, based on short-lived samples, has been modelled by a number of independent authors to have started probably between 3715-3680 cal BC (68% probability) and lasted until 3635-3615 cal BC (68% probability) (Smyth 2014, 48 for a resumé). This has become known as the 'house horizon' lasting for roughly between 50 and 100 years but is in common with the construction of other major monuments in the Neolithic (Whittle *et al.* 2011). Parc Bryn Cegyn, a posthole constructed site, may have started slightly before this horizon or at least at the very start of it at 3760-3700 cal BC (Kenney 2009). White Horse Stone and Yarnnton, both larger structures and of largely posthole construction, suggest an earlier date of construction probably in the 41st-39th C cal BC (Whittle *et al.* 2011). The Scottish 'halls' have been modelled to have started in the 38th C cal BC but carbonised grain from Lockerbie Academy may suggest a date as early as the 40th-38th C cal BC (Kirby 2011, Table 1). More dates from more sites are admittedly needed but it may be possible to suggest that the larger post-built structures of Southern England are considerably earlier than the smaller bedding-trench-defined constructions of Western Britain and Ireland but only slightly earlier than the larger hall constructions in Eastern Scotland. The Yarnbury house was in use at exactly this time of change to smaller structures and can justly be said to belong to this house horizon.

Whilst cereal remains and processing artefacts such as grinding stones have been found at the Irish sites with which Yarnbury finds comparison, it is interesting to note that no cereal remains were found amongst the charcoal flint samples and the lithic finds did not include saddle querns or similar crop-processing artefacts. It must be remembered, however, that only 25% of the house interior was excavated and crop processing may have taken place in specific areas as seems to have been the case at Corbally, Co Kildare (Smyth 2014, 31). The absence of cereal remains is, however, worthy of note and it might be expected that, were grain being processed on site, some seeds may have been accidentally charred when the house was burnt though it must be remembered that the burning at the house appears to have been localised and not intensive. This presupposes that grain preparation took place on site and this is also by no means certain. The presence of hazelnut shells indicates the exploitation of wild resources commonly found on Neolithic sites throughout Britain and Ireland but too much importance should not be read into this evidence. It is natural that wild, 'free food' would be exploited to supplement diet but this exploitation does not demonstrate reliance. Furthermore, the hazel shell, is a robust by-product that has little use other than as a fuel. The by-products of cereals are far less resilient and may also be fed to livestock. Absence of evidence for cereal production cannot be regarded as evidence of absence and it has been noted that cereal pollen appears before 3500-3100 BC in the cores from Braithwaite Wife Hole near Ingleborough, some 30km to the North-west of Yarnbury (King & Simpson 2011), whilst in the pollen records for Malham Tarn (some 12m to the West), it is not until the Iron Age that cereal pollens are visible (Smith 1986, 12).

The Yorkshire Dales have long been seen as an empty space in many distribution maps of Neolithic Britain from Piggott (1954) onwards. The upland pasture regime has not seen the 19thC land improvements that prompted much of Mortimer's work in the Yorkshire Wolds (Mortimer 1905). The area was also largely untouched by the avid collector William Greenwell who worked on the eastern Wolds and in Northumberland and Durham (Greenwell 1877) though he did re-open a barrow containing an oak coffin at Rylston, some

8km South-west of Grassington, where he found traces of textile within the coffin (ibid 375-7). Bateman (1848) concentrated his barrow opening in the Peak District in the Southern Pennines. Antiquarian activity is, of course, recorded in the Dales (e.g Harker 1892; Hill 1907) but not on the scale of that found in the East of the county or elsewhere in Britain.

In contrast to survey work on the later Prehistoric axial field systems (*inter alia* Curwen, 1928; Raistrick & Chapman 1929, Raistrick 1938; Fleming 1998; Laurie *et al.* 2011), concerted research on the Neolithic & Early Bronze Age archaeology of the Yorkshire Dales is overdue. King's (1970) popular booklet devotes only 14 pages to the entire period and White's (2002) introduction also highlights gaps in knowledge and demonstrates the lack of active fieldwork and research on this period of the Dales' archaeology. *The Assessment of the Archaeology of Yorkshire* (Manby *et al.* 2003) further laments the lack of research into this period in this area devoting little more than a page to the specific subject (103-105) and even that including speculative dating (Maiden Castle). This is in stark contrast to the treatment of and detailed information from Eastern Yorkshire (Roskams & Wyman 2005). There is clearly great potential for ground-breaking research in the Yorkshire Dales as questions are being asked, local projects are being mounted and there is considerable grass-roots enthusiasm for local archaeology. The time may be right for a specific Research Assessment and Framework for this potentially important but neglected area.

Neolithic and Bronze Age artefacts are recorded as stray finds and as parts of scatters on the HER such as the Cumbrian stone axe-heads from Long Preston and South House or indeed the Mesolithic to Bronze Age lithics from Yarnbury. A Tievebulliagh polished axe-head from Antrim found at Langcliffe in Ribblesdale suggests distant (Western) connections (King 1970) as does the Kirkby Lonsdale jadeite axe-head in Craven Museum most likely originating from the Mont Viso area of Northern Italy (Sheridan & Pailler 2012, 1082). Middle Neolithic and Beaker material is known from many of the cave sites (King 1974) and associated human burials and domesticated faunal remains date from the earliest Neolithic until the Early Bronze Age (Leach 2015; Taylor 2011). Artefact scatters including Neolithic pottery are documented at Lea Green, to the West-north-west of Yarnbury within the area of axial field system (Manby in Cherry 1998) and at Conistone to the North-west (Cherry 2014).

Long mounds have recently been the subject of a landscape study (Luke 2013) though none has been tested by modern excavation. Other round cairns and barrows, may also prove to have had a Neolithic origin given the considerable evidence for this in the Yorkshire Wolds. Fieldwork in the Dales by Yvonne Luke (*pers com*) is also identifying a number of large undated round to oval mounds similar to Duggleby Howe and Wold Newton (Gibson & Bayliss 2010a & b) and which therefore may also potentially be Neolithic in origin.

Rock art in the form of cup and ring carvings, most likely Early-Middle Neolithic in date, is rare in the Dales despite its abundance in middle Wharfedale, particularly on Rombalds Moor (Brown & Brown 2008). Concentrations are known in Swaledale and the distribution may well be related to geology though this requires further contextualised research. Some recently recorded panels, though still falling within the cup and ring style, incorporate intricate designs (Brown & Brown 2011). Rock art in the Passage Grave style is currently unknown in the area.

Potential Neolithic enclosures have not been dated. Maiden Castle, Grinton, has been considered a later prehistoric hillfort though its situation on a terrace is not obviously defensive and its long external avenue with attendant large round cairn may suggest an earlier date being broadly comparable, in shape and avenue at least, to the Meldon Bridge type palisaded enclosures of the later Neolithic (Gibson 2002). The class 1 henges at Castle Dykes, Wensleydale (Harding with Lee 1987, No205, 306-7), Kilnsey (at the Wharfe Skirfare confluence), and Yarnbury in Wharfedale (Martlew 2004) remain to be dated and, as mentioned above, their topographical situations are unusual. The paired class I and II

hengings recently surveyed at Threshfield (Gibson 2014) are classic in form and bear comparison with those of the Ure Valley (Harding 2013) complete with a narrow second outer ditch. Such classic monuments as these indicate 'mainstream' rather than peripheral Neolithic activity in the Dales.

Palaeoenvironmental studies in the Dales are also few and the well-drained limestone soils are not conducive to the preservation of pollen. During the Late Mesolithic, there appears to have been some deforestation above 400m O.D. with the tree cover replaced by hazel shrubland. This deforestation may have been a deliberate attempt to create clearings as possibly anthropogenic oak ash and charred nuts have appeared in palaeoenvironmental samples (Davis 1966). This deforestation may have created areas of upland heathland in the Neolithic (Smith 1986) which continued into the Early Bronze Age since pollen evidence from below cairns suggests open landscapes at the time of their construction (King 1978). Woodland may well have survived in considerable patches particularly on the lower slopes and valley floors (Walker 1956).

The distribution of arrowheads in the uplands of Upper Wharfedale suggests fertile hunting land (Richardson *et al.* 2002) and this, combined with other artefact studies, points to active exploitation, if not settlement, of the valley sides in the Neolithic & Bronze Age (Cherry 1998; 2014) as well as contemporary connections with other areas (Lynch 2008).

The discovery of an early Neolithic house at Yarnbury is therefore of considerable importance to the region and points to permanent settlement rather than casual or seasonal visiting. The cutting of the substantial oak posts and the construction of oak and hazel panelling would have involved considerable effort and investment suggesting permanent occupation rather than seasonal visitations. The presence of the hearth, and the degree to which the subsoil was heat-affected also suggests long-term occupation. The increasing evidence for Neolithic activity in the form of artefact scatters and the ritual use of caves suggests that the house at Yarnbury was not alone in the Dales and further large-scale geophysical prospection may well locate more.

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APPENDIX 1

Context	Find Number	Type	Number	Broken Y/N	No. Burnt	Comments
101	6a	Chip	1	Y		Dark brown flint
101	6b	Flake	1	Y	1	Heavily burnt flake fragment
101	6c	Core tablet	1	N		Grey chert
101	7a	Flake	2	N		Light grey flint, small flakes
101	7b	Flake	1	Y		Small grey flake frag
101	7c	Flake	1	Y	1	Small broken and burnt flake
101	7d	Flake	1	N		Thick slightly irreg flake
101	7e	Flake	1	Y		Grey chert fragment
101	7f	Miscellaneous retouch	1	Y	1	Mid-brown flake frag with some retouch, lightly burnt
101	8a	Flake	4	N		1 poss grey chert, 1 brown chert, two small flakes
101	8b	Flake	4	Y	2	1 poss grey chert, 1 dark brown chert/, 1 mid-brown flint, 1 heavily calcined flk frag
101	9	Miscellaneous retouch	1	N		Thick slightly irreg flake, small area of retouch, possibly used as a scraper
101	10a	Scraper	1	Y	1	Heavily calcined, thin non-cortical scraper fragment
101	10b	Miscellaneous retouch	1	N	1	Slightly curving flake with possible retouch at distal end but heavily calcined. Possible scraper, shallow retouch
101	11	Flake	1	N		Mid-brown flake with small patch thin brown cortex
101	12	Leaf-shaped arrowhead	1	N		Finely worked arrowhead Green 3Ai
101	13	Scraper	1	N		End scraper on long blank, thin buff cortex over part of surface, steep retouch
101	14a	Blade	1	N		From opposed platform blade core, greyish flint
101	14b	Flake	1	Y		Partly cortical flake mid-brown flint with some cherty inclusions
101	14c	Chip	2	N	1	1 dark brown flint
101	15a	Flake	2	N		1 small mid-brown flake, 1 chert flake
101	15b	Flake	5	Y	1	2 chert, 3 flint
101	15c	Chip	2	N		
101	15d	Chip	2	Y		1 possible chert
102	16	Flake	1	N		Brown possible flake
102	17	Flake	1	Y		Possible flake fragment, chert
102	18	Flake	1	Y		Brown chert
102	19	Bladelet	1	N		Very small, light brown flint
126	20a	Chip	1	N		
126	20b	Microlith	1	N		G geometric microlith scalene triangle later Mesolithic
126	21	Flake	1	Y		Possible irregular flake fragment , chert
126	22	Flake	1	Y		Possible flake fragment , grey chert
126	23	Chip	1	Y		Possible chip ?chert
102	24	Chip	1	Y		Possible chip chert
102	25	Flake	1	Y		Irregular, brown chert
102	26	Burin	1	N		Simple burin

Context	Find Number	Type	Number	Broken Y/N	No. Burnt	Comments
102	27a	Flake	3	Y	1	2 chert
102	27b	Flake	1	N	1	Grey chert
102	27c	Chip	1	N	1	
102	27d	Irregular waste	2	N		?chert
104.12	28	Irregular waste	6	N		?chert
104.10	29a	Retouched flake	1	Y		Grey flint with 1 possible worked edge, some retouch may result form use, patch of thin grey cortex Small broken flakes brown/grey flint with some cherty inclusions
104.10	29b	Flake	2	Y		
104.10	30a	Flake	1	N		Small grey flake
104.10	30b	Flake	2	Y	2	?1 possible chert & lightly burnt, other flake is heavily burnt Brown flake, retouch down one side, possible scraper fragment?
107	31a	Miscellaneous retouch	1	Y		
107	31b	Chip	1	N	1	Possible burnt chip
104.10	32	Flake	1	Y		Possible broken flake
104.16	33a	Burnt unworked	9	Y	9	small burnt unworked fragments
104.16	33b	Flake	1	Y	1	Small broken and burnt flake
105	34a	Bladelet	1	Y		Small bladelet frag Some blade scars, one area of battering possible use as a hammerstone, at least 2 platforms. May have been struck to rejuvenate the platform edge
105	34b	Core fragment	1	Y		
105	35	Serrated blade	1	Y		Broken at proximal end, areas of gloss on parts of both edges, serrations very worn. Good quality brown flint Good quality flint, medium to heavy cortication, thin buff cortex down one side
112	36	Flake	1	Y	1	
114	37	Flake	1	Y		Good quality flint, prox break
119	38a	Flake	1	Y		Small heavily corticated flake frag Very neat 'thumbnail'/button scraper, light grey flint with some cherty inclusions
119	38b	Scraper	1	N		