



HAL
open science

“Valley of the First Iron Masters”. Recent research on Iron Age iron production and its significance in the Foulness Valley, East Yorkshire, England

Peter Halkon

► To cite this version:

Peter Halkon. “Valley of the First Iron Masters”. Recent research on Iron Age iron production and its significance in the Foulness Valley, East Yorkshire, England. Pierre-Yves Milcent. L'économie du fer protohistorique : de la production à la consommation du métal. Actes du XXVIII^e colloque international de l'Association française pour l'étude de l'âge du Fer (Toulouse, 20-23 mai 2004), Supplément Aquitania (14/2), Fédération Aquitania, pp.151-163, 2007, 978-2-910763-08-4. hal-03975804

HAL Id: hal-03975804

<https://hal.science/hal-03975804v1>

Submitted on 9 Feb 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License

“Valley of the First Iron Masters”. Recent research on Iron Age iron production and its significance in the Foulness Valley, East Yorkshire, England

Peter Halkon

ABSTRACT

Initiated in 1980 by Peter Halkon with the East Riding Archaeological Society, and directed jointly since 1983, with Martin Millett (Halkon & Millett 1999), this award winning community-based archaeological project has involved the investigation of multiple sites of many different periods, but with special emphasis on the Iron Age and Roman periods. Highlights include the discovery of the Hasholme Iron Age log boat, the largest surviving in Britain, which is now in the Hull and East Riding Museum, and a substantial iron production centre around Holme-on-Spalding Moor. A slag heap from Moore's Farm is one of the largest yet discovered in prehistoric Britain, which dates from between the 6th to 3rd centuries BC. As a result both the area itself, and the project associated with it, has been called the 'Valley of the First Iron Masters'. This iron industry may be one of the factors behind the wealth and prestige of the East Yorkshire Arras culture with its chariot burials. This article also considers the similarity in technology between northern France and East Yorkshire which reinforces the idea of cultural contact exemplified by square barrow cemeteries and chariot burials, whose closest parallels are in north-eastern France.

KEYWORDS

East Yorkshire, Arras culture, Iron smelting

RÉSUMÉ

Entrepris en 1980 par Peter Halkon avec l'East Riding Archaeological Society et dirigé depuis 1983 conjointement avec Martin Millett (Halkon & Millett 1999), ce programme archéologique, primé au plan local, a concerné l'étude de nombreux sites de plusieurs périodes, mais avec une attention particulière portée à l'âge du Fer et à l'époque romaine. Entre autres points forts, il y eut la découverte de la pirogue monoxyle de l'âge du Fer de Hasholme, la plus grande conservée à ce jour en Grande-Bretagne, qui est maintenant déposée au Hull and East Riding Museum, ainsi qu'un important site de production de fer près de Holme-on-Spalding Moor. Un ferrier découvert à Moore's Farm est l'un des plus importants connus à ce jour pour la Grande-Bretagne protohistorique. Il est daté entre le VI^e et le III^e s. a.C. En conséquence, la région elle-même et le projet de recherche associé ont été appelés "la vallée des premiers maîtres de forge". Cet artisanat du fer est sans doute l'un des facteurs à l'origine de la prospérité et du prestige de la culture de l'East Yorkshire Arras avec ses tombes à char. Cet article aborde également les similitudes technologiques entre le Nord de la France et l'East Yorkshire, qui renforcent l'idée de contacts culturels soulignée par les tombes en enclos quadrangulaires et les tombes à char dont les parallèles les plus proches sont situés dans le nord-est de la France.

MOTS-CLÉS

Est du Yorkshire, culture d'Arras, sidérurgie

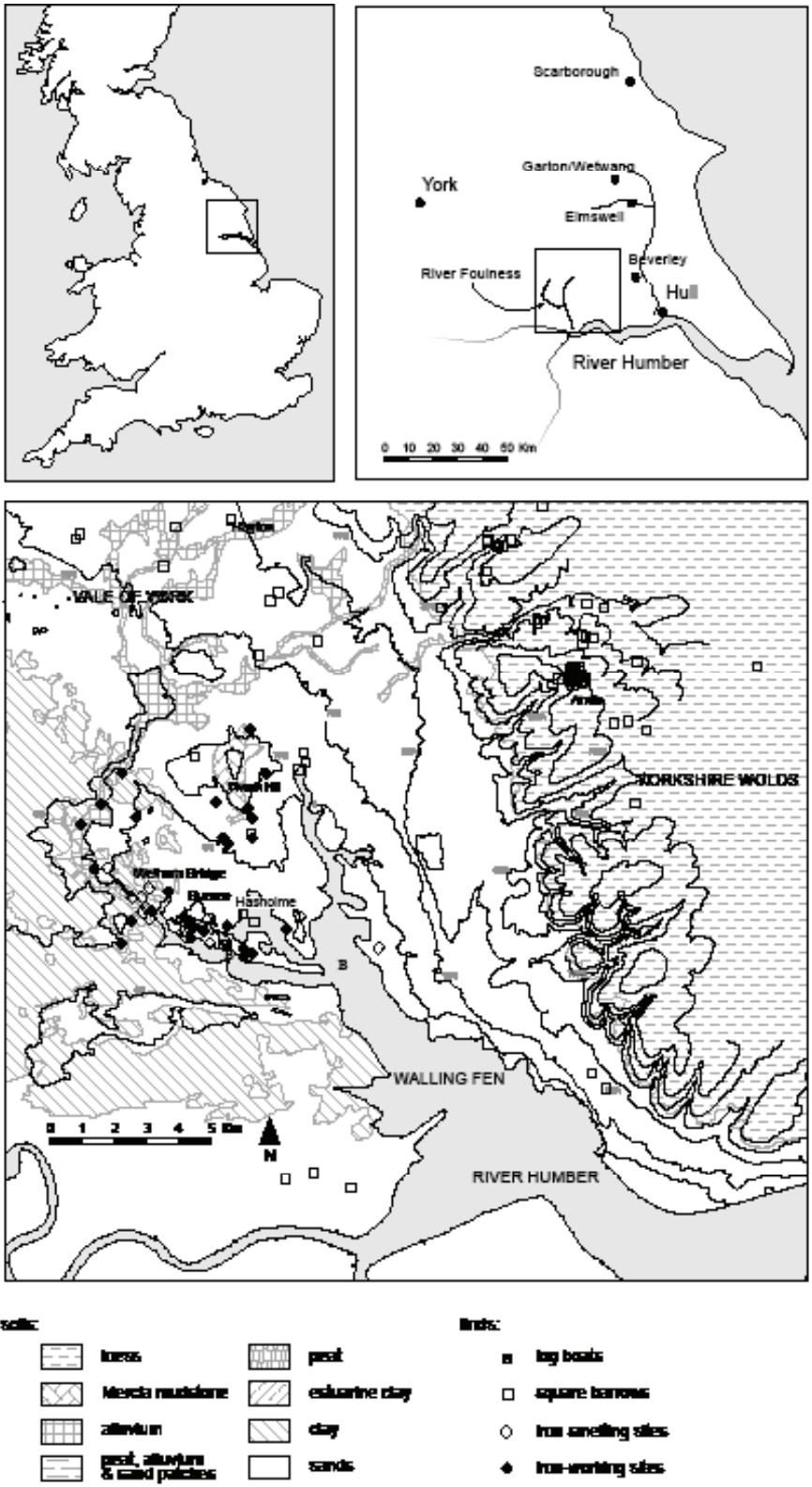


Fig. 1. Maps showing the location of the Foulness Valley and the distribution of Iron Smelting sites and square barrows. Note the tidal inlet of the Humber formed c. 800-500 BC. This became Walling Fen and is now drained and farmed.

1. LOCATION (fig. 1)

The main centre of early iron production reviewed in this article was discovered close to the River Foulness, near Holme-on-Spalding Moor, west of the Yorkshire Wolds and c. 8 km north of the present course of the River Humber, in the East Riding of Yorkshire, England. The surface geology of this low-lying area¹ comprises glacio-lacustrine clays, overlain in places by ridges of Aeolian sands, which rarely rise above 8m OD. Extensive “carrs” of peat and alluvium flank the River Foulness



Fig 2. A slag block from Moore's Farm (note charcoal).

2. THE RAW MATERIALS

2.1. The ore

Bog iron ore and slag have been long recognised in the area, to the extent that agricultural workers called this material “nosmun” or “Nossman”, even in recent years, perhaps an attribution to the “Norsemen”². Thick layers of bog ore, which can impede drainage and cultivation, form on the edges of the sand ridges and peat “carrs” near the River Foulness, providing the raw material for iron production. The rusty colour of the water, caused by these deposits, which is apparent in modern drainage ditches, may account for the name of the river, “Foulness” (or “Foona” as it is called locally), meaning “dirty river”³. The place name is first recorded in a charter of 959 p.C., as Fulanea⁴. The colour of the water may have provided early prospectors with the indication that there was suitable ore in the vicinity. Bog ore from the Foulness Valley supplied by the author, despite being of rather low grade, was successfully smelted in an experimental shaft furnace by Peter and Susan Crew at Plas Tan y Bwlch, Snowdonia in 1996.

2.2. Woodland

Archaeological and palaeo-environmental study shows that the area had been heavily wooded and the distribution of Neolithic stone axes and Bronze Age tools imply long traditions of woodland management (Halkon 2003). Evidence of this, probably coppicing, can be seen in the pollen analysis relating to the Hasholme Boat⁵ though analysis of beetle remains (Heath & Wagner forthcoming) suggests that this was not intensive. The main product of this management was probably charcoal and large pieces of this still remain in Iron Age smelting slag (fig. 2). No definite archaeological evidence for the earth clamps or pits which must have been used for the production of charcoal, has yet been found, however, some of the circular ditches visible as crop marks in aerial photography, could relate to the digging of earth for such clamps rather than burial mounds or the ring gullies of round houses.

3. COASTAL CHANGE AND COMMUNICATIONS

Around 800-540BC, a marine transgression led to the creation of a tidal inlet and estuarine creek system extending more than 8 km north of the present Humber bank (fig. 1). This was the context

1- King & Bradley 1987.

2- Keen 1955, 82.

3- Ekwall 1960.

4- Hart 1975.

5- Turner 1987.

of the 12.5m long log boat, (fig. 3), which was discovered by the author and Martin Millett in 1984 at Hasholme⁶. The massive oak tree from which the log boat was made was felled 321-277 a.C. With a carrying capacity of between 3.5 and 8.5 tonnes, it would be capable of carrying considerable cargo. When it sank it had been carrying timber and beef. Its decorative elements, relative sophistication and large size, however, imply that it was more than just a barge and belonged to a person or group of some status. The boat had sunk close to an Iron Age settlement site where iron smelting had taken place, as large plano-convex furnace bottoms were found in the large enclosure ditches during excavations carried out by the East Riding Archaeological Society⁷. The base of a possible smelting furnace or smithing hearth was also found, though this was partially destroyed by an inexpert volunteer digger before it could be properly recorded. No quantification or analysis of this slag was carried out, nor any dating, though it is presumed that it is contemporary with the boat, as the slag is typologically similar to dated examples from Moore's Farm described below. It is not clear whether the boat was leaving or arriving at the settlement, but as iron smelting sites are distributed along the river, the Hasholme boat is likely to be related to this industry in some way.

A further probably contemporary log boat was found during drainage at South Carr Farm⁸, further east in the tidal inlet, but was destroyed before detailed archaeological work could be done. This too was close to a large iron production site excavated near North Cave, where a large amount of slag and the bases of a number of shaft furnaces were found associated with round houses⁹. Charcoal and wooden objects produced Carbon 14 dates in the mid to late 1st millennium a.C.

4. THE MOORE'S FARM SLAG HEAP (fig. 4)

In 1985 a heap of iron slag standing to 1m high, one of the largest prehistoric examples yet discovered in Britain, was found during field survey by the author and subsequently excavated¹⁰. Its true significance was not realised until a decade later. The slag is mainly in the form of large furnace bottoms. Because each piece was weighed and drawn it was possible to quantify the scale of production based on experimental iron smelting by Crew (1991) although this is not strictly relevant to the technology used at Moore's Farm, and analysis by Clogg¹¹. Clogg categorised the slag into 4 groups (tab. 1).

No furnace structures were excavated at Moore's Farm, though it is possible to reconstruct them on the size and shape of the slag blocks. The variation in form is likely to be the result of different furnace technologies¹², and may be chronological, though it is likely that the type 3 and 4 slags were produced in non-tapping shaft furnaces or slag pit furnaces. The charcoal in the slag was submitted for Carbon 14 dating with the following results:

400-200 Cal BC (68 %) 410-170 Cal BC (95 %)
(HAR 9234)
520-390 Cal BC (68 %) 770-370 Cal BC (95 %)
(HAR 9235)

Using Crew's (1991) present quantifications, Clogg (1999) calculated the quantities of material in terms of output of iron and raw materials outlined as follows:

The heap contained 5338 kg of slag, which would have needed 9120 kg of ore and c.3360 kg of charcoal - the annual product of 47.3 ha of woodland¹³. At this one site 2040 kg of iron bloom would have been produced. This would have made 1080 kg of billet and 540 kg of fully refined bar iron. Millett¹⁴ has suggested that 800 sword shaped bars of trade iron ("currency bars") could then have been produced.

6- Millett & McGrail 1987.

7- Hicks & Wilson 1975.

8- Halkon 1997.

9- Dent 1989.

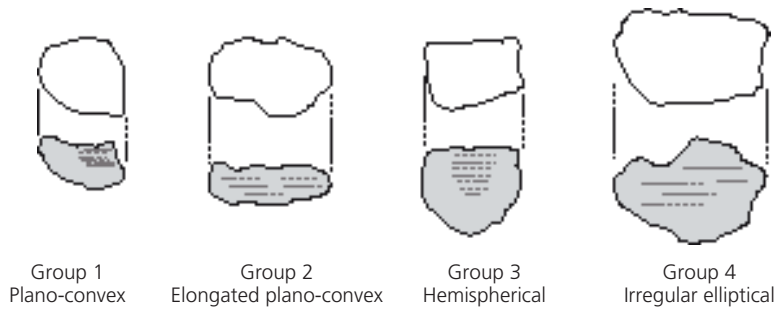
10- Halkon & Millett 1999.

11- Halkon 1997b ; Halkon & Millett 1999.

12- Clogg 1999.

13- Calculation by M. Millett (Halkon & Millett 1999) based on Rackham (1980).

14- Halkon & Millett 1999.



Group	Weight (av.) kg	Length (av.) mm	Breadth (av.) mm	Depth (av.) mm	Max Radius (av.) mm
1	12.68	353.27	283.59	187.92	181.95
2	26.3	525.11	372.69	245.79	278.50
3	47.5	467.06	405.64	386.23	254.50
4	59.71	606.83	488.49	354.13	327.43

Tabl. 1. Description of the Moore’s Farm slag.

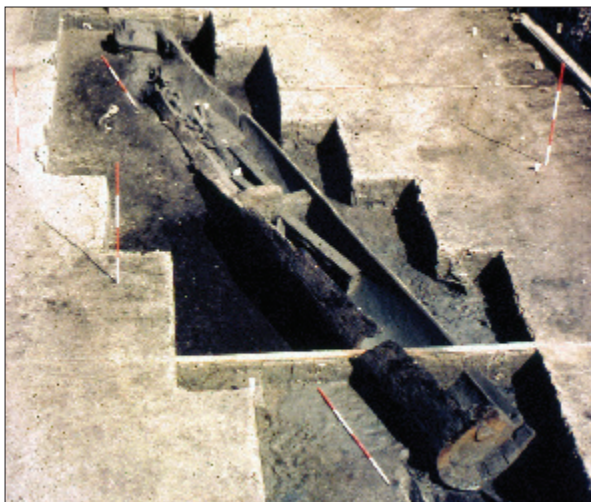


Fig. 3. The Iron Age Hasholme log boat (photo: Martin Millett).



Fig. 4. The five tonne Iron Age slag heap at Moore’s Farm under excavation – one of the biggest yet found in Iron Age Britain.

The true significance of the Moore's Farm slag heap can only be realised when compared with other

SITE	WEIGHT (KG)	CONTEXT
Crawcwellt West	6,500	good excavation
Moore's Farm	5,338	good excavation
Bryn y Castell	1,200	good excavation
Gussage All Saints	700	material virtually ignored, one sentence in final report
Trevelgue Head	c. 250 - 500	most thrown into sea (English Heritage reassessing remainder)
Brookfield	60	previously quoted as 'the largest site'
Kes Tor	2	previously regarded as typical

iron production sites in Britain.

Tab. 2. Comparison of Moore's Farm to other British prehistoric Iron Smelting sites ¹⁵

It can be seen therefore, that the Moore's Farm slag heap is one of the largest prehistoric iron slag heaps yet discovered in Britain. As part of our project, 18 other large smelting sites have been discovered in an 8x8 km area around Holme-on Spalding Moor, making this a specialised iron production zone of considerable significance (fig. 1).

5. WHAT WAS THE ECONOMIC AND SOCIAL SIGNIFICANCE OF IRON PRODUCTION IN THE FOULNESS VALLEY?

No "currency bars" have yet been found in East Yorkshire, the nearest being at Frodingham, to the south of the River Humber in North Lincolnshire. However, the general typology and regional distribution of currency bars¹⁶ suggests that it is only a matter of time before they are found in our region, though as yet we do not know what form the intermediate stage of production between bloom and finished item took here. The nearest finished Iron Age iron objects so far discovered, which were deposited within the "lifespan" of the Moore's Farm

slag heap, were the mirrors, brooches, iron tyres and other vehicle fittings in the richest burials of the square barrow cemetery at Arras, 10k to the north east, on the Yorkshire Wolds. First excavated between 1815-17¹⁷ the Arras cemetery (fig. 5) originally consisted of over a hundred burial mounds, but is now ploughed flat. It is situated at the head of a dry valley, Sancton Dale, which links the iron producing lowlands of the Foulness Valley to the uplands of the Yorkshire Wolds.

The experimental archaeology conducted by Peter Crew already referred to above, has indicated that a steel tyre such as those found in the "chariot" burial at Arras (based on those discovered at Llyn Cerrig Bach in Wales), weighing c. 4 kg, would have needed c.700 kg of charcoal, itself the product of 5 tonnes wood and c 130 person days of labour (fig. 6). Iron is clearly a highly valued commodity within such societies. Crew's quantifications, however, are based on smelting high grade P-rich bog ores in a low non-slag tapping furnace, so are not strictly relevant to the ores and smelting technology used in East Yorkshire. A reassessment of this data is in progress, based on a new series of experiments smelting different ores, which will include work on the rather low grade ores from East Yorkshire.

The location of the cemetery and presence of iron objects within the graves implies that some of the wealth and prestige of the so called Arras culture may have been based on the control of iron production and communications. Even though the most attractive objects are of copper alloy, which allowed more complex decoration, the bronze is often covering an iron core. A similar relationship between "chariot" burials and iron production may also be suggested at Garton/Wetwang Slack, a dry valley running through the eastern Yorkshire Wolds, where five vehicle burials have been excavated and a possible Iron Age iron production site at Elmswell (Congreve 1938, 15) near the head waters of the River Hull, which is also likely to have used bog ores.

This reference to vehicle or "chariot" burials (it is not necessary here to enter the debate as to which they are) and the Arras culture, raises the controversy of continental links, which still preoccupies

15- Information supplied by Peter Crew in 2001.

16- Crew 1994.

17- Stillingfleet 1846 ; Stead 1979.



▲ Fig 5. The Arras square barrow cemetery from the air. Although this once consisted of over a hundred barrows, only a few of these are now visible. It is situated at the head of Sancton Dale, a route way between the iron producing lowlands and the Yorkshire Wolds.

◀ Fig. 6. The Kirkburn chariot burial. This Arras Culture burial contained a tunic of mail. Associated with the Wetwang/Garton Slack group which included five other chariot burials, the tyres and mail tunic emphasise the importance of iron to these people.

archaeologists working on the British Iron Age, and is most recently reviewed by Collis (2003, 182) who suggests continuous not punctuated contact. It is worth discussing this theme further, as the question of continental influence may have a bearing on our understanding of the method by which iron technology entered this region, a subject which has been largely glossed over by leading authorities on the British Iron Age.

The "Arras culture"¹⁸, a term first used by V. Gordon Childe in the 1940s, was thought by Hawkes (1960) to represent invasion from the Marne area of France on the basis of burial traditions. Although the invasion hypothesis was moderated by Hodson (1964) he still saw the Arras culture as intrusive to the native Little Woodbury culture. Stead (1979, 93), comparing East Yorkshire burials with those on the continent, still advocated some migration.

"The arrival in Yorkshire of artefacts from west-central Europe could be explained away by trade, the arrival of ideas – complex burial rites must surely mean the arrival and settlement of people. They could have been tribes but they need not have been numerically strong: perhaps they were adventurers, merchants, evangelists or a few farmers".

He also highlighted the differences, with crouched burials predominating in East Yorkshire and extended ones on the Continent, noting the great contrast in opulence between the French vehicle burials and those of East Yorkshire. By 1991, in the light of much excavation, especially his own at Kirkburn, Garton Station, Rudston and Burton Fleming, and those of Dent (1985) at Wetwang Slack, his hypothesis is moderated further:

"Direct continental influence on the Arras culture amounts to two aspects of the burial rite, cart-burials and square barrows – their arrival points to at least one immigrant... a powerful – well connected evangelist"¹⁹.

The impact of continental contact has therefore been progressively downplayed. Dent (1995, 65) also continued this trend:

"Excavations of Bronze Age and Iron Age settlements have shown that there was a continuous insular cultural tradition in the region. The architecture through this period had more in common with other parts of Britain than the continent".

Examination of the archaeological evidence on both sides of the English Channel, however, suggests that continental links are more complex and traits regarded as "indigenous" or "continental" are not mutually exclusive. It has been clear for some time that there are round houses in France²⁰ and further examples are still being found around Arras (France)²¹. Stead (1979, 38) himself points out that there are crouched burials, though very much in the minority, in the Champagne region, which also has vehicle burials and square burial enclosures. Conversely the skeleton in the "King's barrow" at Arras (E. Yorkshire), buried with two horses, which is itself a unique trait in East Yorkshire vehicle burials, is not crouched but lies on his back with legs flexed²². Dent's (1995, 52) and Stead's (1991, 179) Type B burials, often accompanied by weapons and pig bones were also extended, and with the head to the east or west rather than north.

The vehicle burial excavated at Ferrybridge, West Yorkshire in 2003²³ is important in this discussion for two reasons. Firstly, it was buried intact, unlike all the other East Yorkshire "Chariot" burials, in which the vehicle was dismantled and is thus regarded as being more like its continental equivalents. Secondly, it is 74 km from the core of East Yorkshire "Arras Culture" burials at Wetwang, though it did share similar traits, as the corpse was contracted, in a square burial enclosure and accompanied with joints of pork. Despite these similarities the Ferrybridge find makes it necessary to reconsider the "tribal" boundary of the Arras Culture. The only other vehicle burials outside East Yorkshire were at Pexton Moor and Cawthorn, North Yorkshire and Newbridge, near Edinburgh in Scotland²⁴ and in all these cases vehicles were buried intact.

18- The relationship between the place name Arras East Yorkshire and Arras in France is almost certainly coincidental the earliest spelling being Erghus (Stead 1979, 7).

19- Stead 1991, 228.

20- Harding 1973 ; Jacques & Rossignol 2001.

21- I am grateful to Dimitri Mathiot for this information.

22- Stillingfleet 1846.

23- Boyle 2004, 485.

24- Carter & Hunter 2002, 413.

The grave goods in the richest of the vehicle burials, such as that of a woman excavated at Wetwang in 2001²⁵ included objects lavishly decorated with coral from the Mediterranean, which are a reminder of the importance of trade and exchange²⁶. Whatever the origin of the idea of vehicle burial in Britain was, it is clear that the people carrying out this ritual had command over wide resources. Although Collis (1994) is rather dismissive of vehicle burials in British context, seeing them as little more than the burials of “rich farmers”, I tend to agree with Dent (1995, 66) in seeing the occupants of the graves as “the best candidates to date for the chieftains of the early iron age, assuming that the top rank of society practised this form of burial”. Much of their wealth *was* gained from the land as Iron Age society was principally agrarian – the question is simply one of degree – the enclosure ditch of the Ferrybridge vehicle burial, for example, contained the remains of 250 cattle! If Crew’s calculations are right, iron objects, as exemplified by the mail shirt buried at Kirkburn²⁷, mirrors and weapons, were also of considerable value, and therefore its means of production is likely to have been controlled in some way, at least in the early stages of introduction. In the previous millennium, Collis (1984, 32) reminds us that iron was considered so valuable by the Hittites and Assyrians, that it was probably under direct royal control.

The earliest iron objects found so far in East Yorkshire, were two iron pins discovered at the famous defended hill top enclosure of Staple Howe²⁸, dating from Cal BC 753 - 402 (1 sigma) Cal BC 765 - 390 (2 sigma)²⁹. Interestingly, metal finds from Staple Howe include three bronze razors with Hallstatt parallels. Although it is now not thought that such objects indicate the presence of “invaders”, the parallels for the razors are so close to continental examples that they are very likely to be imports. Did the iron objects come in by similar means?

Cunliffe³⁰ however, suggests some native iron production and presumes that an iron sickle associated with the Early Iron Age (Hallstatt) Llyn Fawr ritual deposit (Wales) must have been manufactured locally. He goes on to suggest that iron technology may have been introduced along the Atlantic seaways of western Britain from the European continent. Collis³¹ proposes that the spread of knowledge of iron manufacture ‘shows a classic pattern of diffusion’ but does not provide a mechanism by which iron technology eventually appears in Britain. The recent report by the Iron Age Research Seminar and the Council of the Prehistoric Society³², produced as part of the English Heritage Research Agendas, highlights some of the problems in trying to resolve this:

“The divide between practical and theoretical sides of archaeology is well-illustrated here: scientists rarely consider the social use of iron, while many archaeologists do not understand the practical constraints on metalworking”.

The experimental work carried out by Peter Crew and continental scholars is of vital importance in addressing this issue³³. It demonstrates the degree of expertise necessary for the production of iron and is beginning to enable us to understand the residues found by archaeologists, such as the large slag heap at Moore’s Farm. There is a close resemblance between the Moore’s Farm type 3 and 4 slag blocks and those produced in the truly remarkable slag-pit furnaces dating from the final Hallstatt and earliest La Tène periods, excavated in the bassin Parisien³⁴. Is it possible that by some mechanism this technology was introduced from the Paris basin into Eastern Yorkshire through the Humber estuary? If burial practices in both regions are similar, why not technology as well?

There is much evidence for cultural exchange via the Humber Estuary, extending backwards into the Bronze Age. There is a concentration of AOC (All Over Corded) Beakers (the earliest type) thought to be continentally derived between the Wash and northern Scotland, with East Yorkshire being one of

25- Hill 2001 ; 2002, 412.

26- Collis 2003.

27- Stead 1991.

28- Brewster 1963, 118, fig. 65.

29- Dent 1995.

30- Cunliffe 1995, 115.

31- Collis 1984, 15.

32- Haselgrove *et al.* 2001.

33- Crew & Crew 1995 ; Crew & Crew 1997.

34- Cabboi & Dunikowski 2004.

the core areas in the distribution of these pots³⁵. The Bronze Age Ferriby boats³⁶ with a date range for Boats 1 to 3 from 1940 to 1680 Cal BC and Kilnsea Boat³⁷ dating from 1870-1670 Cal BC, which represent a sophisticated and well developed wood-working technology, provide the means by which such items or ideas travelled. Though they are unlikely to be capable of sea journeys, the cluster of log boats in the Humber Basin, such as the Hasholme and South Carr Farm boats and the destroyed Brigg log boat³⁸, makes it likely that ocean-going vessels existed in Iron Age in this region, but are yet to be found. The presence of imported coral in Arras Culture graves has already been discussed, but the two way trade must not be forgotten. Jet, possibly from Yorkshire, has been found in contemporary burial contexts around Paris³⁹ and Strabo's reference⁴⁰ to iron, amongst other goods, being an export from Britain is well known.



Fig 7. The remarkable cache of five Iron Age swords and 34 spearheads excavated to the east of the Walling Fen tidal inlet in 2002. Are these the products of the Foulness Valley iron industries? (photo: York Archaeological Trust Conservation Laboratory).

35- Manby *et al.* 2003, 58.

36- Wright *et al.* 2001.

37- Van de Noort *et al.* 1999.

38- McGrail 1990.

39- Information from Luc Leconte.

40- Geography book 4, chapter 5.

Besides providing possible parallels in furnace technology, the work being carried out in the Paris Basin and northern France⁴¹ is also very important, as like the Foulness Valley project, smelting and smithing sites are being considered within the landscape and parallels in their distribution pattern, especially in relation to river systems, can also be seen. Cabboi and Dunikowski have been able to follow the development of iron technology into the later Iron Age. The Moore's Farm dates and the presence of tap slag from other iron smelting sites in the Foulness Valley, show that here also iron manufacture continued, with products traded along the Foulness tidal creeks and estuarine inlet. The remarkable cache of five iron swords (fig. 7) and 34 iron spearheads⁴², found on the eastern side of the tidal inlet in 2002, may relate to this iron industry, although it was several centuries later than Moore's Farm

The weapons cache was buried in the upper levels of a settlement ditch, under sherds of Dressel 20 amphora, dated to around p.C. 70, the period of the Roman conquest of Yorkshire. Hingley (1990) has noted that many of the so called "currency bars" were also found in hillfort and settlement ditches and their deposition may have had symbolic meaning. Is this weapons cache a further example of structured deposition, or were they, as the dating from the pottery suggests, being hidden during decommissioning of weapons in the early stages of Roman rule? The slag blocks which have been excavated recently in the ditches of Iron Age settlements at Hayton and North Cave in the Foulness Valley, on sites where there was no other evidence of Iron Age iron production, may have had a similar ritual significance. At Hayton, slag from the working of copper alloys was also found in settlement enclosure ditches

6. ROMAN IRON PRODUCTION

In the Foulness valley iron production continued into the Roman period, but on a smaller scale, eventually being eclipsed by pottery production. An

41- Dunikowski & Segquier 2004.

42- Humber Archaeology Partnership 2003.



Fig 8. A Roman greyware pot, made in the Holme on Spalding Moor area decorated with the bearded head of the god of smithing, Vulcan, and a pair of tongs. The concentration of head, face and smith's tool pots in this region suggest the presence of a cult associated with this deity and/or his Celtic counterpart.

iron anvil dating from the 3rd Century p.C.⁴³ and the remains of a fragmentary furnace, which may have been contemporary with pottery production, were discovered at Hasholme.

There is a noticeable concentration of Roman pots decorated with smith's tools and/or the head of the Roman god Vulcan (fig. 8) in the Foulness Valley. Most of these were close to water courses and may signify the presence of a cult relating to that deity, or an Iron Age equivalent⁴⁴ – a fitting dedication in the “Valley of the First Iron Masters”.

7. CONCLUSION

This contribution has highlighted the need to undertake investigation of Iron Age iron production

within the landscape and the possibility that iron technology in East Yorkshire had its origins in northern France, along with burial practices. It is very difficult to pinpoint the precise mechanism by which this happened. Hypotheses ranging from invasion, migration or “missionaries”, have been put forward, but it is likely that whatever process occurred, the Humber estuary remained vitally important. In such maritime areas, there were probably always strong continental links. Caesar⁴⁵ comments that the people from the maritime regions such as this came from Gaul. In this context, the relationship between the *Parisi* of East Yorkshire and the *Parisii* of France⁴⁶ is intriguing, though it must be remembered that Ptolemy did not record these names until the second century p.C. The prehistoric iron production centres recently discovered in

43- Manning 1975.

44- Halkon 1992.

45- Caes., BG, 5.10.

46- Collis 2003, 180.

northern France provide important new evidence by which this possible French connection could be further examined.

ACKNOWLEDGEMENTS

This research has been undertaken by the East Riding Archaeological Society (ERAS) working jointly with Cambridge, Durham, Hull, Leeds, Leicester and Southampton Universities, with hundreds of participants, students and other volunteers of all ages. Phil Clogg undertook analysis of slag from Moore's Farm. We are very grateful to Peter and Susan Crew for all their help and support. Peter Crew provided invaluable assistance in improving this article. Mick Carr, its discoverer, supplied information about the weapons cache and the Conservation Laboratory of the YAT the photograph of the weapons cache.

Sponsors past and present include: BAe Systems, Council for British Archaeology (Yorks) Dale Farm Foods, English Heritage, Haverfield Bequest, Holme Charity, Market Weighton Town Council, RM Burton Charitable Trust, Robert Kiln Trust, N. Payne, Royal Archaeological Institute, Trust House Forte, the University of Cambridge, the University of Durham, University of Hull, University of Leeds, University of Southampton, Yorkshire Archaeological Society. The Heritage Lottery Fund is currently funding a web-based "virtual landscape" – Valley of the First Iron Masters, see www.ironmasters.hull.ac.uk.

Bibliographie

- Boyle, A. (2004) : "The Ferrybridge chariot burial", in : May, éd. 2004, 481- 485.
- Brewster, T.C.M. (1963) : *The Excavation of Staple Howe*. East Riding Archaeological Research Trust, 118.
- Cabboi, S., C. Dunikowski, M. Leroy et P. Merluzzo (2004) : "Les systèmes de production sidérurgique chez les Celtes au nord de la France", in : Milcent, dir. 2007, 35-62.
- Carter, S. et F. Hunter (2002) : "The Newbridge chariot", in : May, éd. 2004, 413.
- Clogg, P. (1999) : "The Welham Bridge slag", in : Halkon & Millett 1999, 81-94.
- Collis, J. R. (1984) : *The European Iron Age*, London, 32.
- (1994) : "Reconstructing Iron Age society", in: Kristiansen & Jensen, éd. 1994, 31-39.
- (2003) : *The Celts, Origins, Myths and Inventions*. Stroud, Tempus.
- Collis, J., éd. (2001) : *Society and Iron Age in Europe, Actes du XVIII^e colloque de l'AFEAF, Winchester, 1994*, Sheffield.
- Congreve, A.L. (1938) : *A Roman and Saxon Site at Elmswell, East Yorkshire 1937*, Hull.
- Crew, P. (1994) : "Currency Bars in Great Britain, typology and function", in : Mangin, éd. 1994, 345-350.
- (1991) : "The experimental production of prehistoric bar iron", *The Journal of the Historical Metallurgy Society*, 25.1, 11-19.
- Crew, P. et S. Crew, éd. (1997) : *Early Ironworking in Europe: archaeology and experiment, Abstracts of International Conference, September 1997*, Occasional Paper No. 3, Plas Tan y Bwlch, Maentwrog.
- (1995) : *Iron for Archaeologists: a review of recent work on the archaeology of early iron working sites in Europe*, Occasional Paper No. 2, Plas Tan y Bwlch, Maentwrog.
- Cunliffe, B. (1995) : *Iron Age Britain*, Londres, 115.
- Dent, J. S. (1989) : "Settlements at North Cave and Brantingham", in: Halkon, éd. 1989, 26-32.
- (1985) : "Three cart burials from Wetwang, Yorkshire", *Antiquity*, 59, 85-92.
- (1995) : *Aspects of Iron Age Settlement in East Yorkshire*, Unpublished PhD Thesis, University of Sheffield.
- Dunikowski, C., J. Segquier et S. Cabboi (2004) : "La production du fer protohistorique au sud du Bassin Parisien", in : Milcent, dir. 2007, 279-289.
- Ekwall, E. (1960) : *Concise Oxford Dictionary of English Place-Names*, 4th edition, Oxford.
- Ellis, S., éd. (1990) : *Humber Perspectives – A region through the Ages* Hull.
- Evans, D.H., éd. (1997) : *An East Riding Miscellany. East Riding Archaeologist* 9. Hull, East Riding Archaeological Society.
- Frere, S.S. (1960) : *Problems of the Iron Age in Southern Britain*, Institute of Archaeology Occasional Papers 11, Londres.

- Halkon, P. (1992) : Romano-British face-pots from Holme-on-Spalding Moor and Shiptonthorpe, East Yorkshire, *Britannia* 23, 222-228.
- (1997a) : "A log boat from South Carr Farm, Newport", in : Evans, éd. 1997, 7-10.
- (1997b) : "Fieldwork on early iron working sites in East Yorkshire", *The Journal of the Historical Metallurgy Society* 31 (1), 12-16.
- (2003) : "Researching an Ancient Landscape - The Foulness Valley, East Yorkshire", in : Manby *et al.* 2003, 261-274.
- Halkon, P., éd. (1989) : *New light on the Parisi*, Hull.
- Halkon, P. et M. Millett (2000a) : "Foulness-Valley of the First Iron Masters", in : Selkirk, éd. 2000, 20-29.
- (2000b) : "The Landscape Archaeology of the Foulness Valley, East Yorkshire" in : Harding, éd. 2000, 81-93.
- Halkon, P. et M. Millett, éd. (1999) : *Rural Settlement and Industry: Studies in the Iron Age and Roman Archaeology of Lowland East Yorkshire*, Yorkshire Archaeological Report 4, Yorkshire Archaeological Society, Leeds.
- Halkon, P. *et al.* (à paraître) : *Change and continuity within the Prehistoric landscape of the Foulness valley, East Yorkshire*, Hull.
- Harding, D. (1973) : "Round and Rectangular: Iron Age Houses, British and Foreign", in : Hawkes & Hawkes 1973.
- Harding, J., éd. (2000) : *Northern Pasts - Interpretations of the Later Prehistory of Northern England and Southern Scotland*. British Archaeological Reports, British Series, 302, Oxford.
- Hart, C.R. (1975) : *The early charters of northern England and the north Midlands*, Leicester University Press.
- Haselgrove, C., I. Armit, T. Champion, J. Creighton, A. Gwilt, J.D. Hill, F. Hunter et A. Woodward (2001) : *Understanding the British Iron Age: An Agenda for Action. A Report for the Iron Age Research Seminar and the Council of the Prehistoric Society*, Trust for Wessex Archaeology.
- Hawkes, C.F.C. (1960) : "The ABC of the British Iron Age", in : Frere 1960. Reprinted 1977, 1-16.
- Hawkes, C. et S. Hawkes (1973) : *Greeks, Celts and Romans, Studies in Venture and Resistance*, Archaeology into History, 1, Londres.
- Heath, A. et P. Wagner (à paraître) : "Coleopteran evidence from the Foulness valley", in : Halkon *et al.* à paraître..
- Hicks, J.D. et J.A. Wilson (1975) : "Romano-British Kilns at Hasholme", *East Riding Archaeologist*, 2, Hull, 49-70.
- Hill, J.D. (2001) : "Wetwang Chariot burial" ; web site. The Department of Prehistory and Early Europe, <http://www.thebritishmuseum.ac.uk/pee/peereex.html>
- (2002) : "The Wetwang Chariot burial", in : May, éd. 2002, 410-412.
- Hingley, R. (1990) : "Iron 'currency bars': the archaeological and social context", *Archaeological Journal* 147, 91-117.
- Hodson, F.R (1964) : "Cultural groupings within the British pre-Roman Iron Age", *Proceedings of the Prehistoric Society*, 28, 140-55.
- Humber Archaeology Partnership (2003) : Newsletter Issue 5 May 2003 <http://www.hullcc.gov.uk/archaeology/news05.htm>
- Jacques, A. et P. Rossignol (2001) : "La ferme indigène d'Arras 'Les Bonnettes' (Pas-de-Calais)", in : Collis, éd. 2001, 246-261.
- Keen, G.I. (1955) : "Carrot growing in the East Riding of Yorkshire" in : *Agriculture*, 682, 2, 82-6.
- King, S.J. et R.I. Bradley (1987) : *Soils of the Market Weighton District*, Harpenden.
- Kristiansen, K. et J. Jensen, éd. (1994) : *Europe in the first millennium BC*.
- Manby, T.G., A. King, et B.E. Vyner (2003) : "The Neolithic and Bronze Ages: a time of early agriculture", in: Manby *et al.* 2003, 58.
- Manby, T., S. Moorhouse, et P. Ottaway (2003) : *The Archaeology of Yorkshire-An assessment at the beginning of the 21st century*, Yorkshire Archaeological Society, Leeds.
- Mangin, M., éd. (1994) : *La sidérurgie ancienne de l'Est de la France dans son context européen, Actes du Colloque de Besançon, 1993*, Annales littéraires de l'Université de Besançon, 536.
- Manning, W.H. (1975) : "An iron anvil from Hasholme" *East Riding Archaeologist*, 2, 67-69.
- May, J., éd. (2002) : *Current Archaeology*, 191.
- McGrail, S. (1990) : "Early Boats of the Humber basin", in : Ellis, éd. 1990, Hull.
- Milcent, P.-Y., dir. (2007) : *L'économie du fer protohistorique : de la production à la consommation, Actes du XXVIII colloque de l'Afeaf, Toulouse, 20-23 mai 2004*, Aquitania Suppl. 14/2, Bordeaux.
- Millett, M. et S. McGrail (1987) : "The archaeology of the Hasholme logboat". *Archaeological Journal*, 144, 69-155.
- Rackham, O. (1980) : *Ancient Woodland and its history, vegetation and uses in England*, Londres.
- Selkirk, A., éd. (2000) : *Current Archaeology*, 169, Londres.
- Stead, I. M., (1979) : *The Arras Culture*. Yorkshire Philosophical Society, York.
- (1991) : *The Iron Age Cemeteries from East Yorkshire*, English Heritage.
- Stillingfleet, E. (1846) : "Account of the opening of some barrows on the Wolds of Yorkshire", *Proceedings of the Archaeological Institute held at York*, 26-32.
- Turner, J. (1987) : "The pollen analysis", in : Millett & McGrail 1987, 85-88.
- Van de Noort, R., R. Middleton, A. Foxon, et A. Bayliss (1999) : "The Kilnsea Boat" and some implications from the discovery of England's oldest plank boat remains", *Antiquity*, 73, 131-5.
- Wright, E.V., R.E.M. Hedges, A. Bayliss et R. Van De Noort (2001) : "New AMS radiocarbon dates for the North Ferriby Boats – a contribution to dating prehistoric seafaring in north-western Europe", *Antiquity*, 75, 726-34.