The Early Middle Palaeolithic of Britain and Jersey: reconnecting the Saalian occupations of the Channel Region

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Abstract: *The Early Middle Palaeolithic of southern Britain is best represented by the record recovered from within the terraces of the Thames, within which some attempt has been made to correlate particular sites to substage level within MIS 7. It has been suggested that there are particular features of the British record which suggest both shared features – and differences – to the record in Northern France: firstly, an under-representation of sites in Britain dated to late MIS7/early MIS 6 (unlike Northern France), and secondly, an apparent geographical split in the manufacture of handaxes versus Levallois debitage between the east and west. We here present the key features of the British record, but suggest that taking a "compare and contrast" approach to Britain could artificially create an impression of difference. We need to understand how our records are formed before assuming human behaviour to be the primary driver. It is necessary to work towards a seamless characterisation of north-west European landscapes, taking account the regional filters created by, for instance, local conditions of preservation and release, and research tradition, before addressing such apparent differences. British research has tended to focus on La Manche as a barrier, and the timing and impact of the creation of the channel upon human access to Britain. We here suggest ways in which we can start looking at this area, not as a barrier, but an inhabited landscape, concentrating on what we can learn from sites located around the margins of this now inaccessible, submerged place. The site of La Cotte de St. Brelade, Jersey provides us with an important window into the landscapes of La Manche. This site preserves the longest Middle Palaeolithic archaeological sequence in north-west Europe, spanning from at least 240,000 BP through to MIS3. The Saalian sequence is some 5m thick, and divided into 10 major units, all rich in artefacts. New work enables changing Neanderthal behaviour throughout the sequence to be explored in relation to changes in regional climate and environment, as well as starting to repopulate the space between Britain and the continent. Building on these observations, we can begin to reflect of how space was used by Neanderthals between Great Britain and the rest of the European continent.*

Keywords : *Early Middle Palaeolithic, Jersey, Southern England, Channel River, Lithic industry.*

Résumé : *Le Paléolithique moyen ancien du sud de la Grande-Bretagne est principalement représenté par les assemblages récupérés dans les terrasses de la Tamise. Certains d'entre eux ont été attribués aux divisions climatiques du MIS 7. Des caractéristiques particulières des assemblages britanniques suggèrent deux caractéristiques communes – et des différences – par rapport du nord de la France : d'une part, une sous-représentation des sites en Grande-Bretagne à la fin du MIS7/début du MIS 6 (contrairement au nord de la France), et d'autre part, une répartition géographique distincte des bifaces et du débitage Levallois entre l'Ouest et l'Est. Nous présentons ici les principales caractéristiques des assemblages britanniques, même si cette approche comparative des contrastes crée artificiellement une impression de différence. Il est nécessaire de caractériser les paysages européens du nord-ouest, en tenant compte des filtres régionaux créés, par exemple, par les conditions locales de conservation et de découverte, par les traditions de recherche, avant d'aborder ces différences. Les archéologues britanniques ont eu tendance à considérer la Manche comme une barrière, et se sont concentrés sur les conséquences de la séparation de la Grande Bretagne sur la dynamique du peuplement humain. Nous devons comprendre comment nos dossiers sont formés avant de supposer que le comportement humain est le principal moteur. Nous proposons ici de commencer à regarder cette zone, non pas comme un obstacle, mais comme un paysage vécu, en se concentrant sur ce que nous apprennent les sites situés aux marges de cette zone inaccessible et submergée à l'heure actuelle. Le site de La Cotte de Saint-Brélade, à Jersey, nous offre une fenêtre importante sur les paysages de La Manche. Ce site conserve la séquence archéologique la plus longue pour le Paléolithique moyen dans le nord-ouest de l'Europe, couvrant au moins du début su MIS 7 (240 000 ans) jusqu'au MIS 3 (59-24 000 ans). Les dépôts du Saalien s'étendent sur environ 5 m d'épaisseur et sont divisés en 10 unités stratigraphiques, toutes riches en artefacts – plus de 95 000 au total. Les nouvelles recherches permettent de mettre en relation les changements de comportement de Néandertal lors des changements climatiques et environnementaux régionaux. Ces observations invitent à entamer une réflexion sur l'utilisation de l'espace par les Néandertaliens entre la Grande-Bretagne et le continent européen.*

Mots-clés : *Phase ancienne du Paléolithique moyen, Jersey, Sud de l'Angleterre, Fleuve Manche, Industrie lithique.*

INTRODUCTION

The British Middle Palaeolithic has historically been viewed as somewhat peripheral to understanding the development of Neanderthal behaviours and adaptations in north-west Europe: Roe (1981, p. 233) memorably (and damningly) characterised it as lacking variety, and minimal in quantity. More to the point, before the current British terrestrial Quaternary sequence (four post-Anglian interglacials: MIS 11, 9, 7 and 5e) became widely accepted, the use of a compressed stratigraphic framework meant that the British Middle Palaeolithic did not have "a time to take place in" (Scott, 2011, p. 5). Thus initial attempts to investigate the Middle Palaeolithic relied on a typological subdivision of a largely undated record (*e.g.* Coulson, 1990; Tyldesley, 1987). Chronostratigraphic order was first brought to the Thames sequence by Bridgland's (1994) re-evaluation of the Thames sequence and the reinvestigation of several key sites. Many sites which had previously been correlated with MIS 5e (Ipswichian) or MIS 11 (Hoxnian) were re-dated to the Early Middle Palaeolithic: either MIS 9 (as at Purfleet) or MIS 7 (*e.g.* Aveley, Ilford, Ebbsfleet). The British Middle Palaeolithic could therefore now be isolated and investigated as a chronostratigraphic interval, and not simply on typo-technological grounds. Ongoing work suggests that further climatic complexity within MIS 7 can be discerned, based on stratigraphy, faunal associations (Wenban-Smith *et al.*, in press) and amino acid racemization analyses of bythinia opercula (Penkman, 2004; Penkman *et al.*, 2011), providing yet greater definition of the timing and nature of hominin presence.

Imposing some sort of order on the British Middle Palaeolithic sparked a whole raft of new research, largely under the auspices of the Ancient Human Occupation of Britain (AHOB) projects: an emergent form of Levallois flaking was identified at Purfleet, Essex (White and Ashton, 2003) and a distinction was systematized between an early, Levallois dominated Middle Palaeolithic (MIS 9-7) and a late British Middle Palaeolithic (MIS 4/3) characterised by the manufacture of handaxes, and especially the peculiar British Bout Coupé form (White and Jacobi, 2002; Wragg Sykes, 2009; Ashton and Scott, 2016). The timing and nature of settlement history was a key concern, with Ashton and others (Ashton, 2002; Ashton and Lewis, 2002; Ashton *et al.*, 2003; Ashton *et al.*, 2011; Ashton *et al.*, 2015) suggesting that Britain was host to only low numbers of people from Late MIS 8 onwards, this declining throughout MIS 7, with Britain being abandoned completely between MIS 6 – MIS 4/3 (Currant and Jacobi, 2001; Ashton, 2002; Lewis *et al.,* 2011; but see also Wenban-Smith *et al.,* 2010).

Although very few British Middle Palaeolithic sites have been investigated using modern excavation techniques, and fewer still have produced archaeological information capable of interrogating the record on an ethnographic scale, the improved resolution of the British record allowed hominin behaviour on a landscape scale to be established. Most sites – especially those from the primary fluvial archive of the Lower Thames – can now be chronostratigraphically related to one another, and have produced environmental evidence reflecting climate and local environment. Through adopting an analytical approach which respects difference in the collection, excavation and curation history of each British site, it is possible to reconstruct broad patterns of technological practice in the British Early Middle Palaeolithic (Scott, 2006; White *et al.*, 2006; Scott, 2011; Scott *et al.*, 2011).

"BINARY BRITAIN"

An explicit concern of British researchers working on the Early Middle Palaeolithic was explaining settlement history (human and animal) through focussing on the ongoing evolution of the Channel. This might be termed a "binary Britain" perspective, whereby interpretative weight is placed upon connection to Europe as the primary factor in explaining many features of the archaeological record, but especially colonisation (White and Schreve, 2000; Ashton, 2002; Ashton and Lewis, 2002; Scott and Ashton, 2011; Ashton and Scott, 2016). On one hand, the logic underlying this emphasis is clear; when and if Britain was an island, opportunities for colonisation by viable populations were profoundly restricted (precluding the technologies of sea crossing). However, the "binary" model (connected/not connected) profoundly simplifies our understanding of the now-submerged landscapes that were occupied by early humans across north-west Europe.

Considering La Cotte in its regional context is a useful check for British archaeologists upon the way in which we view our record: our tendency is towards introspection, and viewing "our" record as something different and, to some extent special. La Cotte de St. Brelade is a Neanderthal site that by geopolitical chance is viewed as part of the "British" record, but which is firmly located south of the Channel, within the Amorican Massif. Our purpose here is to explore the way in which a "binary Britain" view of the British record could be redressed, and the place that La Cotte de St. Brelade plays in prompting us to do this, with implications for understanding the development of early Neanderthal behaviours and adaptations across the region. Specifically, the focus here is upon two, inter-related issues: the palaeogeography of the Channel river system (as opposed to a focus on the palaeogeography of Britain itself) and the environmental tolerances of Early Middle Palaeolithic Neanderthals in the north-westernmost tip of Europe. In this paper, we give an overview of some of the key features of the environmental succession of the period and a perspective on the palaeogeography of the channel/southern North Sea, before considering the British "Saalian" record from the perspective of La Cotte.

The environmental structure of the Early Middle Palaeolithic in Europe (MIS 8-6)

Although the appearance of Levallois flaking in Europe seems to have deep, local routes in European technological practice (*e.g.* as at Purfleet, Kesselt op de Schans, Orgnac 3; White and Ashton, 2003; Van Baelen *et al.*, 2007; Moncel and Combier, 1992; Moncel *et al.*, 2005), the Early Middle Palaeolithic (as characterised by this technology becoming widespread and stable) spans a climatic interval (the Saalian: MIS 8-6) which appears unusual when contrasted with earlier glacial/interglacial cycles (*e.g.* MIS 12-10). Ice sheet formation at the beginning of MIS 8 appears to have been restricted (Kukla, 2005), with increased insolation leading to amelioration late in the glacial, preceding the warming limb of the "first" MIS 7 interglacial (~250ka: Roucoux *et al.*, 2006). Because the MIS 8 ice sheets were small, they were restricted to further north than ice sheets in other glacial episodes: there are suggestions that this restricted ice cover was slow to melt, rather than more southerly margins collapsing catastrophically as climate warmed (Tzedakis, 2005; McManus *et al.*, 1999) and causing climate instability. In comparison with MIS 11 or 5, which have long and stable early phases, followed by rapid oscillations in climate, MIS 7 has more, and longer stable periods. The warming limb of MIS 7 was interrupted only once by a brief (2000 year) cold excursion around 250 ka (Desprat *et al.*, 2006) and the subsequent "interglacial" actually comprises three distinct warm peaks, interrupted by two cold phases (MIS 7e-7a).

The precise nature of each of the warmer substages of MIS 7 is harder to establish, however, as different data conflict (Roucoux *et al.*, 2008). Pollen sequences in central France and Greece (Velay, Ionannia: Reille *et al.*, 2000; Roucoux *et al.*, 2008) reflect an alternation between deciduous forest and open grassland, though it is hard to project these patterns into northern latitudes where growing seasons were shorter and the impact of any cold reversals more pronounced. The two cold substages, however, do seem to be very distinct from each other. Global sea level modelling suggests that MIS 7d was a very low sea level event, and probably saw ice sheets developing as extensively as during MIS 8, whereas MIS 7b seems to have resulted in only minor ice accumulation and associated drop in sea level. Within regional loess records, interglacial deposits attributed to MIS 7 are represented by brown, leached soils of the Mautort (Cagny) soil complex, with steppic soil formation correlated with the transition to early glacial conditions in MIS 6 (Gentelles soil). Interglacial soil formation is interrupted by the deposition of a non-calcaereous loess, most probably reflecting the significant reversal of MIS 7d (*e.g.* see Locht *et al.*, 2015).

Globally, MIS 7 has generally been characterised as a "low sea level" interglacial: Waelbroek *et al.* (2002) propose a composite sea level curve based upon a regression between deep sea cores and relative sea level, with dates on coral and raised/submerged beaches as tie points (*e.g.* Thompson and Goldstein, 2006). This indicates that a possible global sea level drop of -80 m for sub-stage 7d, but only -20m for 7b; notably, the warm substages of 7 have been suggested to be close to modern sea level. At the end of MIS 7, abrupt cooling led into early MIS 6 at ~180 ka (Matrat *et al.*, 2007); this cooling was interrupted by a pronounced warm reversal around 175 ka (MIS 6.5) recorded in ice cores (anomalous reversal in 160/180 ratio denoting polar melting) and east Mediterranean ocean cores containing layers rich in organic matter (Peynaud *et al.*, 2009). Some models suggest that this warm phase may have been as pronounced, if not as long, as substage 7a, and, with increased humidity, may have precipitated the formation of an expanded MIS 6 ice sheet sensitive to seasonal melting (Peynaud *et al.*, 2009), with the British and Fennoscandinavian ice sheets coalescent in the North Sea. A further notable warm phase relates to the insolation peak at around 150 ka. Both MIS 7 and 6, therefore, show alternating warm and cold phases, some of which had terrestrial expression, and both of which provided periods when climate shifted between habitats suitable for human occupation to those when it was probably too cold to support a significant faunal community. Understanding these tipping points, and how human presence relates to them, is especially significant when trying to pick apart the settlement history of north-western Europe.

Reconstructing La Manche: Beyond "Binary Britain"

Reconstructions of the changing form of the La Manche river system vary in the emphasis placed upon catastrophic versus more gradual erosive processes. Broadly speaking, the current configuration of the submerged offshore landscape is widely accepted as beginning with an initial (or partial) breach of the Wealden-Artois anticline towards the end of the Anglian glaciation. However, the emphasis placed upon catastrophic versus gradual models, and the timing of major episodes of erosion, has a profound impact on how the landscapes of the channel region can be understood in human terms.

A catastrophic model for the breach of the Wealden-Artois ridge beginning during the Anglian has gained support from bathymetric modelling of the channel sea bed (Gupta *et al.*, 2007; Papers edited by Preece, 1995; White and Schreve, 2000). Toucanne *et al.* (2009) proposed a more gradual erosion of the chalk ridge, though still supported a marine connection through the Dover Straits during high stand situations. More recently, Hijma *et al.* (2012) have proposed a detailed model of the progressive erosion of the southern North Sea basin and London Clay/Asse Clay "landbridge" backing the chalk anticline, which suggests an interesting perspective on the nature of the La Manche landscapes. They emphasise three main geographic states for the southern North Sea/Channel Strait region, based upon bathymetric modelling of sediments and not simply landforms: before MIS 12, following an Anglian pro-glacial partial erosion of a narrowed landbridge, and after MIS 6, a landscape fully dissected by an axial Rhine-Thames valley. This latter model has gained support from renewed geophysical survey supporting two phases of catastrophic breaching of the chalk; an initial Anglian breech, and final severance being correlated with MIS 6 (Gupta *et al*., 2017).

Concentrating on the period MIS 8-7-6, Hijma *et al*. (2012) characterise a topographic low in the Wealden-Artois region as forming a spillway, deep enough to create new valleys that persistently diverted the Thames, Medway, Ijzer and Scheldt towards the English Channel river; the erosion bases of these rivers were lower following the Anglian, and they ran south-west, dissecting the area of the southern Bight. At this stage, there is no strong evidence that the erosion base of the Low Rhine and Meuse were lowered: these major riverways continued to flow northwards becoming confluent in the southern North Sea Basin during cold period lowstands. It is only following British and Fennoscandinavian ice sheet coalescence during MIS 6 and a further proglacial erosion episode that these rivers were diverted to the south-west to considerably enlarge the major axial river in the channel region.

There are some important features of these broad reconstructions for how humans used these landscapes, as well as how such sites may be preserved throughout the region. Firstly, the post-Anglian/pre-MIS 6 landscape comprised two bays which almost connected during high stand situations, with an eroded, lowered chalk bridge, and Palaeogene clay bridge backing it. This situation nevertheless impacted upon the faunal communities which accessed Britain, and it would be interesting to explore how apparent patterning in the faunal communities relates to the dominant axis of the south-west and north-flowing major river systems. Full erosion of the "clay bridge" and remaining chalk by the end of MIS 6 presents a different situation with a sea-strait during high stands and a gorge during low stands. The rivers, including the Rhine and Meuse, were now confluent with the Thames and the Scheldt and formed a single, axial system.

Changes of arrangement in the major fluvial situation are particularly important for the La Manche/Channel region. When thinking about Brittany and Normandy, the links in hominin terms were not north to south – looking towards Britain – but west to east – towards Picardy and the Somme. On a broader scale, a single, major river system was only reached by late MIS 6. Significantly, MIS 6 onwards saw the beginning of major loess accumulation in Northern France, the parent material whipped up and deposited over the land from ice-marginal rivers, including the Rhine. It was with the widespread deposition of these deposits that there is both an increase in the number of French sites (Locht *et al*., 2016), and the possibility to separate them into stadials/interstadials.

THE BRITISH "SAALIAN" RECORD: MIS 8-7-6

In Britain 21 archaeological layers or sites are currently attributed to the "Saalian" (MIS 8-6), nine of which are from the Thames deposits (fig. 1; table 1; see White *et al*., 2006; Scott, 2011; Scott *et al*., 2011). Further sites are also known from less intensively researched fluvial systems (for instance, Solent: Davis, 2013; Hatch, 2014), but they lack precise dating. The fluvial archives of the Thames, and especially its lower reaches, attracted the attention of geologists and collectors alike since the earliest years of Palaeolithic archaeology, through whose attention (especially before the advent of mechanised gravel extraction) we possess the record that we do. Most British sites are now built over, and very few have been excavated using modern methods, the exceptions being Lion Pit Tramway Cutting (Schreve *et al*., 2006) and Aveley (Schreve, 2001) in the Thames valley, and Harnham (Bates *et al*., 2014), Pontnewydd (Aldhouse-Green *et al*., 2012), and potentially also Cuxton (Wenban-Smith, 2004) beyond. However, although largely known from historical collections, most British sites were in primary context, though subject to some fluvial rearrangement: only one site can truly be claimed to have been in situ (Stoneham's Pit, Crayford; Spurrell, 1880).

The Middle and Lower Thames sequence is now widely accepted as reflecting deposition over four post-Anglian interglacial-glacial cycles (Bridgland, 1994, 2001 and 2006; Preece, 1995; Keen, 2001), with MIS 4-2 deposits being largely preserved beneath the level of the modern floodplain. The chronostratigraphy of the Thames sequence forms the framework for attributing any British sites to the Early Middle Palaeolithic, with some being allotted to either an early or late phase of MIS 7 based upon correlation with the rich faunal assemblages from Aveley, Essex (Schreve, 2001). These subdivisions are suggested to be supported by AAR measurements from Bithynia opercula from many sites (Penkman *et al*., 2011), though new work suggests greater complexity (Wenban-Smith *et al*., in press). Most British sites are rich in mammalian fauna and molluscs, although direct evidence for local and regional vegetation (pollen and plant macrofossils) is less common. However, the environments within which humans were active can be partially reconstructed at most sites, and generally reflect cool, open conditions.

Earliest occurrences: Purfleet, Essex and "Simple prepared cores"

The site of Purfleet is the earliest and best-dated site in Britain to exhibit technological behaviours which can be regarded as "Early Middle Palaeolithic in character". A collection of artefacts from the uppermost gravels at Botany Pit, Purfleet, has variously been described as "proto-Levallois" (Wymer, 1968) or "reduced Levallois" with simplified preparatory stages

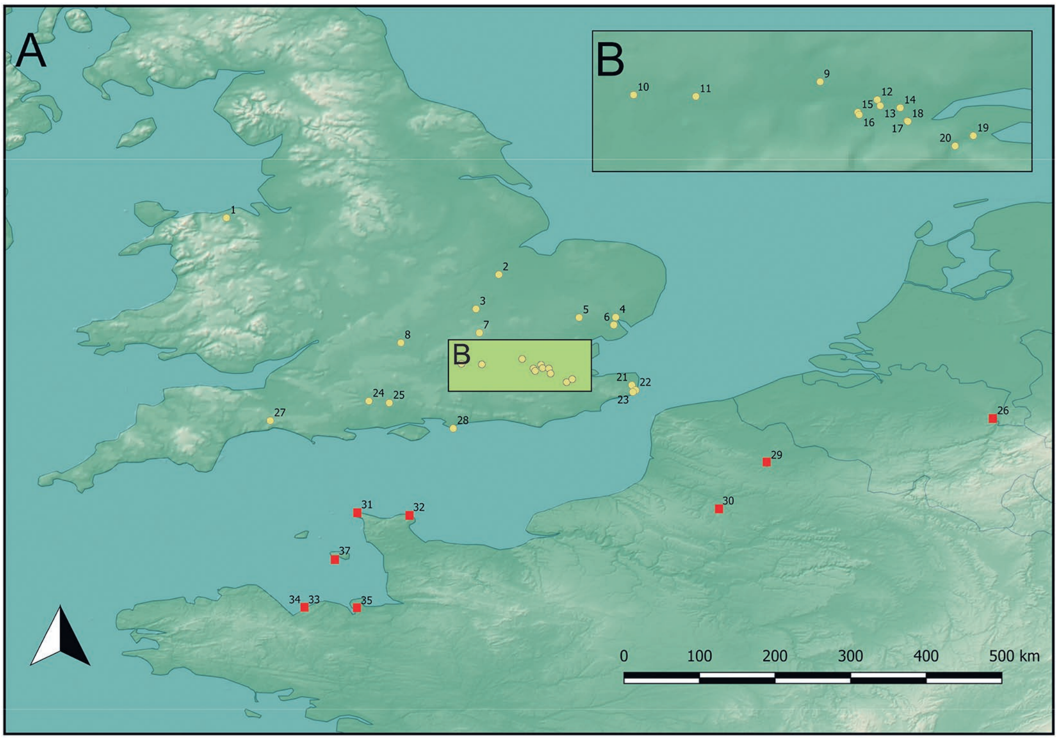

Fig. 1 – Locations of sites mentioned in the text. 1, Pontnewydd ; 2, Woodston ; 3, Biddenham ; 4, Stoke Tunnel, Ipswich ; 5, Brundon, Jordan's Pit ; 6, Stutton and Harkstead, Holbrook Bay ; 7, Caddington ; 8, Dix's Pit, Stanton Harcourt ; 9, Ilford ; 10, West Drayton/Yiewsley ; 11, Creffield Road ; 12, Aveley, Sandy Lane/Purfleet road ; 13, Purfleet, Botany Pit ; 14, West Thurrock, Lion Pit ; 15, Crayford, Norris Pit ; 16, Crayford, Stonehams pit ; 17, Ebbsfleet Channel ; 18, Northfleet, Bakers Hole ; 19, Frindsbury ; 20, Cuxton, Rectory site ; 21, Finglesham ; 22, Wood Hill ; 23, West Cliffe ; 24, Harnham ; 25, Dunbridge ; 26, Kesselt op de Schans ; 27, Broom ; 28, Selsey ; 29, Biache-saint-Vaast ; 30, Ailly-sur-Noye ; 31, Saint-Germain-Sur-Vaux/La Roche Geletan ; 32, Gouberville ; 33, Nantois ; 34, Les Vallees ; 35, Les Gastines ; 36, Orgnac 3.

Fig. 1 – Localisation des gisements mentionnés dans le texte. 1, Pontnewydd; 2, Woodston; 3, Biddenham; 4, Stoke Tunnel, Ipswich; 5, Brundon, Jordan's Pit; 6, Stutton and Harkstead, Holbrook Bay; 7, Caddington; 8, Dix's Pit, Stanton Harcourt; 9, Ilford; 10, West Drayton/Yiewsley; 11, Creffield Road; 12, Aveley, Sandy Lane/Purfleet road; 13, Purfleet, Botany Pit; 14, West Thurrock, Lion Pit; 15, Crayford, Norris Pit; 16, Crayford, Stonehams pit; 17, Ebbsfleet Channel; 18, Northfleet, Bakers Hole; 19, Frindsbury; 20, Cuxton, Rectory site; 21, Finglesham; 22, Wood Hill; 23, West Cliffe; 24, Harnham; 25, Dunbridge; 26, Kesselt op de Schans; 27, Broom; 28, Selsey; 29, Biache-saint-Vaast; 30, Ailly-sur-Noye; 31, Saint-Germain-Sur-Vaux/La Roche Geletan; 32, Gouberville; 33, Nantois; 34, Les Vallees; 35, Les Gastines; 36, Orgnac 3.

(Roe, 1981). The Purfleet sequence is exposed in four chalk quarries which reveal terrace deposits of an abandoned meander loop of the Thames, forming part of the Lynch Hill/Corbets Tey terrace aggraded against the north-facing side of the Purfleet anticline. The sequence comprises gravel (Little Thurrock member) overlain by fossiliferous interglacial deposits (Purfleet Member), surmounted by the gravel of the Botany Member. It is from the latter that these "Levallois-like" artefacts came. The Botany gravel reflects a return to cooler conditions at the end of a full interglacial, suggesting a late MIS 9/early MIS 8 age for the archaeology contained therein. This date is supported by an OSL determination of 324 ka (MIS 9) from an equivalent position at Greenlands Pit (E. Rhodes, quoted in White and Ashton, 2003).

White and Ashton (2003) described the technology from Botany Pit as "simple prepared core working" (White and Ashton, 2003; Scott, 2011; Bolton, 2015), in order to avoid terms which presumed a direct trajectory towards fully-developed Levallois (*e;g.* "proto-Levallois"). The striking platforms of these cores have been deliberately selected and minimally prepared in relation to the existing convexities of one flaking surface. The flakes removed from this surface tend to be larger than any of the flakes used to create the platform, and were removed flat from the surface of the core at 90° to the platform, rather than biting deeply into the core surface. Notably, simple prepared cores do not only occur at Purfleet in the UK; British sites at which such cores are present fall into four main groups:

1. Alongside "full" Levallois flaking at sites dating to MIS 8/7 (*e.g.* Ebbsfleet);
2. Old collections which are totally undated (Caddington, Frindsbury);
3. Old collections from the middle terraces of rivers likely to date to between MIS 11-7, but which are poorly constrained (*e.g.* Biddenham, Cuxton, Dunbridge, Woodston);
4. Occasional individual simple prepared cores associated with terrace deposits pre-dating MIS 8 (*e.g.* Rickson's Pit at Swanscombe, Baker's Farm).

Site	Level/Layer	MIS	Dates	Relative chronology	Dominant technology	Main raw material
Cuxton, Rectory site		9 or 7	OSL: 232.64 ± 13.75 ka (RLAHA-X2561); 197.5 + 17.09 ka (RLAHA-X2563)	Terrace stratigraphy	Handaxe manufacture	Flint
Purfleet, Botany Pit	**Botany Gravel**	Early 8?	AAR: MIS 9 (Penkman *et al*. 2007); OSL: 154 ± 19 ka; 323 ± 23 ka; 292 ± 43 ka; 405 ± 27 ka; 360 ± 62 ka; 267 ± 38ka (Bridgland *et al*. 2013)	Terrace stratigraphy, mammalian biostratigraphy	Simple prepared core working	Flint
Broom	**Middle Beds**	8?	OSL : between 325 and 205 ka (Toms *et al*., 2005)	Terrace stratigraphy	Handaxe manufacture	Chert
Harnham	**Phase I**	8	-	Lithostratigraphy	Handaxe manufacture	Flint
Harnham	**Phase III**	Late 8?	OSL: OxL-1341: 248 + 19 ka OxL-1342: 255 ± 20 ka;AAR = Late 8/ early 7 (Bates*et al*. 2014). DMK values fall within range of MIS 7	Mammalian biostratigraphy, lithostratigraphy	Handaxe manufacture	Flint
Harnham	**Phase IV**	Late 8?	-	Lithostratigraphy	Handaxe manufacture	Flint
Northfleet, Bakers Hole	**Coombe Rock**	Late 8	AAR: Late 8/early 7 (Wenban-Smith 1995)	Terrace stratigraphy, mammalian biostratigraphy	Levallois	Flint
West Thurrock, Lion Pit	**Bed 1**	Late 8/early 7	AAR: MIS 7 (Penkman *et al*. 2007)	Terrace system, mammalian biostratigraphy	Levallois	Flint
West Drayton/Yiewsley		Late 8/early 7?	-	Terrace system	Levallois	Flint
Aveley	**Bed 2**	Early 7	AAR: MIS 7 (Penkman *et al*. 2007)	Terrace stratigraphy, mammalian biostratigraghy		Flint
Ebbsfleet Channel	**Lower fluvial (Phase 2) deposits**	Early 7	-	Terrace stratigraphy, mammalian and molluscan biostratigraphy	Levallois	Flint
Pontnewydd	**Lower Breccia**	Early 7	TL: 200 + 25 ka, 269 ± 37 ka (Debenham and Aitken, 1984, Aldhouse Green *et al*. 2011) U/Th - speleothem underlying: 215 ± 36 ka (in Green 1984, 91-92); 224 + 41 /-31 ka (Ivanovitch *et al*. 1984)	Mammalian biostratigraphy	Handaxe manufacture	Igneous, coarse
Crayford, Stonehams pit	**Lower Brickearth**	7	-	Terrace stratigraphy, mammalian biostratigraghy	Levallois	Flint
Creffield Road	**Top of gravel under "brickearth"**	7	-	Terrace stratigraphy	Levallois	Flint
Selsey		7	AAR: MIS 7 (Penkman *et al*. 2013)	Raised beaches, mammalian and molluscan biostratigraphy	Levallois	Flint
Aveley, Sandy Lane/Purfleet road	**Bed 5**	Late 7	-	Terrace stratigraphy, mammalian biostratigraghy	Levallois?	Flint
Crayford, Norris Pit	**Lower Brickearth**	Late 7	AAR: late MIS 7 (Penkman et al. 2013); OSL: 70 ka (Scott, 2011)	Terrace stratigraphy, mammalian biostratigraghy	Levallois	Flint
Brundon, Jordan's Pit	**Bed 3**	Late 7 (7a?)	U-Series on bone (not cutmarked): 230 ± 30 ka; 174 ± 30 ka (Szabo and Collins, 1975); AAR	Terrace stratigraphy, mammalian biostratigraghy	Levallois	Flint
Stuton and Harkstead, Holbrook Bay	**Brickearth**	Late 7?	AAR: MIS 7 (Penkman *et al*., 2013)	Terrace stratigraphy, mammalian biostratigraghy	Levallois	Flint
Stoke Tunnel, Ipswich	**Stoke "Bone Bed"**	Late 7?	AAR: MIS 7 (Penkman *et al*., 2013)	Terrace stratigraphy, mammalian biostratigraphy	Levallois	Flint
Dix's Pit, Stanton Harcourt	**Stanton Harcourt Channel**	Late 7?	ESR and U-series (inconclusive) OSL; AAR: MIS 7 (Penkman *et al*., 2007)	Terrace system, mammalian biostratigraphy	?	Flint

Table 1 – *Key British Early Middle Palaeolithic sites. Based on data in Hérisson et al. 2016.*
Tabl. 1 – Principaux gisements britanniques de la phase ancienne du Paléolithique moyen. D'après les données de Hérisson *et al*. 2016.

White and Ashton's (2003) "simple prepared cores" seem to have taken on a certain amount of interpretative baggage, sometimes being assumed to be an "early" form of Levallois and sites which contain a number of them as being a similar date to Purfleet (*e.g.* Bolton, 2015). In fact, nearly all well-dated British sites dated to MIS 8-7-6 also contain such cores, alongside Levallois flaking with a more extensive preparatory phases (White *et al.*, 2006; Scott, 2011). Certainly, such cores are more common where available raw material is small, regardless of date (*e.g.* Woodston).

The "Saalian" MIS (8-6) of the Thames Valley: technology and landscape use

The early Middle Palaeolithic sites from the terraces of the Thames represent the best-dated of such occurrences from Britain (see fig. 1). Although largely old collections, many extant deposits have been reinvestigated, providing a chronostratigraphic and environmental context for the occupations they contain. Most of these sites were recovered from historical (pre-mechanisation) gravel quarries in the Lower and Middle Thames, most of which are currently correlated with late MIS 8/early MIS 7. This has led some to suggest an early local extinction within Britain, before the end of MIS 7, or a failure to recolonise after the pronounced 7d cooling event (Ashton and Lewis, 2002; Ashton *et al.*, 2011). Although the largest British sites do date to earliest MIS 7, humans are also present later, most notably at Crayford, where humans may persist into MIS 6.

Technological analysis of the material from the Thames sites also throws up some patterns relating to landscape use and technological practice. Most are associated with raw material sources, and all the largest sites (regardless of date) reflect the direct exploitation of such sources (*e.g.* Crayford: Spurrell, 1880; Scott, 2011; Baker's Hole: Smith, 1911; Wenban-Smith, 1995; Scott, 2010). Hominins are "gearing up" at these points, preparing Levallois cores, and transporting them and their products, away for use elsewhere. This is a pattern most clearly seen at Crayford and Creffield Road (Scott, 2011; Scott *et al.*, 2011). Given that southern Britain as a whole is a generally flint-rich landscape, it is hard to discern the transported counterparts of these extraction sites, but there are hints of it: for instance, a single, exhausted Levallois core associated with rich faunal remains in fine-grained deposits at Stoke Tunnel in Ipswich (Layard, 1920; Scott, 2011).

The Saalian of the Channel River: La Cotte de St. Brelade

The assemblages from throughout the La Cotte de St. Brelade sequence provide a useful contrast to the flint dominated record of the Thames. Sediments infilling a T-shaped ravine system cut into the cliffs on the south-east corner of the Island (fig. 2) primarily comprise loessic, and head deposits, spanning the period from potentially as early as 238 ka until at least 40 ka (fig. 3: Callow and Cornford, 1986; Bates *et al.*, 2013). The main Saalian occupations reflect broadly temperate occupations within MIS 7, and cool-cold occupations at the end of MIS 7/beginning of MIS 6. Composed primarily of igneous and metamorphic geologies, Jersey is part of the Amorican Massif, with the nearest chalk being some 20 km offshore to the north. Flint occurs rarely on modern Jersey beaches, and is generally small and riven with internal flaws. Whilst grab samples from the sea floor suggest that during low sea level phases flint was present in offshore beaches to the north. During the cold, regressive marine phases when the site was occupied, the assemblages reflect the transport to the site of flint obtained from increasingly distant sources, including those near bedrock during the coldest phases (Layer 5/6; Shaw *et al.*, 2016; Bates *et al.*, in press). This material is heavily recycled and sometimes elegantly resharpened in order to prolong its use-life and is generally very small. Similar transported material, if present and discarded amongst material at the extraction sites that dominate the British record, is unlikely to have ever been spotted by historical collectors, but recycling to this degree would similarly rarely be necessary in such contexts. However, the La Cotte assemblages show that recycling and curation can be part of Early Middle Palaeolithic technological responses where tractable raw material is not immediately available.

Away from the rivers: the partial landscape of the British Early Middle Palaeolithic

Although sites exist outside the mainland British river valleys which may date to MIS 8-6 (containing substantial Levallois assemblages), most of these are currently undated. These are provisionally allotted to the Early Middle Palaeolithic on typo-technological grounds, and although OSL dating has been trialled, it remains problematic as the sole dating method applied to sites of this age. Upland contexts on the chalk interfluves (*e.g.* dolines) include Caddington "South Site" (Bedfordshire: Bradley and Samson, 1978) and Finglesham (east Kent: Parfitt and Halliwell, 1996). The only Early Middle Palaeolithic cave site from Britain is Pontnewydd, in the Elwy valley, Wales, within which the artefact assemblage shows a degree of mixing, but which has produced the only early Neanderthal fossils from Britain (Aldhouse Green *et al.*, 2012; Compton and Stringer, 2012). Similarly to La Cotte, the assemblage shows a mixture of recycling of imported flint (often using Levallois techniques), and a switch to using less tractable local stones in a less controlled manner.

Sites like La Cotte show that early Neanderthals do travel far from available raw material sources: it is almost the diametric opposite of most of the British Early Middle Palaeolithic record. The British record

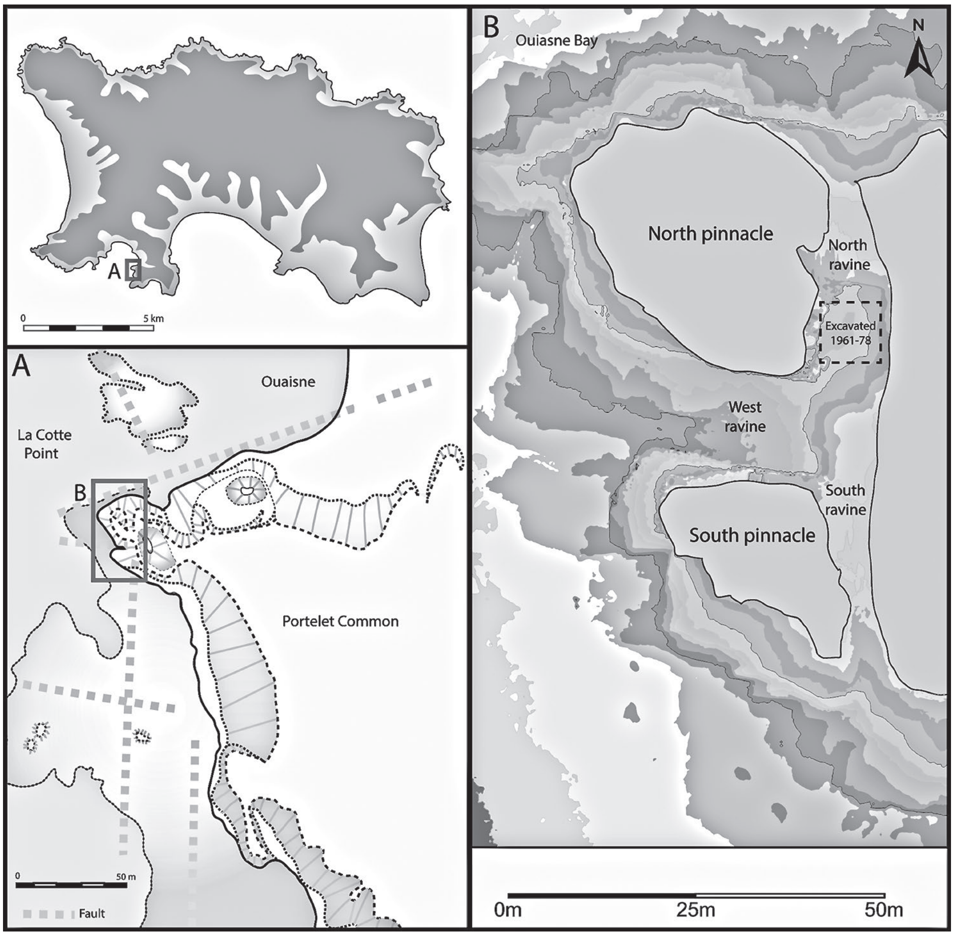

Fig. 2 – Location of la Cotte de St. Brelade on the Channel Island of Jersey showing (A) location of fissure system on La Cotte point and (B) T-shaped ravine system within which Cambridge excavations took place.
Fig. 2 – Localisation de la Cotte de Saint-Brelade sur l'île de Jersey montrant (A) l'emplacement du système de fissure sur le point de La Cotte et (B) le système de ravin en forme de T dans lequel ont été réalisées les fouilles de Cambridge.

Fig. 3 – West-facing section through MIS 7/6 and post-MIS 5e deposits excavated within north ravine of La Cotte de St.Brelade (modified from Callow and Cornford 1986, 61, fig. 6.6).
Fig. 3 – Section orientée vers l'ouest à travers les dépôts SIM 7/6 et après SIM 5e creusés dans le ravin nord de La Cotte de Saint-Brelade (d'après Callow et Cornford 1986, 61, fig. 6.6, modifié).

is so strongly dominated by sites from fluvial contexts that it shows us the same behaviours in the same locations, and however hard one tries to look outward from individual sites to broader patterns of land-use this dominance – and a surfeit of homogenous raw material – skews the picture. This pattern is reinforced by the fact that exposures of raw material likely to be exploited in this way are more common in late glacial/early interglacial contexts of whatever date – consider, for instance, workshop sites such as Ailly-sur-Noye, at the base of a periglacially eroded chalk slope dating to late MIS 6 (Locht *et al*., 2013; Locht *et al*., 2014; Locht *et al*., 2016). As it currently stands, the British Early Middle Palaeolithic record is overwhelmingly dominated by one type of site, from one point in the landscape.

THE BRITISH RECORD: STRONGER IN EUROPE

Reviews of the archaeology of the "British Saalian" have flagged up some notable features when contrasted with mainland Europe. Firstly, British Early Middle Palaeolithic sites – and especially those of the Thames valley – are dominated by Levallois flaking, though a handful of sites do attest to the regular manufacture of handaxes persisting after the MIS 8 pleniglacial: into MIS 7 at Pontnewydd (where intractable volcanic raw materials dominate), potentially at Cuxton (although the excavators are reinvestigating the OSL dates: Bates *et al*., 2014), during MIS 8 at Broom (though this is a secondary context site) and at Harnham (Bates *et al*., 2014). With the exception of Cuxton, these sites are concentrated in the west of Britain, contrasting with the Thames pattern. It has been suggested (Scott and Ashton, 2011; Ashton and Scott, 2016) that when the continental Saalian sites are compared with the British pattern, then a similar concentration of Saalian "Acheulean" sites in the west is also apparent, though raw material effects are likely to strongly influence these patterns. However, this is not a pattern which makes geographic sense in terms of major drainage patterns. From at least the Anglian onwards, there was never a straight link between western France and western Britain, and even during low sea level phases of MIS 8-7-6, moving easily between western Britain and western France would involve passing through both Picardy and the Thames Valley. Both regions show abundant evidence for Levallois technology during this period.

The dominance of sites dated to late MIS 8/early MIS 7 in the British record has been related by some to how easy Britain was to access from the continent (Ashton and Lewis, 2002; Ashton *et al*., 2011, Ashton and Scott 2016; Scott and Ashton, 2011). The assumption is that Britain became "less accessible" to humans during the latter part of MIS 7 than earlier, and that this pattern may relate to the changing palaeogeography of the channel region. It is notable that, whereas so many Northern French sites dates to late MIS 7/early MIS 6, or even to interstadials within MIS 6, so few British sites can be allotted to this period. This is especially true of the west of France (*e.g*. Nantois, Les Vallées: Bahain *et al*., 2012), a pattern into which the later Saalian occupation of La Cotte de St. Brelade fits well.

This jump to an explanation based on connectivity, when discussing a partial, and biased, record (river valley, extraction site dominated) underlines a problem with how British researchers have concentrated on the palaeogeographic structure of Britain as an island, rather than the broader palaeogeographic structure of the La Manche region. This could be termed the "binary Britain" approach – where the primary concern is in connection, rather than the texture of the entire landscape that people were occupying. Thus Scott and Ashton (2011) explained the lack of well-dated late MIS 7 sites in Britain as due to progressive erosion of the "northern landbridge" of London Clay backing the Wealden-Artois ridge (Busschers *et al*., 2007) and ongoing deepening of the North Sea basin. These factors were presented as increasingly limiting opportunities to gain access to Britain throughout MIS 7.

Taking a North-West European perspective on the British record, three possibilities can be proposed: firstly, if a model of population decline throughout MIS 7 holds, then we need to consider the nature of the southern North Sea/Channel landscape during the MIS 6 regression. Raw material distribution patterns at La Cotte de St. Brelade suggest very low sea levels, with humans accessing near cretaceous chalk bedrock sources of flint immediately before cold episodes marked in the site stratigraphy by episodes of loess deposition (*e.g*. Layer 5: see fig. 2). If the primary episodes of loess deposition in the la Cotte sequence can be linked to the main periods of loess deposition recorded in the regional loess pedostratigraphy (Locht *et al*., 2015), it seems that humans were using the Channel landscape out almost as far as Guernsey during a warmer phase in early MIS 6, with layer 5 potentially reflecting the MIS 6.5 interstadial (Peynaud *et al*., 2009; Bates *et al*., in press). Accepting La Cotte as evidence for local low sea level when humans were active in the area begs the question as to why we see so little evidence for a human presence in Britain during MIS 6, the warmer phases of which do see people returning to the immediate south of Britain. Sea level is low, people are present locally: why are they not more visible in the British record?

The second possibility is that this pattern relates to an interplay between the environmental tolerance of early human groups, and routes of recolonization. Many of the sites dated to MIS 6 in the region immediately surround Jersey: the St.Brieuc – St. Malo sites (Nantois, Les Vallees, Les Gastines) (Bahain *et al*., 2012; Bates *et al*., in press; Ravon and Laforge, 2016), and those on the Cotentin peninsula (Gouberville, Saint-Germain-sur-Vaux/La Roche Geletan: Cliquet *et al*., 2003; Cliquet, 2013; Locht *et al*., 2016). Most are on the modern day coast, a situation which both allows a section through Pleistocene landscapes, but might also form a corridor for human and animal movement around the edge of a channel landscape during a regression. The westerly concentration of these sites could suggest either rapid recolonization from west/south-western refugia, or the comparative response of western France to climatic amelioration (i.e. contrast the climate of modern Jersey with that of East Anglia, where average sea surface temperatures are some 4º C colder).

This suggestion might be supported by the distribution of periglacial features reflecting permafrost formation, which are more widely mapped in Britain and Belgium than Picardy/Normandy, where ice wedge casts are largely confined to west-facing hills (Murton and Lautridou, 2003). Although this pattern predominantly reflects MIS 4-2 permafrost formation, a similar situation can be assumed for MIS 6. Perhaps, therefore, the duration of these warmer interstadials within MIS 6 only allowed brief periods of population expansion, in areas close to refugia, which became habitable by herbivores and humans relatively quickly.

The third possibility is that we accept that we do not have an equal record across the Channel region which truly allows us to model relative demography in space or time: thus we have an apparent under-representation of sites showing a human presence during MIS 6 in Britain – but how many of these have been systematically examined for evidence that people were there? We also have to consider the type of capture point from which we are drawing our evidence: the British record is dominated by fluvial sites, whilst the broader record of the Channel region records a significant human presence in late MIS 7 and early MIS 6 (Locht *et al*., 2016). Of 15 individual occupations attributed to late MIS 7/6 or MIS 6 in Northern France, only one comes from a fluvial deposit (fluvial loam at Ailly-sur-Noye N3: late MIS 6/MIS 5e; Locht *et al*., 2013). Most come from loess or dune sands, including Biache-Saint-Vaast levels D and D1 (Hérisson, 2012). Continuing to privilege fluvial contexts in Britain as the sole repositories of Palaeolithic information would mean we might never find evidence for a human presence during MIS 6: the dominance of coarse gravel deposition by major rivers such as the Thames (*e.g*. Taplow terrace) during early glacial conditions means that any such occurrences would, at best, be found in secondary context.

Loess distribution and its effects upon preserving human traces is a feature that has been remarked upon previously (*e.g*. Roebroeks and Speelers, 2002; Hijma *et al*., 2012; Antoine *et al*., 2015). Increased sedimentation amplifies opportunities for capture and preservation, and hence the chance of sites even entering the archaeological record. Loess also acts to preserve the structure of the landscape itself, increased depth of cover potentially insulating underlying, frost-susceptible bedrock like chalk from the periglacial destruction (Murton and Lautridou, 2003). There is a notable contrast in loess distribution between Britain and North France. In Northern France, loess was primarily deposited in the Weichselian, and mantles the leeward slopes of the Somme valley, receiving loess fall from prevailing west/north-westerly winds from a source in the Somme estuary/southern North Sea (Antoine *et al*., 2015). Late Saalian (MIS 6) loess is also widespread, with earlier cold-stage loess only being preserved within deeper capture points – such as dolines.

Moving out of the loess-mantled landscapes of Picardy, west and north into Brittany and Britain, loess fall is increasingly restricted to protected capture points: incised valleys and coastal capture points (Brittany) or dolines (southern Britain). The dip slope of the North Downs in east Kent (Sittingbourne to Thanet) received the thickest British loess fall (up to 4 m), facing at times of low sea level out into the Thames/southern North Sea basin. Where dated, this is primarily late Devensian (17 ka at Pegwell Bay: Murton *et al*., 2003; Parks and Rendall, 1992). However, dolines are prolific across the chalk of this area of east Kent, and, as in North France, deeper loess sequences are likely to be recordable at depth. To date, attention has been restricted to the margins of dolines associated with Palaeolithic surface scatters (Finglesham, West Cliffe, Wood Hill), rather than understanding the sequence that they might capture. These are precisely the type of capture point that retain deposits with potential to record late MIS 7/early MIS 6 archaeology, as well, perhaps, as providing loess profiles that could be correlated to the regional loess stratigraphy of the rest of the La Manche region (Antoine *et al*., 2015). Until we start looking in the places where we see people in the rest of the continent, we cannot claim that people were not here.

REPOPULATING THE CHANNEL

If we are to move beyond a “binary Britain” perspective on the changing palaeogeographic status of the La Manche region, then it is necessary to take into account a “whole landscape” approach, which considers the landscape-scale taphonomy of the region (cf. Pope *et al*., 2016). In a similar way, the issues identified here for the late Middle Pleistocene are part of a wider consideration of paleogeography in north west Europe which is pertinent to understanding the responses of multiple hominin populations to changes in drainage and landscape development over almost a million years of the Pleistocene. The punctuated and cyclical nature of colonisation events in north west Europe is far from a series of repeated, identical experiments. Not only do the intervals between colonisation and the windows of opportunity for northward expansion events vary, but so do the cognitive, behavioural and ecological capabilities of the hominin colonisers and the fundamental structure of the landscapes they were re-occupying. There is scope even within single interglacial periods for multiple dispersal events from multiple sources areas, populations or even hominin species.

For the Early Middle Palaeolithic the challenges in reconstructing demography, as outlined above are considerable. Between the loss of now submerged parts of landscapes of La Manche and Doggerland, the former with its distinctive scabland topography (Gupta *et al*., 2017) that we have barely begun to consider in terms of hominin affordance, and under-investigated plateau contexts, we do not yet possess a full picture of human presence and absence for the region. Sites like La Cotte are showing us that particular locales and capture points provide massively localised signatures for landscape-scale occupation (Shaw *et al*., 2016) over multiple cold and warm stage cycles. Comparing these elusive, sparser records, within the more abundant evidence for Hominin presence from MIS 13-9, we can take nothing at face value. Absence must be tested through survey and occupation records viewed as part of wider living systems which extend beyond our current coastlines, river valleys and national borders. ■

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