



LITHIC STUDIES SOCIETY

2019 Conference

Life at the cutting edge:
Celebrating 40 years
of the Lithic Studies Society

National Civil War Museum
Newark-on-Trent

25th to 26th October 2019

Life at the cutting edge: celebrating 40 years of the Lithic Studies Society

Friday 25th to Saturday 26th October 2019

National Civil War Museum, Newark Museum, Newark-on-Trent

For 40 years, the Lithic Studies Society has promoted the advancement of knowledge, education and research in lithic studies. It has drawn together academics, professionals and independent researchers with a shared passion for lithics wherever they occur, and whatever period they date to. Research supported and published by the Society has touched on many key developments in our understanding of stone tools as evidence of human technology, behaviour, society and evolution. We can look forward to exciting times as new technologies augment traditional methods of analysis, and as the resolution of chronological and environmental frameworks is improved.

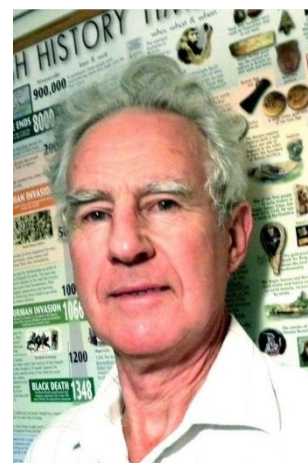
We are pleased to welcome you to our two-day conference that has been organised to celebrate the 40th anniversary of the Society. Day 1 consists of a series of talks that reflect on the trajectory of lithic studies over the past four decades, present current work on lithic assemblages and consider potential future directions and developments. Day 2 will focus on themes relating to the work of the late Terry Hardaker, a long-term member who made a significant contribution to the Society and Palaeolithic archaeology over the past three decades. The morning's talks will reflect his work in the UK, particularly focusing on the archaeology and environments of the Thames and Bytham rivers, with the afternoon moving south to the arid environments of sub-Saharan Africa and Arabia.

Terry Hardaker

Throughout the 40 years since the initiation of the LSS its membership has been diverse, combining academics with commercial and avocational archaeologists with wide-ranging interests in the study of stone tools. Terry Hardaker, a member since the early 1990s, has been a keen and active part of this group.

A cartographer by trade and with a life-long interest in geology, Terry's introduction to archaeology came while climbing Mount Kenya in 1965 where he stumbled across his first artefact (which, of course, was taken to the National Museum in Nairobi!). It wasn't until several years later, however, sifting for geological finds through the reject heaps of Cassington, a quarry local to Terry's Oxford home, that a chance meeting with R.J. McRae led to his new found love of archaeology; something that would develop into a huge part of his life.

Those who knew Terry will know that energy, enthusiasm and inquisitiveness are qualities he had in abundance, and he poured these into his archaeological work, becoming a regular contributor of publications regarding challenging areas of archaeological research. These include British gravel pits and their flint and non-flint artefacts, surface finds in the UK, and investigating abundant surface material in arid environments, particularly in Namibia and Botswana.



Programme

Day 1

09:00 – 09:20	Registration	
09:20 – 09:30	Welcome	
09:30 – 09:50	Adam Turner et al.	Animal, Vegetable or Mineral? Identifying tool use in British Mesolithic woodworking
09:50 – 10:10	Jessica Bates	A microscale approach to understanding the use of space at the Early Mesolithic site of Star Carr
10:10 – 10:30	Robert Rhys Leedham	A Mille-Feuille Mesolithic or a Dobos torte?
10:30 – 11:00	Aimée Little	Exploring the meaning of stone tools in prehistoric hunter-gatherer mortuary rites and rituals
11:00 – 11:30	Coffee	
11:30 – 11:50	Tom Lawrence et al.	A Mesolithic Brexit: Fact or fiction?
11:50 – 12:10	Tom Elliot et al.	The state of the art: cutting-edge machine learning approaches to lithic sourcing in the UK
12:10 – 12:30	Daryl Garton et al.	Looking back at Farndon Fields – results from different methodologies
12:30 – 13:00	Nick Barton	From lithics to landscape: reflections on Late Glacial open-air sites
13:00 – 14:00	Lunch	
14:00 – 14:30	Elizabeth Healey	Trajectories of lithic analysis: developments in obsidian studies in the Near Eastern Neolithic
14:30 – 14:50	Jacky Sommerville	The lithic assemblage from Early Neolithic pits and a causewayed enclosure at Thame, Oxfordshire
14:50 – 15:10	Spencer Carter	ICE & FIRE: 10,000 Years of heritage in a fragile community Landscape
15:10 – 15:40	Matt Pope et al.	Looking for the Late Middle Palaeolithic in Southern Britain: An English Channel perspective
15:40 – 16:00	Coffee	
16:00 – 16:20	Sheila Koons	The Middle to Upper Palaeolithic Site of Abri des Merveilles in the Vézère Valley, France: An assessment of the integrity and research potential of an historically-excavated lithic collection
16:20 – 16:40	Becky Vickers	A macrowear analysis of a Middle Palaeolithic lithic assemblage from Petit Portelet, Jersey
16:40 – 17:00	Aaron Rawlinson et al.	Re-evaluating Biddenham and Kempston: early prepared core technology in the Great Ouse valley
17:00 – 17:30	Nick Ashton	High Lodge to Happisburgh: changing perspectives on Lower Palaeolithic archaeology
17:30 – 19:00	Wine reception	

Programme

Day 2

09:15 – 09:45	Registration	
09:45 – 10:00	Introduction	
10:00 – 10:30	Rob Davis et al.	The archaeology of the Bytham River: chronological variation in stone tool assemblages during the early Middle Pleistocene of northwest Europe
10:30 – 11:00	Jim Rose	The environment associated with the Early Palaeolithic habitation of the Bytham River catchment in eastern and midland England
11:00 – 11:30	Coffee	
11:30 – 12:00	Lynden Cooper et al.	Glimpses of the Bytham from Brooksby Quarry: A Lower Palaeolithic lithic assemblage from the Midlands
12:00 – 12:30	Kate Scott	Stanton Harcourt
12:30 – 13:30	Lunch	
13:30 – 14:00	John McNabb et al.	Are there differences in the ways that <i>Homo erectus</i> and <i>Homo heidelbergensis</i> made their large cutting tools at Olduvai Gorge?
14:00 – 14:30	Eleanor Scerri	Exploring the role of marginal regions in human evolution
14:30 – 15:00	Coffee	
15:00 – 15:30	David Thomas	The highs and lows of the Makgadikgadi MSA, Botswana
15:30 – 16:00	Rachel Bynoe	The contribution of Terry Hardaker to our understanding of the Palaeolithic record of Namibia

Abstracts

High Lodge to Happisburgh: changing perspectives on Lower Palaeolithic archaeology

Nick Ashton

British Museum

The last 60 years have seen dramatic changes in our understanding of Lower Palaeolithic archaeology, none more so than in Britain. This talk discusses what has changed over this period. Although there have been new techniques of lithic analysis and the discovery of new sites and their assemblages, we still discuss ovate and pointed handaxes, but perhaps with more authority. I suggest that the really important changes have been in the resolution of the chronological framework through improved understanding of the geological sequences, better dating techniques, improved biostratigraphy and innovative work on biological proxies to reconstruct changes in climate and environment. Together with more rigorous understanding of assemblage formation through processual archaeology, the improved chronology allows us to examine the human signatures at new scales of analysis. This paper will take several examples from Britain, including Happisburgh and Barnham, to show that we have exciting times ahead.

From lithics to landscape: reflections on Late Glacial open-air sites

Nick Barton

University of Oxford

In this paper I take as my theme the study of Later Upper Palaeolithic open-air sites in southern and central Britain. Beginning with a short history of research, I consider why such sites are still relatively rare and why, despite a major focus of research on the adjacent European mainland, their potential as important sources of information has largely been overlooked in Britain. Using data from earlier excavations and ongoing research I examine how we might develop future strategies for finding new examples of open-air sites and how we can interpret the relationship of sites to landscape from topographic evidence.

A microscale approach to understanding the use of space at the Early Mesolithic site of Star Carr

Jessica Bates

University of York

During recent excavations at the Early Mesolithic site of Star Carr, North Yorkshire (UK), nearly 24,000 flints were found and three structures were identified. Microwear results from a study of 126 flints (Conneller et al. 2018) have shown that a range of activities were undertaken across the site, such as craftwork, plant working, axe manufacturing, bead making, hide and antler processing. This initial microwear pilot study of the structures indicates retooling and clearance as well as opportunistic, small-scale craft activities, sometimes on recycled projectiles: thus challenging traditional typo-functional models. The microwear results further suggest that there are possible distinctions in tool-based activities undertaken in and around the structures. However, the full extent and nature of these activities remains unknown, and it is still unclear how tool-using activities within the structures relates to those found across the site.

This paper will present current microwear analysis focussed on both un-retouched and retouched flint tools associated with the structures. This microscale approach to lithics analysis is enabling new

social narratives of how hunter-gatherers used and structured space at Star Carr to be built. The social dimensions of tool using areas at Star Carr will be examined and the potential to gain new insights into the lives of hunter-gatherers who inhabited the site will be discussed.

Conneller C, Little A, Garcia-Diaz V, Croft S (2018) 'The Worked Flint', in N. Milner, C. Conneller, and B. Taylor (eds.) Star Carr Volume 2: Studies in Technology, Subsistence and Environment, 493-534. York: White Rose University Press.

The contribution of Terry Hardaker to our understanding of the Palaeolithic record of Namibia

Rachel Bynoe

University of Southampton

For nearly twenty years Terry dedicated much of his time to the challenging archaeology of south-west Namibia. First encountered during a rare holiday in this area, Terry became fascinated by the potential contained in these vast scatters of artefacts, devoid of primary context, supporting evidence from fauna and flora, or datability. A challenge that many would balk at, elucidating the latent information contained in these artefacts and their surrounding landscapes became a passion of Terry's, and he worked tirelessly for nearly two decades: fieldwalking, developing tests and publishing on this little archaeologically-understood corner of the African continent. Although I was only marginally involved in this work, Terry and I had many in-depth discussions about this archaeology, both in the field and, as always, in the pub. Through this talk I would therefore like to reflect on the work Terry accomplished and its impact on our understanding of not just Namibia, but surface scatters in similar environments the world over.

ICE & FIRE: 10,000 Years of Heritage in a Fragile Community Landscape

Spencer Carter

Cleveland Archaeology Trust; TimeVista Archaeology; Durham University Archaeology

The Eston Hills on Teesside dominate today's industrial landscape of the Tees estuary and the rugged, beautiful coastline of north-east England. The community moors, woodlands and wetlands are a wildlife haven that also bear testament to human endeavour since the end of the last Ice Age – the "ICE" of the project name, and beyond the industrial revolution – iron, coal, potash, ship-building, petro-chemical and steel.

Yet recent years have seen a rapid increase in arson, illegal off-roaders and anti-social activities which are causing irreparable damage to the fragile archaeological environment. The public's comfort in exploring their landscape has been compromised and public safety is most definitely at risk, despite widespread media reporting and outcry – the "FIRE".

The project enjoys support from multiple organisations; to assess, sample and rescue the archaeology-at-risk, but also to pull together the many community stakeholders to focus on sustainable solutions – with political momentum around a single 'landscape' cause. The aim is to turn around perceptions and behaviour, across generations and backgrounds, to make the destruction by a minority socially unacceptable.

This paper will focus more on the broader outreach strategies than the nature of the lithics finds themselves, important though these are. Our narratives build "lithic signatures" and "past lifeways" into a set of educational activities open to the everybody, irrespective of experience or ability.

Glimpses of the Bytham from Brooksby Quarry: A Lower Palaeolithic lithic assemblage from the Midlands

Lynden Cooper, Wayne Jarvis and Matt Beamish

University of Leicester Archaeological Services

A long term watching brief of aggregate extraction of the Bagington Sands and Gravels by ULAS has revealed a large collection of lithic artefacts, mostly of quartzite raw material. Much of the collection is of core and flake technology, but some bifaces also occur. The lithics likely represent the typical local lithic technology of the MIS 13 stage of the Cromerian.

The archaeology of the Bytham River: chronological variation in stone tool assemblages during the early Middle Pleistocene of northwest Europe

Rob Davis, Nick Ashton and Simon Lewis

British Museum

Sediments associated with the pre-Anglian Bytham River provide an important archive of Lower Palaeolithic technology related to human occupation of central and eastern England prior to approximately 450,000 years ago. Much of this record is concentrated in the Breckland of central East Anglia, where large assemblages of stone tools have been collected from gravel and clay pits associated with Bytham sediments. This record represents occupation of the region from approximately 600,000 years ago and has been characterised by the presence of three distinct typological elements: refined ovate handaxes, crude hard hammer-struck handaxes and intensively retouched scrapers.

The Breckland Palaeolithic Project has sought to better understand this record and resolve the relationship between the different elements of the stone tool record through targeted fieldwork and analysis of existing museum collections. Fieldwork has been conducted at four sites: Warren Hill (1st Terrace), Rampart Field (2nd Terrace), Sapiston (3rd Terrace) and Fakenham Magna (4th Terrace). Coarse sieving of gravels has provided data on the presence/absence of artefacts, the relative density of artefacts and improved understanding of the context of existing collections. Assemblages from four key sites have been studied: Brandon Fields and Maidscross Hill (Terrace 2), Warren Hill (Terrace 1) and High Lodge. This paper reports the results of this work and considers their implications for human occupation of northwest Europe during the early Middle Pleistocene.

The state of the art: cutting-edge machine learning approaches to lithic sourcing in the UK

Tom Elliot and Robert Morse

University of Worcester

It is nearly 50 years since Sieveking et al. published their pioneering paper on the geochemical analysis of artefacts from Neolithic flint mines in southern England. Since then there has been a modest output of publications on the sourcing of flint in Britain, with a renaissance in recent years due to improved instrumentation and growing interest. Despite these developments, subsequent data analysis methods have largely remained unchanged, limiting improvements in source determinations and ultimately archaeological interpretation. This paper presents the evaluation of machine learning techniques towards lithic sourcing, using the results from recent doctoral research towards Mesolithic artefacts from the Lower Wye Valley region. This research utilised Laser Ablation

Inductively-Coupled Plasma Mass Spectrometry (LA-ICP-MS) and machine learning to compare artefacts with geological samples from both bedrock and superficial deposits. The paper introduces this research, discusses the implications of evaluating alternative machine learning methods, and explores their potential for future lithic sourcing projects.

Looking back at Farndon Fields: results from different methodologies

Daryl Garton and the Ice Age Journeys team

Our paper will look at the complementary methodologies employed at the Late Upper Palaeolithic open site of Farndon Fields, Nottinghamshire and the different results that ensued. It will show how community groups can add value to development investigations, not just in outreach, but in understanding of the archaeological resource and its place in the landscape.

Trajectories of lithic analysis: developments in obsidian studies in the Near Eastern Neolithic

Elizabeth Healey

University of Manchester

One of the original reasons for forming in 1978 the Lithic Studies Group (constituted as the Lithic Studies Society the following year) was to channel the then “parochial” approaches to lithic artefacts towards a study of them in behavioural and technological terms. From the start we focused on trying (rather unsuccessfully) to create standard lists or a glossary of lithic artefacts of the post-glacial period in the UK as well as providing a forum in which ideas relating to lithic analysis could be debated.

Over the years the way we frame the questions we ask and the methodologies of investigation we use have changed and our approaches are increasingly multi-disciplinary. No longer are we satisfied with producing a descriptive list of what is present in an assemblage and comparing it to other assemblages, we also want to know what people used stone tools for, what influenced their choices of raw material and from where and how they obtained it. Also it is now generally accepted that techniques and skills employed for making tools are socially constituted so we need to find ways of studying technology that will elucidate this. And ethnographic studies have encouraged us to investigate more ephemeral questions about whether certain types of stone had symbolic meanings and how these might have been transmitted.

Recent research on the use of obsidian in the Neolithic Near East goes some way to addressing some of these questions, as I hope to demonstrate in my presentation. Obsidian is potentially a particularly meaningful material for several reasons. In most assemblages it is an exotic material and although exploited locally since the Palaeolithic, its use greatly increased and became more widespread as Neolithic ways of life became established and it was used not only for tool manufacture but also to make jewellery, mirrors and vessels. Renfrew’s pioneering work in the 1960s demonstrated that it can be geochemically characterised so that obsidian artefacts can be matched to particular sources and models of distribution constructed; now new techniques are allowing us to provenance much larger numbers of artefacts which opens up different ways of interpreting their distributions. When this is coupled with techno-typological studies, we are beginning to be able to demonstrate the presence of different “communities of practice”. I would like to take the opportunity of this paper to evaluate some of these approaches in more detail and to consider whether they might have a wider application, as well as to speculate about what could be done to refine and inform future research.

The Middle to Upper Palaeolithic site of Abri des Merveilles in the Vézère Valley, France: an assessment of the integrity and research potential of an historically-excavated lithic collection

Sheila Koons

As museum shelves buckle under the weight of thousands of unstudied and virtually forgotten boxes of artifacts, many institutions are questioning the utility and benefit of the future curation of these historically excavated materials. Much of the material in question is comprised of lithic artifacts excavated during the infancy of American archaeology abroad. This project was undertaken to evaluate the integrity of a prehistoric lithic collection and to examine the efficacy of utilizing the resulting data for larger research questions. It begins with a history of the site and the prehistoric environmental context within which the site was formed. Abri des Merveilles was one of the few sites in the Vézère Valley containing both Middle and Upper Palaeolithic layers of deposition and thus may contribute significantly to the understanding of the distinction between these two periods throughout the region. The most important aspect of this undertaking was the analysis of the Merveilles lithic collection currently curated at three American museums. The lithic analysis tested the soundness of the site's historically designated cultural layers and elucidated the positive and negative effects of past excavation and curatorial methods. The project also provided a comparative data set for future research in the region.

A Mesolithic Brexit: Fact or Fiction?

Tom Lawrence, Mike Donnelly and Elizabeth Kennard

Oxford Archaeology

The Late Mesolithic peoples of Britain have often been described as an isolated and separated culture due to the island's geological break from the continent at around 8250kya. Their technologies, in some regard, seemed far removed from those of neighbouring Scandinavia or Germany and the lack of any visible seafaring technology in Britain during this period does little to refute this isolationist school of thought. Researchers from across the south of Britain are now identifying new and unique technologies that contain similarities to those from continental Europe, challenging this paradigm. Recently, on the Isles of Scilly, trapezoid microliths of Tardinosian or Rhine-Meuse-Scheldt type have been identified. Likewise, the extraordinary estuarine landscape at Bexhill has yielded microliths similar to those of northern Spain. These new microlith types, as well as a more refined chronology of Britain's break from the continent, can provide evidence for a thriving network of communication between Mesolithic Britain and Europe that was previously thought to be absent. These new microliths paint a very different picture to the secluded and remote backwater this country is often portrayed as in the literature.

A Mille-Feuille Mesolithic or a Dobos torte? The pastry layered understanding of variation in lithic technology from Late Mesolithic Structures at the site of Stainton West near Carlisle. What are the implications this has for understanding the Mesolithic-Neolithic transition within Cumbria?

Robert Rhys Leedham

University of Central Lancashire

Understanding the specifics of what went into making a pastry is restricted. Because despite the mouth-watering sensation of eating the finished article, each batch of pastry mix you create is ever so slightly different from one another. This is true of both a simpler pastry such as a mouth-watering Mille-Feuille or a complex Dobos Torte. Understanding the specifics of changing lithic technology in

Cumbria during the late Mesolithic and early Neolithic is no different. Each site as well as research endeavour is slightly different from each other. This paper will explore a Mesolithic pastry, an analogy for understanding lithic working traditions within Structures at Stainton West, near Carlisle, and its relation to understanding the Mesolithic-Neolithic transition in Cumbria. Using two late Mesolithic structures dating to early 6th millennium cal BC and mid-5th millennium cal BC respectively, this research is trying to understand how lithic technology changed in the late Mesolithic at Stainton West and the implications for Mesolithic-Neolithic transition within Cumbria. In Britain, the 'transition' (archaeological changes between the 5th and 4th millennium BC) has remained a complex and multidimensional area of study for over a century. At a basic level it is about the changes from a hunting-gathering way of life to an early farming one. All prior narratives of the transition have illustrated that it does not conform to a national or universal model. This analogy demonstrates we are no longer dealing with a British-wide phenomenon. If we are to understand this period more closely, we must focus our attention upon unappreciated regions, the potential of new sites and their relation to a rethink of what a 'transition' is.

Exploring the meaning of stone tools in prehistoric hunter-gatherer mortuary rites and rituals

Aimée Little

University of York

In this presentation I will consider the symbolic role of stone tools within mortuary contexts. Tools, like people, contain life histories - how interconnected were the lives (and deaths) of people and their tools in Palaeolithic and Mesolithic Europe?

Are there differences in the ways that Homo erectus and Homo heidelbergensis made their large cutting tools at Olduvai Gorge?

John McNabb and Cory Stade

University of Southampton

This talk will take a look at the LCTs from Olduvai Gorge, one of the world's most iconic Acheulean sequences. The Acheulean there spans more than a million years of evolutionary time, and was made by two different hominins. Can we see any differences between the handaxes and cleavers that Homo erectus made, and those fashioned by Homo heidelbergensis?

Looking for the Late Middle Palaeolithic in Southern Britain: An English Channel Perspective

Matt Pope, Lesley Blundell, Beccy Scott, Hannah Cutler.

University College London

The 'Acheulean' record of Northern France and southern Britain has long been acknowledged as internationally important, having played an important historical role in the development of the discipline. Abundant artefacts have been recovered, primarily, but not entirely, from fluvial gravel archives, allowing the responses of Middle Pleistocene human populations on the edge of their geographical distribution to be interrogated. But the record requires careful reading and can't be read as simple indicator of presence, absence or relative abundance of early humans. Factors such as the regional super-abundance of high-quality flint (related to solid geology) and intensity of

aggregate exploitation also played their part in generating the apparently regionally dense record of finds. This paper investigates the inter-related patterns of human behaviour, preservation, artefact release and research tradition which underpin these basic distribution maps in reference to single question, how do we target research on the Late Middle Palaeolithic record of the last Neanderthal populations in Northern Europe? We present data which brings into focus parts of the landscape as having a rich record of LMP material and ask questions about why this might be. We present a framework for understanding the processes which have created the current distribution map –which we have called the Unified Palaeolithic Landscape Approach (UPLA) and how this might framework might be used in the La Manche (English Channel) region. We end with a call to arms to value the fundamental particles of our discipline (stone artefacts) as scientific datasets in their own right and to support the maintenance of records and collections of these important objects.

Re-evaluating Biddenham and Kempston: Early prepared core technology in the Great Ouse valley

Aaron Rawlinson and Luke Dale

Durham University

The discussion of MIS9 has often focused around a handful of flagship sites. The tripartite sequence of non-handaxe, Acheulean and Levallois at Purfleet and less clearly at Cuxton offers an intriguing narrative for MIS9 that has yet to be tested across the corpus MIS9 sites other than brief references in previous overviews. The presence of early Levallois, often termed Proto-Levallois or simple prepared core technology, is especially vital to our understanding of the Lower to Middle Palaeolithic transition. The apparent uniqueness of Purfleet compared to the sporadic appearances of similar technology during this period is one of the unanswered questions concerning MIS9, although the work of Hérison et al. (2016) has demonstrated that early Levallois is seen across North-West Europe during MIS9. One area of potential is situated around Bedford on the third terrace of the Great Ouse at the sites of Biddenham and Kempston. Roe (1981) previously compared the site of Biddenham to Purfleet due to similarities in their core and flake technology. These prolific sites have been worked since the 1860s, and later controlled excavations at Biddenham towards the end of the 20th century have confirmed previous observations. While the sites contain large Acheulean assemblages, they also contain a high proportion of flake tools and Proto-Levallois technology showing early signs of Middle Palaeolithic behaviour. There have previously been references to 'Clactonian' core and flake working at the sites also. This paper aims to analyse the sites of Biddenham and Kempston and assess whether they fit with the current narrative on MIS9, offering an up-to-date interpretation of these old collections within the current framework.

Hérison et al. 2016. The emergence of the Middle Palaeolithic in north-western Europe and its southern fringes, *Quaternary International*, 411, Part A. 233-283.

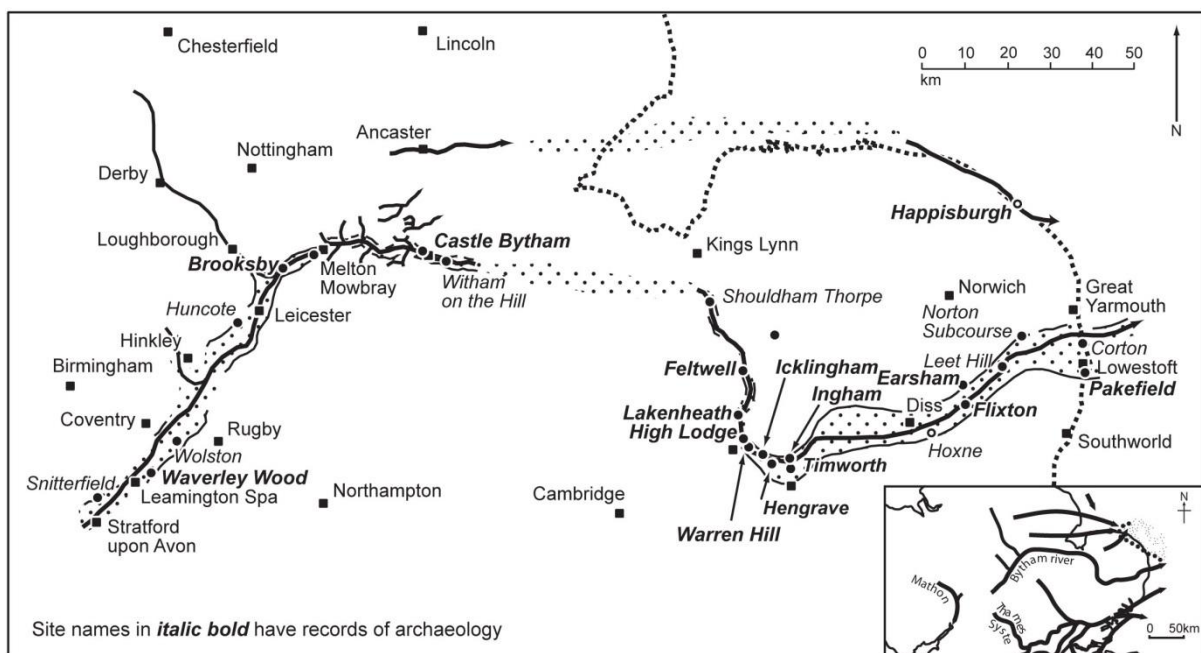
Roe, D. 1981. *The Lower and Middle Palaeolithic periods in Britain*. London, Routledge and Kegan Paul.

The environment associated with the Early Palaeolithic habitation of the Bytham River catchment in eastern and midland England

Jim Rose

Royal Holloway University of London; British Geological Survey

The Bytham River drained the largest catchment in southern Britain before it was over-ridden and destroyed by glaciation about 430,000 years ago. It drained into a shallow sea which accumulated sands and gravels known as Crag, and existed at a time when Britain was linked to the Continent and the English Channel had yet to be formed. At least twelve Bytham River sites and one associated shallow marine Crag site have evidence for Palaeolithic archaeology. However, of these sites, only four have in-situ or in-context archaeology that can be associated with a contemporary environment. The remainder contain derived artefacts washed into the Bytham sands and gravels as the river eroded the existing floodplain, terraces and valley sides. Some of these sites, such as Warren Hill have provided a very large number of archaeological finds and this can be explained in terms of river and search processes, but in all cases the frequency of artefacts is a minute proportion of the total river deposit. Those sites which provide a context for the archaeology (from west to east: Waverley Wood, High Lodge, Flixton and Pakefield) provide a variety of evidence. High Lodge and Pakefield are associated with overbank sediments (typical muddy floodplains such as found in river valleys in lowland Britain today), and provide evidence of the climate, vegetation and fauna, and in the case of High Lodge actual presence of activity on the floodplain. The archaeology at Waverley Wood is preserved along with environmental and climate proxies and although not specifically in-situ, reflects a locally derived assemblage. The archaeology at Flixton is derived from sediments that accumulated in a shallow pool on a sand and gravel braidplain and appears to have been a focus for a variety of mammals including humans, as well as acting as a receptacle for organic detritus. These four sites formed at different times during the early Middle Pleistocene (c. 700 to 450 ka BP), but represent occupation in climates that range from Mediterranean to cool temperate, and in landscapes with abundant biomass including megafauna, and locally produced soil erosion. This presentation will provide further details of the climate and environment and place the findings in the context of the development of the Bytham River and associated coastline between c. 1 Ma and c. 450 ka BP.



Exploring the role of marginal regions in human evolution

Eleanor M.L. Scerri

Max Planck Institute for the Science of Human History, Jena, Germany

The abundant landscapes of eastern and southern Africa and the Levant, have all been closely linked with human evolution and dispersal. In contrast, marginal regions, such as the Saharo-Arabian arid belt, are viewed as empty landscapes that were either avoided or rapidly skirted around. In this paper, the role of the Saharo-Arabian arid belt is explored over the last half a million years of human evolution, to understand the role, if any, of marginal environments in the maintenance of populations connections, and as drivers of diversification. New data from this region will be presented that indicates that the environmental fluctuations of these hyper-arid regions played a critical role in modulating early human demography, driving evolutionary and behavioural changes throughout the Pleistocene.

The lithic assemblage from Early Neolithic pits and a causewayed enclosure at Thame, Oxfordshire

Jacky Sommerville

Cotswold Archaeology

Between February and September 2015 an excavation was undertaken by Oxford Cotswold Archaeology (OCA) on land off Oxford Road, Thame, Oxfordshire. The excavation uncovered 5000 years of settlement from the Early Neolithic, through the Early Iron Age and Roman periods, to the Early to Middle Anglo Saxon period.

Of particular interest to the society are the lithics recovered from a causewayed enclosure and from Early Neolithic pits. The 20 pits, which formed part of 11 pit groups, were located within the centre of the causewayed enclosure and between its inner and middle circuits. They produced 1293 worked lithics and are considered to represent the earliest activity on site. Forty segments of the causewayed enclosure ditch, plus associated buried soil and a cleaning layer, produced 3320 worked lithics which constituted half of the 6660 lithics recovered from the site as a whole.

A monograph on the site is currently in progress. This paper will characterise the lithic assemblage from the pits and the causewayed enclosure, focusing on what aspects are typical and atypical of such assemblages.

The highs and lows of the Makgadikgadi MSA, Botswana

David Thomas, Sallie Burrough, Sigrid Staurset, David Nash, Sheila Coulson and Sarah Mothulatshipi

University of Oxford

The interior Kalahari of southern Africa is an archaeological enigma: a desert that is not quite a desert; lacking surface water yet with evidence of multiple, extensive, lake highstands during the last 250ka; and long regarded as an archaeological backwater. It is home to the world-renowned MSA sites at Tsodilo Hills but despite the wider landscape being noted 70 years ago for its rich lithic legacy, systematic archaeological analyses have been few and far between, especially in the context of extensive open-air sites. This huge region remains a significant knowledge gap in African Stone Age archaeology.

In 2007-8 we conducted initial mapping of the archaeological resource of the 90,000km² Makgadikgadi paleolake basin in Botswana. We took Terry Hardaker and a group of archaeologists on a post-Southern Deserts Conference fieldtrip in 2009 that included Makgadikgadi. They were amazed by what they saw on the basin floor- lithics everywhere, and no logical explanation for their distribution. From 2016-19 we conducted the first systematic analysis of the extensive Stone Age archaeology of the basin, framed around the question of how Late Quaternary hydrological changes, relating to mega-lake waxing and waning, affected human mobility, resource use and the distribution of archaeological sites in the landscape.

We have mapped 38 archaeological sites and 44 scatters/minor sites (mainly MSA, also LSA and Pastoralist) on the western floor and perimeter of Makgadikgadi; excavated six sites using *décapage* methodology; conducted sedimentological and landform including sampling for chronometric (OSL, 14C), geochemical and bio-proxy analyses; and mapped and sampled >300 silcrete outcrops for geochemical provenancing of lithic source areas. Preliminary findings indicate extensive MSA use of Makgadikgadi during lowstands or at seasonally dry times. Basin floor occupation sites have been preserved through burial during lake highstands and subsequent deflational exposure. Raw materials are dominated by black silcrete that arrived from a range of source areas, often many tens of km distant, in different stages of preparation. While the degree of post-depositional artefact disturbance varies from site to site, chaîne opératoire analyses show that some sites are surprisingly well preserved. In these cases flakes and tools have been refitted to cores over distances of a few metres, allowing documentation of technological approaches and knapping sequences, with further reconstruction of site specific behaviour patterns. Excavated sites fall in the 90-70ka age range. Overall, the Makgadikgadi MSA has greater affinities to areas to the north and east rather than South Africa, suggesting that hydrological networks connecting the basin to more tropical source regions have played a key role in Late Quaternary societal dynamics.

Animal, Vegetable or Mineral? Identifying tool use in British Mesolithic woodworking

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The 2017 identification of the first Mesolithic fish-trap structures found in Britain at the late Mesolithic site of Goldcliff East, Wales (Bell et al. 2019, forthcoming), has led to the identification of distinctive cut-marks on pointed stakes with characteristics previously unknown in the British Mesolithic record. On-going PhD research is focused on understanding the manufacturing process and tools used to cut and shape the Goldcliff artefacts. This relies on the use of experimental archaeology, with comparable replicas, to assess cut-marks and wear traces left by a variety of relevant tools; including lithic tools such as the tranchet adze, flaked and polished axes as well as large bone and antler tools.

Better understanding the complexities and similarities in prehistoric woodworking is a useful way to assess the cultural and technological variability between disparate prehistoric cultural groups. In Britain, the Mesolithic archaeological record has suffered from a comparative scarcity of wooden artefacts to achieve this, however finds in the last decade from sites such as Goldcliff are presenting new opportunities to study this missing aspect of prehistoric material culture. Preliminary results from that work and comparison with wooden artefacts, tool types and assemblages from other sites across Britain and northern Europe, has suggested the presence and use of a distinctive tool type than appears to span the cultural divide between the late Mesolithic and early Neolithic communities.

Bell, M. et al. (2019) Mesolithic Pathways, Fishtraps and recording of intertidal archaeology at Goldcliff, Wales, 2006-2019 (forthcoming).

A microwear analysis of a Middle Palaeolithic lithic assemblage from Petit Portelet, Jersey

Becky Vickers

Microwear analysis of Middle Palaeolithic lithic assemblages have largely focused on the abundant and rich assemblages from the French archaeological record. These studies have successfully shed light on a wide diversity of tool using activities in the Middle Palaeolithic. Some of which were previously unknown, such as processing of fish and plants, fire starting, hafting and woodworking. However, there remains a significant geographical bias and as a result there are many regions for which we know very little about Neanderthal stone tool using activities. As a consequence researchers tend to draw on studies from other regions to explain behavioural patterns, despite considerable differences in the local environment, ecology, etc. Drawing on studies from other regions also disregards the success of previous Microwear studies which were fundamental in revealing regional behavioural diversity.

This paper presents the results of preliminary Microwear analysis of a newly re-discovered Middle Palaeolithic site from the Channel Island of Jersey. Despite over a century of research into the Middle Palaeolithic in this region, there has only been one preliminary Microwear study of a small sample of lithics, from La Cotte de St Brelade. This new programme of functional analysis is helping shed light on Neanderthal tool-using activities in what is now a submerged landscape. Details of findings to date will be presented and contextualised within the broader body of functional analyses of European Middle Palaeolithic lithic assemblages.