

Autumn Meeting 2016

Food and Farming Systems

Organisers: Jessica Smyth and Roz Gillis

10.30am-5.00pm Monday 28th November 2016

**The Stevenson Lecture Theatre (lowest level of the Great Court), the British Museum,
London**

NB Please organise your own refreshments on arrival and lunchtime: we only provide afternoon tea!

- 10.00 *Coffee (available for purchase at outlets in the Great Court)*
- 10.30 Welcome / introduction *Timothy Darvill*
- 10.40 *Food and farming systems – a brief rationale* Jessica Smyth
- 10.50 *Grub's up? Assessing the evidence for broad spectrum plant exploitation in Pre-Pottery Neolithic Southwest Asia* Michael Wallace
- 11.10 *Taming the wings: hunting for early domestic birds* Julia Best and Mark Maltby
- 11.30 *Bones and seeds: an integrated approach to understanding the spread of farming across the western Balkans* Jane Gaastra and Anne de Vareilles
- 11.50 *An integrated perspective on early farming communities of the Northern Mediterranean* Roz Gillis
- 12.10 Discussion and additional questions
- 12.20 *Lunch (make your own arrangements)*
- 13.30 *Southern Portugal animal exploitation systems: trends and changes from Neolithic to Bronze Age* Maria João Valente and António Faustino Carvalho
- 13.50 *Our daily bread? Plant foods in Neolithic Ireland* Meriel McClatchie*
- 14.10 *Neolithic Brexit: reduced crop packages in England & Wales/Plants and People in Scotland* Catherine Langford*/Rosie Bishop
- 14.40 *Integrated approaches to animal exploitation in the Central European Early Neolithic: a case study from Ludwinowo 7 (Kuyavia, Poland; 5250-5000 cal BC)* Mélanie Roffet-Salque*
- 15.00 3-minute oral poster presentations (details in abstract booklet – Seren Griffiths, Emily Johnson*, Amy Styring*)
- 15.15 *Tea*
- 15.40 *Neolithic explanations revisited: modelling the arrival and spread of domesticated animals into Neolithic Britain and Ireland* Vicki Cummings and James Morris
- 16.00 *Searching for Middle Neolithic farming in Wiltshire. New evidence from the Stonehenge and Avebury WHS* Fay Morley*
- 16.20 *What's cooking in the Neolithic?* Emilie Sibbesson
- 16.40 Discussion
- 17.00 Close

* Lead author. Full details of authors in abstract booklet.

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Oral presentations:

Grub's up? Assessing the evidence for broad spectrum plant exploitation in Pre-Pottery Neolithic Southwest Asia

Michael Wallace,

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The concept of the Broad Spectrum Revolution - a broadening of subsistence practices to incorporate common but low-yielding resources in the Middle-/Upper-Palaeolithic and persisting through early periods of cultivation - is widely accepted. While evidence for how this revolution manifested in terms of species diversity has been slower to surface in the plant sphere than for animal resources, the remarkably well-preserved plant assemblage of Epipalaeolithic Ohalo II would seem to have validated the concept's relevance to plants. Whilst acknowledging the exceptional case of Ohalo II, this paper examines the archaeobotanical evidence base as a whole to identify where, and for which taxa, a strong case can be made for wild plant food exploitation during and prior to the emergence of agriculture.

A 'big data' approach is taken; making use of the largest sample-level database of plant remains from Pre-Pottery Neolithic and earlier sites in southwest Asia. The approach taken uses a novel method of analysing compositional data, which is combined with contextual information to identify deliberately collected wild plant resources that were in storage or being processed. Identification of individual samples relating to these behavioural episodes is considered the most robust evidence for wild food use. A suite of wild taxa are identified as likely to have been exploited in the past, some of which aligns with ethnographic research; the findings also highlight the importance of re-evaluating the evidence upon which the discipline's theories are built.

Taming the wings: hunting for early domestic birds

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Whilst the Neolithic sees the uptake of many new animals and plants, it appears that birds were a surprisingly late addition to the domestic menagerie. Early evidence of bird domestication is often scarce, and problems surrounding bird bone recovery in archaeological excavations also hinders full profiling. Chickens are today our most widely distributed domestic animal and most common domestic bird. They were domesticated from wild junglefowl, of which there are four species. These birds are not native to Europe, but are found in South-East Asia. Recent work has shown that both red and grey junglefowl contribute to our modern domestic chicken, indicating that the domestication process was complex and may have involved several stages. Debate continues over the earliest chicken domestication with the proposed 8000BC event in China now being heavily contested. Many of the earliest claimed examples are currently from insecurely dated contexts, or are erroneous/unconfirmed identifications. A new programme of radiocarbon dating is enabling some of the earliest proposed bones of chickens from across Europe to be dated, facilitating new insights into domestic birds in prehistory. It is also important to consider the role of other domestic and tamed species that are sometimes difficult to identify due to having diverse local wild populations, including ducks and geese.

This paper therefore discusses the recent rethinking of specimens that were presumed to show Neolithic bird domestication, and also explores the evidence for potential management of non-domesticated wild birds for meat and eggs.

Bones and seeds: an integrated approach to understanding the spread of farming across the western Balkans

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The Neolithisation of the western Balkans is a key area of research for understanding the process of Neolithisation across Europe. It is at this point and time that the two streams of the European Neolithic begin their spread across the continent as two distinct but geographically proximate entities. Beginning from c.6000 BC we can compare - within one region – processes of Neolithisation moving both along the Mediterranean (here particularly the Adriatic) coast, and following the Danube corridor to central Europe. As part of the EUROFARM project (UCL), directed by Dr. M. Vander Linden, exhaustive surveys of both Neolithic archaeozoological and archaeobotanical data were collected from the western Balkans and neighbouring regions (Croatia, Bosnia and Herzegovina, Serbia, southern Hungary, western Romania and eastern Italy.)

In this presentation we offer a holistic view of farming, combining both sets of data to explore the agro-pastoral regimes practised along the two streams of neolithisation. We demonstrate that, notwithstanding significant limitations, it is possible to compare and combine the datasets and present an integrated approach to the spread and development of farming within the western Balkans. Our research does not merely provide a compilation of species used by early farmers, but also evinces diachronic and spatial differences within agricultural systems and the intensity of effort put into agricultural production.

An integrated perspective of early Farming communities of the Northern Mediterranean

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The Mediterranean seaboard was a major route for the expansion of Neolithic culture and ideas. Early Neolithic pioneers would have brought with them technological and cultural traditions. Organic residue analysis can provide a means of investigating cooking and food processing techniques, whereas archaeozoology investigates the role of animals within human societies. It is evident from recent analyses of organic residue and archaeozoological remains that there were significant differences between cultural groups along the seaboard. Furthermore, findings show variable intensities in dairy and non-dairy activities in the Mediterranean region with the slaughter profiles of domesticated ruminants mirroring the results of the organic residue analyses from sites dating to 7th to 5th millennium BC. This paper will present a summary of recent analysis and detailed investigation into husbandry practices and herd composition of early Neolithic groups of the Northern Mediterranean. Differences between cultural groups in terms of dairy production and processing could be an indication of difference cultural food traditions between early Neolithic groups.

Southern Portugal animal exploitation systems: trends and changes from Neolithic to Bronze Age

Maria João Valente¹ and António Faustino Carvalho²,

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Despite the short number of assemblages with statistically sound animal remains for the Neolithic–Bronze Age Southern Portugal, we can observe some general trends in animal exploitation systems: 1) a high variability of species during the Early Neolithic (5,500–4,000 cal BC), with the presence of animals both wild (deer, rabbit, wild boar) and domestic (sheep, goat and cattle; possibly pig); 2) specialization in caprine herding and red deer hunting at the onset of megalithism (Middle Neolithic: 4,000–3,300 cal BC); 3) larger faunal collections and different regional trajectories in Late Neolithic and Pre-Bell Beaker (3,300–2,700 cal BC), showing general abundance of caprines, with cattle being common in Estremadura and swine and game more frequent in Alentejo; and 4) an increase of hunting evidences during the Bell Beaker and Bronze Age (2,700 cal BC onwards), especially in Alentejo.

Reliable age profiles are restricted to 4th/3rd millennia assemblages, thus preventing the observation of culling patterns and further insights on the exploitation of secondary products and its impact in overall herding systems. In Alentejo, the increase of swine remains (domesticated or tamed) from 3,300 cal BC (Late Neolithic) onwards may attest to the emergence of the “montado” traditional farming system.

These observations have been complemented by two phenomena provided by the few case-studies on isotopic analyses for mobility and diet: itinerant pastoralism in the Middle Neolithic and changes in caprine feeding habits across the Chalcolithic–Bronze Age transition in Estremadura (2,200 cal BC, coinciding with the 4,200 cal BP climatic event). Ongoing isotopic research may provide further insights on both phenomena and expand our views on animal exploitation systems.

Our daily bread? Plant foods in Neolithic Ireland

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The Neolithic period in Ireland witnessed enormous changes in the types of foods being produced and the work involved in their production. Several new crops were introduced – archaeobotanical studies indicate that emmer wheat became the dominant crop, with evidence also for barley (hulled and naked) and flax. Gathered resources were not abandoned when farming arrived into Ireland. On the contrary, there is substantial archaeobotanical evidence for a variety of nuts, fruits and greens. Recent studies have shed much light on the timing and nature of these new ways of farming and living, but the focus is often on ingredients rather than finished food products. Can we determine what foods were being made with these new crops? How can we assess the dietary and social importance of cereals? This paper will explore current archaeological evidence for plant foods in Neolithic Ireland and highlight potential avenues for future research.

Neolithic Brexit – the reduced crop package of England and Wales.

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When agriculture spread into Europe, the Neolithic package was based on a wide variety of crops including at least six different cereals and four pulses. As farming spread further north and west the

range of crops became gradually reduced until, in Britain, Neolithic agriculture appears to have been primarily reliant on two cereals. The University of Manchester ERC funded ADAPT project is utilising genetic and archaeobotanical data to investigate how certain crops were able to adapt and why others may have failed to adapt to the change in climate as agriculture spread across Europe. The archaeobotanical element of this project, based at the University of Sheffield, is aimed at the creation of a sample by sample database of crop data from the European Neolithic. This will provide an archaeological framework to examine changes in the Neolithic crop spectra and potentially enable assessment of whether changes were influenced by climate variation or through human choice. This paper will provide an overview of crop distribution across Europe using archaeobotanical data collected as part of the ADAPT project as well as from published databases to highlight zones of agricultural contraction. In particular, this paper will explore the transition of agriculture from the Continent to Britain, with an emphasis on the temporal and regional differences in plant exploitation during the Neolithic of England and Wales.

Plants and people in Neolithic Scotland: local selection strategies and adaptations to environment

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To what extent were crop and wild plant use strategies in Neolithic Scotland determined by climate and environment, or was there an element of local selection of particular plants within Neolithic subsistence strategies in Scotland? This paper will discuss the variability of the evidence for Neolithic plant use across Neolithic Scotland through an inter-site comparison of the archaeobotanical evidence for cultivation and wild plant use, and will consider the possible factors influencing the selection of particular plants in Neolithic subsistence strategies. The presentation will also highlight the challenges in identifying different plant subsistence strategies - and their causes – given the patchiness of the archaeological record and the disparities in the preservation and dating of different assemblages.

Integrated approaches to animal exploitation in the Central European Early Neolithic: a case study from Ludwinowo 7 (Kuyavia, Poland; 5250-5000 cal BC)

Mélanie Roffet-Salque¹, Jessica Smyth, Rosalind Gillis, Emily V. Johnson, David T. Altoft, Iain Kendall, Marta Bartkowiak, Marta Osypińska, Joanna Pyzel, Iwona Sobkowiak-Tabaka, Volker Heyd, Arkadiusz Marciniak, Jean-Denis Vigne, Marie Balasse, Alan K. Outram, Richard P. Evershed

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The introduction and spread of cattle-based agriculture by Europe's Neolithic farming groups re-shaped prehistoric culture, biology and economy in ways that underlie modern life virtually worldwide. Recent genetic studies point towards 6th millennium BC central Europe as the core region for the emergence of the lactase persistence allele -13,910*T. However, it is not known if milking was part of the LBK Neolithic 'package' from the start, or if it emerged as a new technology in specific regions during the development of the LBK, or indeed was not intensively practiced in the LBK. Determining when, where and why the transition to full domesticate-based farming occurred requires integrating multiple strands of evidence. Here we detail ongoing multi-proxy research into the intensification of dairying in Neolithic Europe, using the site of Ludwinowo (late 6th millennium BC, central Poland) as a case study, one example of what likely was a diverse array of animal management strategies. Lipid biomarker and stable isotope compositions of food residues from vessels provide qualitative and quantitative assessments of the major animal products acquired and processed within LBK society. As well as the composition of wild and hunted species, state-of-the-art archaeozoological analyses are identifying herding and slaughtering practices, butchery practices and the nature of meat and fat exploitation. A range of isotope analyses on domesticated animal teeth are also being undertaken to define seasonal

herd management. This combined approach offers a fully integrated picture of animal exploitation and milk use at the central European LBK site of Ludwinowo.

Neolithic explanations revisited: modelling the arrival and spread of domesticated animals into Neolithic Britain and Ireland

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In 1969 Humphrey Case considered the practical implications for the start of the Neolithic in Britain and Ireland. Taking this as our starting point we revisit these issues but in the light of nearly 50 years of research. In this contribution we model the arrival and spread of domesticated animals from the Continent, with a specific focus on cattle. In particular we will consider the numbers of animals required from the continent to make a viable genetic population, boat transportation, breeding rates, survival rates, issues surrounding wintering and the subsequent spread of animal populations throughout Britain and Ireland within the new chronological framework outlined in Gathering time. It is hoped that the implications of this work may better inform our understanding of the kinds of processes involved in the onset of the Neolithic.

Searching for Middle Neolithic farming in Wiltshire. New evidence from the Stonehenge and Avebury WHS.

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Although Wiltshire is internationally renowned for its Neolithic archaeology, the Middle Neolithic is elusive within the county; the Wiltshire and Swindon HER lists only 16 Middle Neolithic sites, as opposed to 1466 Late- and 1695 Early Neolithic records. As a consequence of its poor archaeological visibility, evidence for Middle Neolithic food and farming systems is also relatively scarce, as demonstrated in reviews of zooarchaeological and archaeobotanical evidence. The scant available evidence has been used to suggest that the Middle Neolithic was a period in which domestic herds continued to dominate human-animal interaction, but predating the large scale pork feasts recognised at later monuments. It has also been suggested that it marks the beginning of a period of decline in arable farming. Recent excavations by Historic England at West Amesbury, towards the eastern margins of the southern area of Stonehenge and Avebury WHS, revealed a cluster of five pits and an inhumation burial, radiocarbon dated to the Middle Neolithic. Large pottery and flint assemblages were evident in the pit fills, together with an informative zooarchaeological assemblage, including evidence for carcass processing and consumption. A comprehensive recovery strategy was employed including extensive whole-earth sampling, ensuring material loss was minimised and allowing more confident interpretation of remains whose representation are sensitive to recovery, particularly archaeobotanical assemblages. Post-excavation analysis of the pit assemblages is underway. This paper will present preliminary archaeobotanical and zooarchaeological evidence from the pit cluster along with results from a programme of strontium isotope analysis. These data will be compared to evidence from elsewhere in the county and their significance for examining food utilisation and local farming practices in the Middle Neolithic will be explored.

What's cooking in the Neolithic?

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New foods are a defining feature of the Neolithic in our archaeological minds. Yet for the British Neolithic archaeological attention has tended to focus on overall diet and whether people ate mainly foods from domesticated or wild plants and animals. In this paper, I consider the recent shift of wider archaeological attention away from diet and economy towards smaller-scale food processing and consumption practices, and how this is beginning to impact on Neolithic studies. I also draw on non-archaeological literature to consider how we may approach concepts like ‘staples’ and ‘migrant food’ in more nuanced ways. I suggest that a more fine-grained food vocabulary is needed to accommodate the complexity and intimacy of the food evidence that is emerging. To this end, I discuss the different meanings of terms such as ‘diet’, ‘cooking’, and ‘food culture’. To clearly differentiate between them is crucial as they relate to different categories of archaeological evidence and different scales of analysis. I present a case study of Early Neolithic cooking at domestic sites in the Upper Thames region to illustrate both the interpretive potential of cooking practices and the need for a well-defined food vocabulary.

Posters:

A cereal problem. Recent Understandings of the Roles of Domesticated Plant Resources in Britain and Ireland.

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In the years since the publication of the last Neolithic Studies Group offering on the role of plant resources in the Neolithic we have seen the application of a range of archaeological science techniques which have importantly influenced our understandings. The large-scale application of sampling strategies in commercial developments have also critically influenced the available sample for study. This paper will present new analysis of the radiocarbon results from domesticated cereal remains in the Irish and British Neolithic to explore what these can tell us about the nature of the early Neolithic. This approach does not assume that cereals were present as part of the first Neolithic activity at different sites. By independently modelling the chronology of cereals themselves, it is possible to unpick this element of the ‘Neolithic package’. Cereals may not have been part of the first Neolithic presence in many regions, instead forming a subsequent Neolithic development after introduction of practices including monuments in the form of causewayed enclosures, tombs and in some regions post-and-slot-built structures.

From animal to archaeologist: profiling butchery, deposition and taphonomy through bone fracture analysis.

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This poster presents a new method of assessing and displaying taphonomic history through detailed bone fracture analysis. Bone is a particularly useful indicator of taphonomic processes as it is sensitive to *when* it is broken based on degradation over time. Our proposed ‘fracture history profiles’ show the sequences of fracture and fragmentation that have affected assemblages of bone specimens from the death of the animal to recovery by archaeologists. The method provides an assessment of the carcass processing traditions of past people, relating specifically to bone marrow and bone grease extraction. In addition, by analysing post-deposition fracture and bone modifications caused by burning, gnawing and other taphonomic agents, it is possible to reconstruct a comprehensive taphonomic history for each archaeological context. This has implications for understanding effects on other artefacts that have no

equivalent diagnostic features for determining timing of breakage, and also for establishing the nature of events such as secondary disturbance of deposits. This method will be demonstrated using a case study from the Neolithic Linearbandkeramik culture.

Cultivation of choice: direct insights into the interplay between crop production and consumption from isotopic analysis

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Stable isotope analysis of crop remains complements conventional isotope analysis of human and faunal bones, permitting a more holistic insight into subsistence practices during the Neolithic. Here, we present isotopic data from the Linearbandkeramik (LBK) sites of Vaihingen an der Enz and Stuttgart Mühlhausen Viesenhäuser Hof, and the Late Neolithic lakeshore settlements of Hornstaad-Hörnle IA and Sipplingen-Osthafen. As well as demonstrating the central role that crops played in human diet, extensive stable isotope analysis of crop remains provides evidence for a strong interplay between crop production and consumption practices, which belies an ecological impetus for the differential treatment of crops.

While contextual and isotopic evidence from the LBK sites indicates the mixed cropping of glume wheats (einkorn and emmer), differential manuring of naked wheat and naked barley at the Late Neolithic sites articulates with their distinct culinary uses. Wheat (recovered in the remains of porridge and bread) was manured more intensively and consistently than barley (likely roasted whole) and this differentiation lasted for over a thousand years. Nevertheless, isotope analysis of crops from Iron Age sites in the region demonstrates that the manuring intensity of barley increased over that of wheat, at a time when it was the main crop used in beer production. Our results therefore reveal the strong interrelationship between production, storage and consumption of staple crops and demonstrate that crops occupied different social and ecological niches than they do today.

Home is where the hearth is: what cooking practices tell us about Neolithic households in Çatalhöyük

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Çatalhöyük has given us a wealth of data related to food and food preparation in the Neolithic period. For example, analysis of plant and faunal remains, human bones and dental remains, lipid residues and cuts on bones, clay balls and pottery indicate diet and cooking methods. I bring these strands together and ask what the material remains associated with food processing reveal about daily cooking practices (e.g. increase in stewing meat, replacing clay ball heating with cooking over the fire). I widen the perspective from the material assemblage to the architectural features and the landscape linked to food and its preparation and reflect on the longer term changes. I focus on the development of fireplaces in the 600 years spanned by levels South L-S and 4040 G-H in Çatalhöyük and show that practical considerations determine the construction of different types of fireplaces (e.g. ovens, hearths, firepits, firespots), their internal and external locations, their alterations and their abandonment. I examine variations of cooking facilities between and within households over time and conclude that households not only responded to a changing environment (e.g. availability of fuel, food type), but actively adapted their surroundings to changing practical needs (e.g. changes in household size, autonomous households and communal living). I argue that not only natural resources and culture, but also daily practice impacts on landscape, architectural features and artefacts and thus shapes the physical and social environment.